Swiss Volkskalender of the 18th and 19th Centuries – A New Source of Climate History?

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University of Bern

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Isabelle Vieli

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Supervisor: Prof. Dr. Christian Rohr, Institute of History,
Oeschger Centre for Climate Change Research, University of Bern

Co-Supervisor: Prof. Dr. Stefan Brönnimann, Institute of Geography,
Oeschger Centre for Climate Change Research, University of Bern

Abstract

The *Volkskalender* is one of the earliest printed mass media of the early modern times. The non-calendrical part, which also contains climate- and weather-related data, has not yet been systematically analysed. This study focuses on the *Appenzeller Kalender*, one of the most successful and continuous *Volkskalender* over time. Within the 144 observed years, 1,424 climate- and weather-related entries were counted. The information mainly consists of retrospective information, and to a lesser extent forecasts and knowledge on climate- and weather-related topics. The calendar reflects and discusses extreme natural events and impacts on society. About half of the years, which showed a peak in one of the quantitative analyses (such as number of pages, keywords and clusters), coincide with a reported weather anomaly. The yearly report on seasonal weather does not fulfil the requirements for a time series, as precise information on the measuring place and dates are missing. Therefore, a time series is not feasible. However, the extensive content related to weather and climate provides a detailed picture of the perception of natural events during the period 1722–1865 and the change in explanatory patterns over time.

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1. Introduction

Climate change is omnipresent at the moment. People are realising that the changing climate will alter our world. The interest in future climate and weather is always closely linked to the conditions in the past. What changes happened in the past? And at what speed? What conclusions can be derived from past climate conditions? Although, in the last decade, many reconstructions of weather data have been undertaken, there is still a lot to do. While early instrumental measurements are of interest to climate scientists, there are numerous historical documents that – if carefully analysed – can partially fill the existing gaps or help in understanding and interpreting the given instrumental data. Furthermore, they can offer a higher temporal and spatial resolution than other proxy data such as those from tree rings or lake sediments.

This study concentrates on one type of source that has not been widely analysed regarding climate- and weather-related contents: the *Volkskalender*. The *Volkskalender* was one of the first mass media printed publications in the early modern period throughout Europe. While the role of the *Volkskalender* in the public Enlightenment and alphabetisation has been widely studied, climate- and weather-related subjects have not been systematically analysed so far. In its role as popular media over several centuries, the potential of available sources seems reasonable. Apart from the prognostication and forecasted weather events, articles about the current understanding of weather phenomena, as well as past natural events, were described in the calendar. Therefore, the calendar covers a multidimensional view of the understanding and interpretation of weather at the time. Moreover, as the readership and – in the case of the *Appenzeller Kalender* – also the editors mainly belonged to the farming community, the understanding within the calendar most likely reflected the actual view of its readership at a certain time. Thanks to the invention of the printing press, the *Volkskalender* experienced an upward trend in circulation with a peak in the number of copies sold in the first half of the 19th century. The great abundance of calendars in Switzerland – which will be shown in this study – as well as abroad illustrates the enormous potential of the *Volkskalender* as a source.

The aim of this study is to adopt a qualitative and quantitative approach to study the perception of nature over a time span of almost 150 years. While the initial intention was a meta-study on different calendars in Switzerland, the restriction to one single calendar should present a more detailed and promising view on the medium, allowing a deeper discussion of the research questions. However, this thesis cannot deliver a time series on temperature or precipitation, nor a phenological trend. Nevertheless, in combination with other studies from other fields, it can help to give us a differentiated view on the weather and climate of the 18th and 19th centuries in north-eastern 'Switzerland'.

1.1. State of Research

1.1.1. Historical Climatology

Historical climatology as part of environmental history has an interest in the reconstruction of past natural conditions and processes through the analysis of documentary sources.[1] Its focus is on societal archives, including images, numbers and written records.[2] The modern historical climatology was established as an independent discipline by Emmanuel Le Roy Ladurie in the late 1960s. He introduced a clear distinction between climatic conditions and societal development,[3] as before, the latter was often attributed to climatic conditions, even if the relationship between these two components is far too complex.[4] The modern historical climatology[5] consists of three parts: *reconstruction* of past weather and climate, *vulnerability analysis* of past societies, and *knowledge and perception* history of climate. The most recent, holistic overview on the state of research of the first two parts is given by Chantal Camenisch in "Endlose Kälte" (2015).[6] In the following, contributions relevant for this thesis are mentioned explicitly.

Christian Pfister is representative of the second generation of historical climatologist in the field of *climate reconstruction*. The establishment of this field in Switzerland has to be ascribed mainly to him and his working group. "Klimageschichte der Schweiz 15251860" (1988) and "Wetternachhersage" (1999) are two pioneering handbooks regarding climatic reconstruction in 'Switzerland' that emphasise the importance of interdisciplinary research – especially in climate sciences. The latest publication containing his contribution is "The Palgrave Handbook of Climate History" (2018), which summarises

1 Cf. Winiwarter, Knoll 2007: 115–117.

2 Cf. Behringer 2007: 23–25. Examples of different historical sources can be found in the typology of climatic data according to their originator, as done by Pfister 2018: 37–42; 1999: 16.
Anthropogenic sources such as instrumental measurements started to appear in the middle of the 16th century. Due to the differences in equipment and methods used, they are hardly comparable. Only in the 19th century did a more systematic approach and a faster exchange of data lead to a greater reliance on instrumental weather and climate data. In contrast, documentary sources can give us an idea of the weather and climate of the period before the time when reliable instrumental data were used. In Switzerland, this change from the 'historical' to the 'modern' period took place with the establishment of a network by the *Naturforschende Gesellschaft* in 1864; cf. Pfister, White, Mauelshagen 2018: 2; Behringer 2007: 25–26; cf. Pfister 1988: 19.

3 This is also known as 'climatic determinism'. It denotes the approach of identifying the climate as a monocausal driver of historical events, although the causes of societal change are more diverse and complex; cf. Wanner 2016: 181; Mauelshagen 2010: 20–26.

4 Cf. Camenisch 2015: 15–16. The development since the publication of Ladurie is elaborated in more detail in Pfister, White, Mauelshagen 2018: 6–8.

5 A more detailed discussion on this term can be found in Pfister, White, Mauelshagen 2018: 3.

6 Cf. Camenisch 2015: 18–30.

the current state of research, as well as methods and case studies.[7] For the geographical area of Germany Rüdiger Glaser's "Klimageschichte Mitteleuropas" (2013) provides a reconstruction over 1,200 years.[8]

Natural catastrophes as a result of extreme weather have become targets of research in recent years. The perception of natural catastrophes provides an aid to understanding the relationship between humans and nature in general. An overview of natural catastrophes from the ancient world until the 20th century is given by Dieter Groh, Michael Kempe and Franz Mauelshagen.[9] Christian Rohr's "Extreme Naturereignisse im Ostalpenraum" (2007) in particular covers the perception and interpretation of extreme natural events in the Alpine area. A larger spatial and temporal context is treated within the anthology of Christa Hammerl, Thomas Kolnberger and Eduard Fuchs.[10] Different coping strategies in cases of natural catastrophes are discussed by Verena Twyrdy in "Die Bewältigung von Naturkatastrophen in mitteleuropäischen Agrargesellschaften seit der Frühen Neuzeit" (2010).[11] The handling of the risks and the commemorative culture in 'Switzerland' between 1500 and 2000 are the main topics in Christian Pfister's "Am Tag danach" (2002).[12]

Vulnerability analysis of past societies was seen for a long time as very controversial as the deterministic interdependency of humans and climate was criticised. Despite these reservations, Christian Pfister approached the interplay between the two and provides a regional study for the area of the western Swiss Plateau for the period between 1755 and 1797,[13] where he situated his reconstructions in the context of economy and society. Hubert Horace Lamb established the modern vulnerability analysis at the end of the 1970s.[14] Heinz Wanner (2016) and Franz Mauelshagen (2010) deliver an overview on different spatial scales of the interdependency of climate and humans.[15] A combined approach of reconstruction and analysis of societal variability is chosen by Daniel Krämer, who analysed the hunger crisis of 1816/1817, and developed a concept of vulnerability.[16] The latest publication of Dominik Collet (2019) addresses the hunger crisis of 1770–1772 in the European context.[17]

7 Cf. Pfister 1988; 1999; White, Pfister, Mauelshagen 2018.
8 Cf. Glaser 2013.
9 Cf. Groh, Kempe, Mauelshagen 2003.
10 Cf. Hammerl, Kolnberger, Fuchs 2009.
11 Cf. Twyrdy 2010: 13–30.
12 Cf. Pfister 2002.
13 Cf. Pfister 1975.
14 Cf. Krämer 2015: 186–187. See also Lamb 1989: 311–356.
15 Cf. Wanner 2016; Mauelshagen 2010.
16 Cf. Krämer 2015: 205–210.
17 Cf. Collet 2019.

The third part, *knowledge and perception history of climate*, is the largest desideratum within the historical climatology, as Franz Mauelshagen observes.[18] An early and extensive work on the "history of science, technology and philosophy" of the 18th century was written by Abraham Wolf in 1938. However, it includes mainly scholastic concepts of the different fields and not the perception of the broad public.[19] In his essay, Franz Mauelshagen (2018) provides an overview on the changing concept of climate until 1800. He clearly separates the history of climate from meteorology, which – according to him – is only addressed as a "by-product of technological progress in meteorological measurements and data-collection" before 1800.[20] While Franz Mauelshagen mainly discusses the development of the concept of climatology, Franziska Hupfer concentrates on the history of meteorology and climatology in the newly formed Swiss federal state (1860–1914).[21] Linda Richter provides a recent study on the development of three different dynamics within the field of meteorology between 1750 and 1850.[22] Although it does not explicitly address weather and climate, the following studies examine the relationship between humans and nature. A general overview on the changing understanding of nature from the 18th to the 20th century is given by François Walter's "Bedrohliche und bedrohte Natur" (1996).[23] The link between God and weather is widely elaborated in "Von der Glückseligkeit alles zu wissen" by Anne-Charlotte Trepp.[24] The omnibus of Sophie Ruppel and Aline Steinbrecher (2009) covers the topics of religion and nature, the contemporary perception of thunderstorms in the 18th century and the natural scientific approaches in the early modern period.[25] Another essay by Andreas Schmidt addresses the changing interpretation of lightning.[26]

1.1.2. Volkskalender

The first study of the *Volkskalender* was conducted by the French literature historian Charles Nisard in 1854.[27] He realised early on the potential of this source because of its wide popularity. An important

[18] "Klimahistoriker haben sich bisher nur in Ansätzen mit den kulturgeschichtlichen Wurzeln ihrer Schriftzeugnisse befasst. Medizinische und astrometeorologische Traditionen […] sind zu wenig aufgearbeitet, geschweige denn in einer Kulturgeschichte des Klimawissens dargestellt worden. Unter dem bis heute gültigen Primat der Klimarekonstruktion blieb die Wissensgeschichte des Klimas Desiderat." Mauelshagen 2010: 47.

[19] Cf. Wolf 1938: 274–342.

[20] Cf. Mauelshagen 2018: 565. See this overview also for a profound summary of the state of the art concerning weather knowledge.

[21] Cf. Hupfer 2019. An older study addressing the meteorological development before 1700 is provided by Klemm 1974.

[22] The three different dynamics are called *Semiotik* (semiotics), *Organik* and *Physik* (physics); cf. Richter 2019: 16.

[23] Cf. Walter 1996.

[24] Cf. Trepp 2009.

[25] Cf. Ruppel, Steinbrecher 2009; Greyerz 2009; Missfelder 2009; Boscani Leoni 2009.

[26] Cf. Schmidt 1999.

[27] Cf. Nisard 1854.

early contribution for Switzerland, especially Bern, was written by Johann Heinrich Graf in 1896 ("Historischer Kalender, oder, Der Hinkende Bot. Seine Entstehung und Geschichte: Ein Beitrag zur bernischen Kalendergeschichte").[28] Although the *Volkskalender* had already been studied in the 19th century, it was not further analysed in the first half of the 20th century due to the stigma of it being "throw-away" literature. The first disciplines resuming the study of the *Volkskalender* were medical historians and ethnologists.[29] A dogmatic change in literature research in the 1960s brought the *Volkskalender* back into focus. Research questions addressing the literacy of lower classes and reading material as an instrument of power were especially popular.[30] Rudolf Schenda (1930–2000), a representative of this new movement, dedicated several extensive publications to the public Enlightenment and censorship, but also the production and reception of the *Volkskalender*.[31] Today the focus lies mainly on research into the effect and perception of media.[32]

The collection of the available sources in the German-speaking area exists mainly because of Klaus-Dieter Herbst. He established the series "Acta Calendariographica", which contains a commented index of the *Schreibkalender*[33] of the 17th century and research on their impact in the early Enlightenment.[34] An overview of a specific type of *Volkskalender* is given by Susanne Greilich and York-Gothart Mix. They published a bibliographical collection of *Hinkende Bote/Messager boiteux* in Europe.[35] Earlier studies that address the *Volkskalender* in 'Switzerland' usually only cover a selection of the available calendars. Stephan Giess conducted an early study in 1998 with a cultural and scientific perspective on the calendars.[36] A comparative analysis of the evangelic and Catholic calendars was published by Ursula Brunold-Bigler (1980).[37] Whereas Klaus-Dieter Herbst's most recent ambitions of providing a catalogue of available sources focused mainly on Germany in an earlier phase, the aim of the SNF project "Text

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28 Cf. Graf 1896.

29 Cf. Messerli 2016 (Enzyklopädie der Neuzeit Online); Tschui 2009: 32–33, 41–43.

30 Cf. Schenda 1988: 22; 1876: 135–139.

31 Cf. Schenda 1996; 1988; 1976. Numerous publications are dedicated to the role of the *Volkskalender* in the Enlightenment; cf. Rohner 1978; Petrat 1991; Mix 2005.

32 Cf. Mix 2014 (Enzyklopädie der Neuzeit Online).

33 For the differentiation in between the terms *Schreibkalender* and *Volkskalender*, see footnote 99.

34 Cf. Herbst 2008; 2010; 2012. Norbert D. Wernicke contributed the fourth volume to the series, which consists of a commented index of the *Schreibkalender* of the 16th and 17th centuries available in Swiss libraries. Cf. Wernicke 2012. A project of the *Thüringer Universitäts- und Landesbibliothek (ThULB) Jena* and the *Stadtarchiv Altenburg* digitised and published almost 300 calendars from the 17th and 18th centuries: Thüringer Universitäts- und Landesbibliothek Jena: journals@UrMEL, https://zs.thulb.uni-jena.de/content/main/journalList.xml#A/jportal_class_00000200:calendars, 12.12.2019. More information regarding the project can be found in Herbst 2018: 112–114.

35 Cf. Greilich, Mix 2006. As well as calendars from France and Germany, calendars from 'Switzerland' are also included: Basel, Bern, Neuchâtel, Schaffhausen, Trogen and Vevey. The calendar of Trogen is congruent with the *Appenzeller Kalender*. In her essay, Susanne Greilich addresses the general content, structure and readership of the *Hinkender Bote*: cf. Greilich 2006: 9–42.

36 Cf. Giess 1998. However, the choice of sources does not seem to be systematic as not all the existing volumes were taken into consideration.

37 Cf. Brunold-Bigler 1980.

– Zahl – Bild. Schweizer Volkskalender 1500–1900", initiated by Alfred Messerli, was to collect and index all the available sources in the German-speaking part of 'Switzerland'. As a result of this project, two dissertations were published. Teresa Tschui (2009) concentrated on the graphical material within the calendars, differing from Norbert D. Wernicke (2011), who focused on the sorts of text.[38] Alfred Messerli's announced overview of the project is still awaited.[39] Norbert D. Wernicke's publication contains a detailed index of calendars and their location, which forms the foundation of the following thesis. Unfortunately, the intended database has never been realised, therefore no digital index exists.[40] As for its wide geographical spread and continuity, the *Appenzeller Kalender* has been the subject of studies from regional,[41] but also international,[42] perspectives. A detailed insight into the "Kalendermacherfamilie" Sturzenegger (1771–1819) is provided by Ursula Brunold-Bigler; she analysed notes by the family within their own calendars.[43]

In the following, the intersection of the source *Volkskalender* and historical climatology will be discussed. Weather diaries are denoted as one of the "most valuable kinds of non-instrumental meteorological evidence"[44] and therefore are first-hand data for the reconstruction of past weather and climate.[45] The early *Volkskalender*, and especially the *Schreibkalender* (for a definition, see Chapter 2.1.2.), provided space for notes next to the astrological weather forecast. Early weather observers such as Laurentius II. Effinger (1500–1540), Wolfgang Haller (1525–1601), Kilian Leib (1471–1553) and Peter Krafft (1470[?]–1530) used their calendars to take notes.[46] While these aforementioned weather diaries and notes are the predominant target of several researchers,[47] the *Volkskalender* as a source of climate- and weather-related information has not systematically been taken into account yet.[48] In this thesis, therefore, the *Volkskalender* will be analysed regarding its information on weather and climate, and not on the comments of its users. The research questions addressed in this thesis will be discussed below.

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38 Cf. Tschui 2009; Wernicke 2011a.

39 Cf. Wernicke 2011b.

40 See footnote 109.

41 The *Appenzeller Kalender* is treated within the press history of the canton AR (for example Schläpfer 1978); as well as an anniversary publication of the *Appenzeller Kalender* ("250 Jahre Appenzeller Kalender", AK 1971: 53). Another anniversary publication written by Norbert D. Wernicke concerning the *Berner Hinkender Bote* was published in 2018; cf. Wernicke 2018.

42 Cf. Messerli 2013: 231–248. On the basis of three international events, Alfred Messerli demonstrated how information was passed to the readership of the *Appenzeller Kalender* at the time of publication.

43 Cf. Brunold-Bigler 1983: 63–84.

44 Manley 1953: 242–261 cit. after Pfister, White 2018: 53.

45 Cf. Pfister, White 2018: 53–54.

46 Cf. Pfister 1999: 20–28, 271. Harald Tersch (2008) addressed the question, when people took notes in their Schreibkalender, in his publication "Schreibkalender und Schreibkultur".

47 Cf. Flohn 1979; Klemm 1970; Pfister 1988; 1999; Schwarz-Zanetti, Pfister, Müller 1995; Pfister et al. 1999; Schwarz-Zanetti 1998; Bregy Hediger, Kalbermatter, Zenhäuser 2006.

48 Some extracts of the *Appenzeller Volkskalender* are already incorporated in the *Euro-Climhist* database, but no systematic approach has been undertaken so far.

1.2. Research Questions

As stated in the previous section, the *Volkskalender* has not been systematically analysed regarding its content on climate and weather. Although the original intention was to conduct a meta-study on the general potential of the *Volkskalender* as a source for climate reconstruction, it became clear very soon that this would go beyond the scope of a master thesis. Nevertheless, an overview of the potential sources in the German-speaking part of 'Switzerland'[49] is presented based on the index of Norbert D. Wernicke. Eventually, the *Appenzeller Kalender* was analysed, as it is one example of a *Volkskalender*. Thanks to its continuity, the well-known editors and the large spread of volumes, it proved to be the obvious object of investigation. Unlike Norbert D. Wernicke's publication, the investigated period was extended from 1848 to 1865[50] in order to cover the time span up to the start of the meteorological network in the newly formed Swiss federal state.

The first research question addresses the content of the *Appenzeller Kalender* 1722–1865. This thesis aims to provide an overview of the different content related to climate and weather. (Astrological) Weather forecasts, monthly pictures, prognostications and proverbs as well as retrospective information on natural events will be taken into account. However, the focus is clearly on the retrospective information. While a short summary on the proverbs and prognostication will be provided, the monthly pictures will not be discussed.

Secondly, the change of content will be addressed. The question 'How does the content of the calendar vary over time?' will be answered. Moreover, it will be analysed whether there exists a correlation between the editors and the space dedicated to climate and weather.

Thirdly, the change in perception will be dealt with. A strong link to the change in content is expected. How does the perception of climate and weather change over time? These results will be interpreted in light of the general contemporary understanding of climate and weather.

The fourth question aims to deliver a preliminary insight into the general potential of the source *Volkskalender* apart from the *Appenzeller Kalender*. In a case study, it is analysed how the crisis of 1770–1772 (period of inflation and hunger) is perceived in the four most continuous calendars: *Appenzeller Kalender*, *Berner Hinkender Bote*, *Jährlicher Haus-Rath* and *Solothurner Schreibkalender*.

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[49] Norbert D. Wernicke's index of the *Volkskalender* (cf. Wernicke 2011a) covers the geographical area of what is nowadays considered as the nation state of Switzerland. As this area underwent major changes during the investigated period, the term 'Switzerland' is not entirely adequate. An adequate term will be used whenever there is no doubt about the regime or governmental form spoken of in the text. However, if the whole investigated time span is referred to, the term 'Switzerland' will be used to indicate its simplification.

[50] The new measuring system came into use in December 1863. To cover the full information of 1863, the two volumes of 1864 and 1865 were also taken into account.

Lastly, the question of the potential of the *Appenzeller Kalender* regarding climate reconstructions will be answered.

1.3. Methods

The first step was to extract all the relevant material from the digitally available calendars (www.e-periodica.ch). The climate- and weather-related information was noted in an Excel file, which is available in the digital annexe of the thesis. The relevant information was distinguished according to the volume they appeared in and the different entries within the volumes. An entry is a clearly defined unit that usually consists of a single event in a defined region or a report on one topic. For further details about how an entry is defined, see Chapter 3.2.1.1.

The extracts from the *Appenzeller Kalender* were copied as accurately as possible. Nevertheless, some adjustments were made: the line breaks were not made visible – unless there is a clear change in topic; accentuations through a larger character spacing, another font, bold or two capital letters at the beginning of a word (such as *GOtt*) were not copied; spaces between the last character and the punctuation marks were ignored; double consonants indicated by a line on a character were resolved – the same is true for the macron (the line on top of an "e" indicating "en"); whenever it was not clear, if a comma or a slash was used,[51] the comma has been chosen; different variations of "s" – except for "ß" – were all reflected as a normal "s" in the transcription – the same is true for the variations of "r"; "ů" was changed to "ü" – the same is true for other mutated vowels; the abbreviation "etc." was resolved; uncertainties or errors in spelling were made visible ([sic]).

Afterwards, the information was categorised according to a system based on the *Euro-Climhist* database. *Euro-Climhist* is a coding system designed to assign a code to one phenomenon and to describe an event with different codes. As the coding system is not user-friendly for non-database users, only the headers of each subcategory (level 2 of the coding system) were used for the categorisation system of this thesis. While the *Euro-Climhist* database only includes retrospective information, the categorisation system was adapted for this thesis to further categorise future prognostications or general knowledge on the relevant texts. The *forecast* categorises either prognostications or proverbs, while the *general knowledge* assigns information about general knowledge on weather phenomena or their view on the world. Monthly pictures[52] were also taken as general knowledge, as they show a certain conception people had of the respective months. Although indicated, they will not be further discussed

[51] In earlier volumes, instead of a comma, a slash was used. At some point, they start to mix the two and it is not always clear which punctuation mark is used.

[52] Monthly pictures are woodcut pictures, which were used in the *Appenzeller Kalender* from 1764 onwards, usually showing a typical activity of this month.

within this thesis. Additionally, columns were appended to make the spatial context and its perception clear on first sight. Whenever an entry included information about its severity in the form of mentioned damage, the column *severity* was marked. The whole categorisation scheme will be discussed in detail in Chapter 3.2.1.1., *Categorisation and Keyword Distribution* (also see Figure 13).

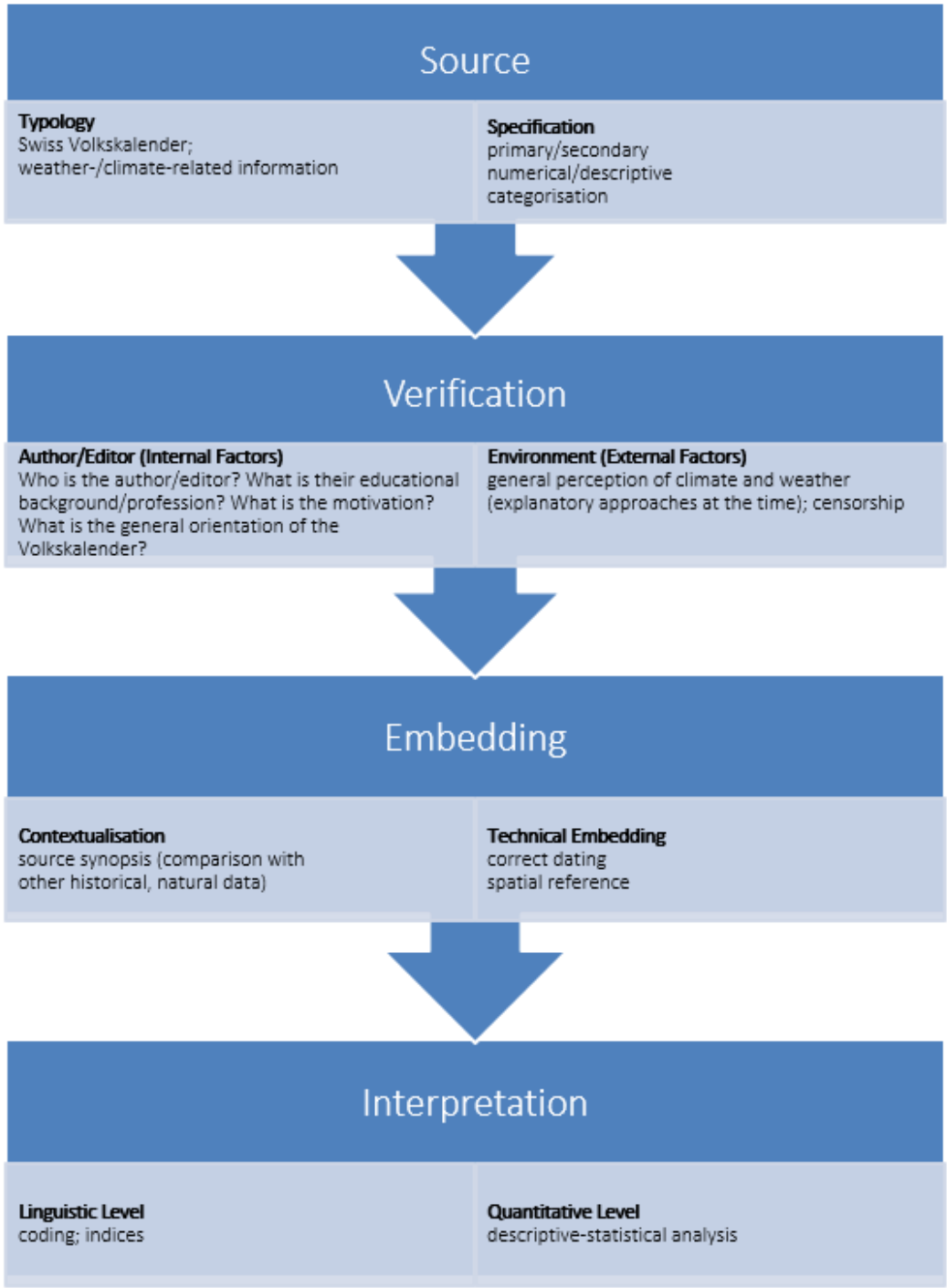

Fig. 1: Methodological approach based on Rüdiger Glaser (2013: 30); adapted and simplified by the author for the source criticism of the Volkskalender.

As the categorisation system is relatively coarse, keyword tags were introduced to allow conclusions to be drawn for individual phenomena (such as avalanches, hail etc.). After the categorisation of the event, the entries were tagged with keywords. An index provides an overview of the different keywords over time (see Chapter 7.3.1.). The same procedure applies for LOC tags (location tags). Every entry was assigned a location tag. This allowed a more detailed picture of what regions the information in the *Appenzeller Kalender* was referring to. A full index of all the spatial tags is available in the annexe (see Chapter 7.3.2.).

In a further step, some quantitative and qualitative analyses were undertaken to see if a development over time can be detected. Such quantitative approaches were applied to entries, climate- and weather-related pages, keyword/LOC tags and clusters. The qualitative analyses concerning the explanatory patterns and the change in perception over time conform to the historical-hermeneutic method of source criticism. As can be seen in Figure 1, after the data extraction and a critical analysis of its authors, the information is set within its context of time and space. The verification and embedding of the data should allow an interpretation of its content.

Although the focus of this study is on the *Appenzeller Kalender*, the case study of the crisis of 1770–1772 also provides insight into other *Volkskalender* and their potential. The procedure was the same as for the *Appenzeller Kalender*.

Not all of the data are discussed within this thesis. However, the information on all the calendars is available in the digital annexe.

1.4. Outline

After the introductory Chapter 1., Chapter 2. is dedicated to the *Volkskalender* as a source overall, and especially the consulted calendars. While the first two sections in Chapter 2.1. generally address the medium and its definition, Chapter 2.1.3. shows the distribution of the *Volkskalender* in 'Switzerland'. A short description of the history and preconditions of Appenzell Ausser Rhoden in Chapter 2.2.1. allows a more precise interpretation of the results. The detailed analysis of the *Appenzeller Kalender* delivers background information on the editors, the content and the source of information. Chapter 2.3. then focuses on the other calendars, which are included in the case study.

After an introduction to contemporary explanatory patterns and concepts (Chapter 3.1.), the data on the *Appenzeller Kalender* will be analysed in detail in Chapter 3.2. The analysis of the retrospective information and knowledge is divided into a quantitative (Chapter 3.2.1.1.) and a qualitative (Chapter

3.2.1.2.) section. Chapter 3.2.1.3. then addresses the prognostication and proverbs within the calendar. A short synthesis in Chapter 3.2.2. links the different results from Chapter 3.2.1. The last part of this chapter is dedicated to a case study on the crisis of 1770–1772 (Chapter 3.3.).

Chapter 4. answers the five research questions and provides an outlook on further research. The annexe consists of an overview of sources (Chapter 7.1.), a list of editors of the *Appenzeller Kalender* (Chapter 7.2.), and indexes on keywords and LOC tags (Chapter 7.3). The source material is linked in Chapter 7.4.

2. Sources

2.1. The Volkskalender

2.1.1. Reading Material of the 'Lower' Classes

Origin and Development

The printed calendar appeared with the invention of the printing press in the 15th century.[53] Johannes Gutenberg issued a printed calendar in 1448 and by the 1470s large numbers were being published.[54] It was not yet a *Volkskalender* as it is understood in this thesis (see Chapter 2.1.2.), but it already contained certain typical elements. The calendar was usually printed on one page – so-called 'broadsheets'. Moreover, almost a third of the existing calendars were in Latin, which reduced the readership and they were therefore limited to a more highly educated audience. Around 1500, the first precursor of the *Volkskalender* occurred. The little booklet contained a calendar with indicated days for certain activities such as bloodletting, hair cutting or market days. Because of the practical approach it was mostly in popular speech and no longer on one page, but in the typical quarto format. In addition to the calendar, a second part evolved during the 16th century: the prognostication (*Praktik*). Since the second part of the 17th century, a third part has contained non-calendrical entries, which include information and short stories with educational intention or just for amusement. Woodcuts can be found from 1700 onwards, to illustrate the stories and to pique someone's curiosity.[55] This combination of calendar, guidebook and light fiction made it into an often-consulted reference book. The multifunctionality goes even further, as the *Volkskalender* was used as reading material at school, to colour in[56] or as a diary. Despite its function as an article of daily use, the editors of the *Volkskalender* also suggested keeping copies to obtain a chronicle in full length. The quality of the bequeathed copies is usually quite bad – which supports their function as articles of daily use – unless they contained personal notes. These copies are often in better condition, because of the higher valuation.[57]

The content of the *Volkskalender* underwent constant change over the centuries. First, the three parts of the "typical" *Volkskalender* evolved. Then, the non-calendrical part gained importance and a higher diversity of different text genres emerged. Later, the *Volkskalender* became the target of scholars during the Enlightenment in the 18th century. The content of the calendar was revised to conform

[53] Calendars, "table[s, I.V.] of the astronomical and astrological events of the coming year", have existed since antiquity; Capp 1979: 25. The term calendar originates from the word "calendae", which marks the first day of a month in the ancient Roman calculation of times; cf. Schenda 1996: 161.

[54] Cf. Capp 1979: 25–26.

[55] Cf. Wernicke 2011a: 56–63; Tersch 2008: 20–21. The function and techniques of woodcutting are discussed in further detail in Tschui 2009: 47.

[56] An example of colouring in the calendar can also be found in the AK 1781: [65].

[57] Cf. Wernicke 2011a: 67–71; Tersch 2008: 21; Wernicke 2018: 21.

to the ideas and perception of the proponents of the Enlightenment. Prognostications, superstition and proverbs were eliminated. The revised version was less popular and therefore some of these drastic changes were revoked.[58] Eventually, the newly occurring weekly, and later daily journals at the end of the 18th century required a differentiation of the *Volkskalender*. As the news was usually already known, the editors included more background information or commentary on the news.[59] The content – pictures and text – of the *Volkskalender* was often copied from sources such as broadsheets, books and (later) journals. While these original sources are often stated in the early phase (17th century), they do not appear in later centuries.[60] This was also due to the fact that copyright did not include periodicals.[61]

Norbert D. Wernicke argues that the increase in the number of pages over the centuries reflects the increasing literacy of the readership. While in the mid-18th century only a few calendars had over 50 pages, it was not rare to find twice as many a century later.[62]

The following sections on the *Volkskalender* concentrate on the available sources and the development in 'Switzerland'.

From the Production to the Audience

The astronomical calculations for the calendar were usually conducted by a scholar or a doctor until the end of the 17th century. The design and the financing were assumed by the publisher/printer. As the non-calendrical part grew in importance, the scholars behind the calculation of the calendar lost importance. In the 17th and 18th centuries the calendars were mainly linked to their region (like the *Appenzeller Kalender*, *Berner Hinkender Bote*) instead of being linked to a person.[63] Like the calculations, an increasing number of parts of the non-calendrical part were self-produced. However, a large part was copied or bought from others. At the beginning, the collection of content, the edition and the financing were accomplished by one person – the so-called "Kalendermacher"; eventually, the publishing and production process was slowly split into different steps in the late 18th century. The editor was responsible for the content of the calendar, the publisher for the financing, while the printer was responsible for the final production. The authors of the individual articles are usually not known.[64]

58 Cf. Schenda 1996: 164–167.
59 Cf. Wernicke 2018: 43–44; Messerli 2016 (Enzyklopädie der Neuzeit Online).
60 Cf. Messerli 2016 (Enzyklopädie der Neuzeit Online); Schenda 1996: 161–163.
61 Cf. Wernicke 2011a: 56–63; Tersch 2008: 20–21.
62 Cf. Wernicke 2011a: 42–43. Pagination was only in use from the 19th century onward. Cf. ibid.: 11–13.
63 Cf. Wernicke 2012: 17.
64 Cf. Tschui 2009: 17–18; Wernicke 2011a: 56–63. While the terms are clearly dividable in German, the distinction in English is more difficult, as the terms are suitable for different meanings. The editor corresponds to the German word "Herausgeber", while the publisher is the "Verleger". The editor of an article within the calendar is called an author in this case, so as not to mix it up with the editor of the whole calendar.

However, at least for some of the editors, it is argued that they produced the content themselves (see Chapter 7.2.).[65] The printed calendar was either sold by the printer – they often bought a large number of copies and sold them at their own risk – by colporteurs,[66] by a bookbindery or by a local bookshop.[67] The number of copies reached around a thousand. Only in the 19th century did the number of copies exceed some ten thousand.[68] The production of the *Volkskalender* was mainly between summer and autumn. The challenge was to deliver as early as possible – to be the first one to sell the new calendar, but not too early to be as current as possible.[69]

Audience

The first *Volkskalender* appearing in the 16th and 17th centuries were read by officials and members of the upper class (f. ex. merchants).[70] Only later did the readership of the *Volkskalender* diversify and include farmers, labourers on farms or manufacturers, workmen, lower officials (in the administration or military), servants and urban lower classes. The new readership included people who had not experienced higher education provided by a tutor, gymnasium or university but possessed at least a minimal literacy for reading the calendar.[71] Towards the end of the 18th and beginning of the 19th century, an increasing number of calendars that addressed specific groups – such as children or military men – appeared on the market. These calendars are not included in the definition of the *Volkskalender* – as they are not meant for the broad public (see definition below).[72]

The reading of periodical magazines or journals was reserved for higher-income classes until the 1830s. News was reported in the church, at the fair, at the inn or by broadsheets or calendars. The *Volkskalender* was often – along with the bible, a hymn book and religious reading material – part of the standard library of a lower-class household.[73] Harald Tersch even calls it a symbol of a minimal rural education. The high number of copies means that the *Volkskalender* can be classified as mass media. Publishing figures from the mid-17th century in England show that theoretically every third household had a *Volkskalender*.[74] Norbert D. Wernicke even assumes that almost everyone had access to the *Volkskalender* around 1800: either by reading it themselves (estimating that at least half of the

[65] An assessment of the editing of early calendars is provided by Norbert D. Wernicke (2011b): 265–270.
[66] Only through colportage – the distribution of publications by carriers – was it possible to distribute the calendars to remoter areas and villages. Cf. Wernicke 2011a: 64.
[67] Cf. Wernicke 2011a: 64.
[68] Cf. Messerli 2016 (Enzyklopädie der Neuzeit Online).
[69] Cf. Wernicke 2011a: 63.
[70] Cf. Schenda 1996: 163.
[71] Cf. Tschui 2009: 17–18; Tersch 2008: 17–19.
[72] Cf. Wernicke 2011a: 51.
[73] Cf. Tschui 2009: 17–19.
[74] Cf. Tersch 2008: 18–19.

population was literate) or being told by others.[75] Teresa Tschui points out that there is a large regional difference when talking about literacy. Only 1–10 % read on a regular basis in the German-speaking part of the Helvetic Republic around 1800.[76] The *Volkskalender* was usually kept in the living room – easy to access and perceived as a reference book for daily use (see Chapter 2.1.1., *Content*).[77]

Content

As Teresa Tschui sums up: "The Volkskalender was an affordable reference book that spread news, informed about past and future events, entertained and amused, offered advice, explained, educated and passed down contents."[78] The content of the *Volkskalender* is determined by the editor and he, therefore, sets the frame for what seems to be relevant for his audience.

The first page of the *Volkskalender* is the cover, on which you can find the title and – depending on the calendar – more or less lavish cover pictures.[79] The title can refer to a place or a region (such as *Appenzeller Kalender*, *Badener Kalender*, *Bündner Kalender*) or to its editor (*Distelikalender, Rosiuskalender*); it can be a personification (*Berner Hinkender Bote*[80], *Der lustige Schweizer*), and/or it indicates the content or purpose of the *Volkskalender* (*Kräuterkalender Oelmann*, *Zürcher Geschichtenkalender*). The title mostly remains constant to enable recognition over the years. Apart from the title, the name of the originator of the calendrical calculations is usually given, the place of printing and in the 19th century sometimes the editor.[81]

The first part is dedicated to the calendrical calculations, which took up one, or more often two pages. The calendar mostly includes the names of the different weekdays,[82] as well as the calendar in Julian and Gregorian style. Although the edict of 1798 prescribed the use of the new Gregorian style for the calendar, the old calendar was still in use (for example in Grisons until 1812). The calendrical part is frequently accompanied by monthly pictures. They displayed activities of the specific month or the prevailing sign of the zodiac and proverbs or poems. Additionally, the calendar contained the moon

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75 Cf. Wernicke 2011a: 64–66.

76 Cf. Tschui 2009: 18.

77 Cf. Messerli 2016 (Enzyklopädie der Neuzeit Online).

78 "Das selbst für einfache Leute erschwingliche Gebrauchsmedium Kalender verbreitete Nachrichten, informierte über Geschehenes und Zukünftiges, unterhielt und belustigte, bot Rat, klärte auf, bildete und tradierte gleichzeitig bekannte Inhalte." Tschui 2009: 19 (own English translation).

79 A more detailed analysis of the different cover pictures can be found in Tschui 2009: 314–352.

80 The origin of the figure of the "Hinkender Bote" ("limping messenger", "messager boiteux") is not entirely clear. One explanation is that the news always lags behind the actuality due to its only yearly publishing; another explanation is that the figure is based on a crippled man (wounded in the Thirty Years War), who is working as a news vendor; cf. Schenda 1996: 163–164.

81 Wernicke 2011a: 13, 16–18.

82 Before the beginning of the 18th century, the weekdays were only signed with the letters a– g in reference to weekdays, and the letter for Sundays was indicated; cf. Wernicke 2011a: 22.

cycle and indicated the dates for activities (such as bloodletting, cutting down trees, hair cutting, bathing) as well as market dates or the arrival of the postman. Moreover, a figure – the zodiac man (*Aderlassmännchen*) – indicates when bloodletting of which part of the body should be undertaken. The Enlightenment led to the abandonment of this figure around 1800. To avoid competitors, the calendrical part and the star constellation were calculated regionally to make it as precise as possible.[83]

The second part is the prognostication. While the prognostication used to be an independent publication, it was tied to the *Volkskalender* throughout the 16th century, and eventually became part of the calendar. It usually contained a discussion on the four seasons in a year including weather forecasts, prognostications about peace and war, diseases and the outcome of the harvest. As a result of the Enlightenment, the prognostication lost importance during the 18th century.[84] The prognostications usually implicitly contained politics – to avoid provocation it appeared in an indirect form. For instance, a forecasted plague could be a result of social and political passivity. The government was usually suspicious of these predictions, due to their "obvious subversive potential".[85]

The last part is the non-calendrical part. This part was defined by Norbert D. Wernicke, because of the highly heterogeneous content, which can be found not only after the calendrical part and the prognostication, but also in between. The genres of the content vary a lot over time and over the different calendars. On the one hand, it can be literary texts such as anecdotes, puzzles, droll stories, extracts from novels or moral stories, or, on the other hand, non-literary texts like chronicles, news and practical information for daily life. The non-calendrical part only appeared in the second half of the 17th century and mostly contained advisory texts, chronicles and past events (war history). The two topics of nature/catastrophes and war predominated this last part, which was subsequently broadened to include elections of kings and popes, the occurrence of comets, and notable and disgraceful deeds performed by people towards the middle of the 18th century. The development of this third part finally led to a change in the readership, as the initial middle-class future-oriented calendar turned into a retrospective mass medium (see the Chapter *Audience*).[86] From the 18th century onwards, an increasing number of initially weekly, and later daily journals emerged on the market and forced the editors of the *Volkskalender* to differentiate their content. Consequently, more background reports of stories or contextualisation were published. Another strategy was to fully focus on educational information or timeless stories. As already mentioned above, the change in content by proponents of the Enlightenment led to a loss of popularity in the second half of the 18th century. From then on, the ideas of the Enlightenment were integrated into stories and narrations.[87] The absence of political topics between

[83] Cf. Wernicke 2011a: 20–27; Tersch 2008: 19–25.
[84] Cf. Wernicke 2011a: 28–30; Capp 1979: 29–30.
[85] Cf. Capp 1979: 28; Tersch 2008: 29.
[86] Cf. Wernicke 2011a: 31–35.
[87] Cf. Wernicke 2011a: 35–41.

the time of the French Revolution and 1831 is notable, and was partly due to domestic political censorship until 1830.[88] Although we see a depoliticisation of the calendar, a countermovement can be observed in the middle of the 19th century. Increasingly, the different *Volkskalender* took sides in the liberal-conservative conflict during the Restoration and Regeneration. Even some of the traditional *Volkskalender*, which claimed to be apolitical, published political comments. In the late 19th century, new (professional) associations and organisations published their own calendars.[89]

In other words, the *Volkskalender* distinguished itself through its calendar and prognostication, but it also had an educational and entertaining purpose.[90]

2.1.2. Definition of Volkskalender

As the thesis is based on the source collection of Norbert D. Wernicke's and Teresa Tschui's dissertation project, their definition of *Volkskalender* is used. The *Volkskalender* is defined through its appearance, content, readership and function. In the following, these characteristics will be looked at in more detail. It is a condensed version of the criteria treated above.

The *Volkskalender* is usually quarto size (4°)[91], which means around 19.0–20.5 x 15.5–17.0 cm. The copy is printed on thick, coarse, rather low-quality paper and held together by thread stiches.[92] As already mentioned above, the *Volkskalender* can be divided into three parts: the first part is the calendar with its astronomical and astrological calculations, the second part is the prognostication and the last part is the non-calendrical part. The content of the calendar is not dedicated to a specific readership – it is aimed at a broad audience. Calendars only addressing a specific group[93] are excluded in this thesis. The audience is predominantly represented by the lower classes, which did not experience higher education.[94] The *Volkskalender* is meant to be a reference book – a help in daily life and therefore usually placed in the living room for quick and easy consultation.[95]

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88 The freedom of the press was implemented around 1830 – depending on the canton. More details can be found in Wernicke 2011a: 34, footnote 69.

89 Cf. Schenda 1996: 174–176; Wernicke 2011a: 41–47.

90 Cf. Tersch 2008: 23–24; Messerli 2016 (Enzyklopädie der Neuzeit Online). Rudolf Schenda and Norbert D. Wernicke also emphasise the patriotic function of the *Volkskalender*. Schenda 1996: 171; Wernicke 2011a: 41.

91 Quarto, lat. *quartus*, indicates how many times a sheet of paper is folded. A four-time folded sheet results in eight sheets in the format of a quarto; cf. Münch 2012 (Enzyklopädie der Neuzeit Online).

92 Tschui 2009: 16–17; Münch 2019 (Enzyklopädie der Neuzeit Online).

93 Not excluded are *Volkskalender* like "Kalender für den Landmann" – as they still include the whole male population; cf. Wernicke 2011a: 51.

94 Cf. Tschui 2009: 17–20; Wernicke 2011a: 51.

95 Cf. Messerli 2016 (Enzyklopädie der Neuzeit Online).

The *Volkskalender* often defines itself as being separate from other calendar genres. In this thesis, the term *Volkskalender* refers to the English or French term *almanac*.[96] However, this translation is not used to avoid confusion with the genre of the Swiss and German *Almanach*, which refers to a yearly publication (not necessarily containing a calendar) consisting of 'belles lettres' aimed at a more highly educated (female) audience. The *Almanach* is usually smaller than the *Volkskalender* and appeared at the end of the 18th and beginning of the 19th centuries.[97] The *Amtskalender* – an official calendar produced by the government – also has to be separated from the genre of the *Volkskalender*. This calendar included a bulletin and important information for the public. It was usually more expensive and therefore read less frequently by the lower classes. Another genre is the farmers' almanac; it exists either as a booklet or wall calendar, and occurred mostly between the 16th and 18th centuries. Most of the content is in symbols – either for people with little reading skill or to make sure that information can be obtained at a short glance. The perpetual almanac (*immerwährender Kalender*) is the fourth type of calendar. The missing allocation of weekdays in the calendar allows the calendar to be reused annually. The wall calendar is easy to distinguish from the *Volkskalender* because of its size.[98] The *Schreibkalender* consists of a calendrical part, the prognostication and space for notes and is the most difficult to distinguish from the *Volkskalender*. The *Volkskalender* evolved out of the *Schreibkalender* – the most notable difference is that the *Schreibkalender* does not usually contain non-calendrical material such as stories and pictures. However, the transition between the two genres is fluid.[99]

2.1.3. Volkskalender in 'Switzerland'

The first Swiss calendar in the quarto format was printed by Christoph Froschauer in Zurich for the year 1567.[100] The development of the *Volkskalender* happened at a time when the Old Swiss Confederacy was consolidated, and the final detachment of the Holy Roman Empire took place. However, the literature and especially the *Volkskalender* in the 16th and 17th centuries were highly influenced by the Holy Roman Empire. Calendars of the south-western German-speaking part of the Holy Roman Empire found their way into the Old Swiss Confederacy, as private estates in Swiss libraries show. In the 17th

96 Cf. Schenda 1996: 167–169, 279; Mix 2014 (Enzyklopädie der Neuzeit Online).

97 Cf. Schenda 1996: 167–169; Wernicke 2011a: 49–51. A detailed overview of the German *Almanache* in 'Switzerland' in the 18th and 19th centuries is given by Markus Zenker 1996: 113–127.

98 Cf. Wernicke 2011a: 51–56.

99 Cf. ibid.: 47–49. While Norbert D. Wernicke distinguishes between *Volkskalender* and *Schreibkalender*, Klaus-Dieter Herbst pleads for the single term *Schreibkalender*, which has to be separated from wall calendars, pocket calendars and perpetual almanacs. He classifies them according to their means of use, not according to their content. Norbert D. Wernicke admits that they did not reach a consensus on the definition and therefore the two collections of *Volkskalender* (Wernicke 2011a) and *Schreibkalender* (Wernicke 2012) are hardly comparable. Cf. Herbst 2008: 44; e-mail of Norbert D. Wernicke, 22.08.2019.

100 Other yearly calendars had already been printed before. A detailed description of the development of the early calendars in the Old Swiss Confederacy is given by Wernicke 2011b: 252–259.

century in particular, the lack of an own printing press led to the import of calendars of the Holy Roman Empire.[101] As well as the political, the confessional affiliation of the readership is also relevant with regard to the *Volkskalender*. For the Catholics,[102] the dioceses in Constance (until 1815), Chur and Basel were important. Zurich, Bern, Basel, Schaffhausen and Vaud were Protestant. Appenzell was split in 1597 into a Catholic part (AI) and a Protestant part (AR) (see Chapter 2.2.1.1.). In some cantons both denominations occurred (for instance Glarus and Grisons). The confessional unrests eventually led to the *Sonderbundskrieg* in 1847.[103] In 1582, Pope Gregory XIII decided to correct the time lag in the Julian calendars with a correction of 10 days. While the seven Catholic cantons adopted the calendar at the beginning of 1584, the Protestant ones only adjusted a considerable number of years later (for instance Zurich, Bern, Basel, Geneva, Thurgau and Schaffhausen in 1701[104]). Appenzell also adopted the new calendar in 1584, but returned to the Julian calendar after the split-up in 1597 (only AR). Eventually, they accepted the Gregorian calendar in 1798.[105] Between 1793 and 1805 the calendar of the French Revolution was in use – it had to be attached to the Gregorian calendars.[106]

Thanks to the project "Zahl – Text – Bild. Schweizer Volkskalender von 1500–1900"[107] of the *Swiss National Science Foundation* and the continuing studies of Norbert D. Wernicke, there exist lists of sources in the German-speaking part of 'Switzerland'. The cantons of Vaud,[108] Valais, Neuchâtel and Fribourg were not systematically analysed. Moreover, there are no *Volkskalender* available for the cantons of Appenzell Inner Rhoden, Nidwalden, Obwalden and Uri. Unfortunately, the originally planned database of the different sources never came into use.[109] The gathered sources are listed in Norbert D. Wernicke's books (2011a and 2012).[110] The list of sources is based on the catalogues of larger libraries (municipal libraries, cantonal libraries, university libraries, monastic libraries, 'Burger'

[101] Cf. Wernicke 2011b: 251–252.

[102] The Catholic cantons were Fribourg, Valais, Jura, Solothurn, Lucerne, Unterwalden, Uri, Schwyz and Zug; cf. Wernicke 2012: 48.

[103] Cf. ibid.: 47–48.

[104] Cf. Grotefend 1991: 27.

[105] While Hellmut Gutzwiller writes that AR finally adopted the Gregorian style in 1798, Hermann Grotefend speaks of 1724, and a review published in the *Appenzeller Kalender* dates it to 1742. Cf. Gutzwiller 2018 (e-HLS); Grotefend 1991: 27; AK 1971: 5. The change in 1798 seems the most plausible, as only then (first time in the volume of 1799) did the calendar change the two columns "Neuer Januar" on the left and old calendar on the right side of the page. The explanation of the abolishment of the Julian calendar can be found in AK 1799: [36]. Another indication is the fact that Mathias Sturzenegger noted in 1799 "Bemerkung nach der Neuenzeit" (Brunold-Bigler 1983: 70). The calendars of 1744/1745 still explained the differences between the two calendars, implying that the Julian calendar was still in use; cf. AK 1744: [5–28]; AK 1745: [5–28]. The volume of the AK of 1754 includes a plea for a return to the old Julian calendar; cf. AK 1754: [28].

[106] Cf. Gutzwiller 2018 (e-HLS).

[107] More details on the project and similar projects in other places can be found in Wernicke 2011a: 73–74.

[108] Although the canton of Vaud is French-speaking, they had a famous German *Volkskalender Hinkenden Boten von Vivis*; cf. Wernicke 2011a: 76.

[109] Norbert D. Wernicke informed me on 29.10.2018 that the project did not come to an end, and therefore no database is available.

[110] Cf. Wernicke 2011a: 356–366; ibid. 2012: 20–45.

libraries, 'central' libraries).[111] This gathering of sources led to a total of 1,112 copies of calendars, which were analysed in the SNF project. The list covers the time span from 1508 to 1848 – starting with the first printed *Volkskalender* up to the foundation of the Swiss federal state. While the sources in the dissertation project of Wernicke (2011a) are arranged according to their printing history (congruent series with the same printing place), the sources in the collection of 2012 are ordered according to their originator.[112] The publication of 2012 covers all the German-speaking calendars of the 16th and 17th centuries, while the publication of 2011 only lists 'Swiss' calendars. Due to the differences in definitions (see footnote 99), the *Schreibkalender* of the publication of 2012 were not included in the following, as they very possibly do not match the definition of a *Volkskalender*.

It should be remembered that the *Volkskalender* was an article of daily use and hence they were not in a good condition and were kept over centuries. Therefore, it is expected that the actual number of published *Volkskalender* was much higher. While at least one exemplar of a *Volkskalender* with larger number of copies might have survived, it seems clear that many volumes or even full series are missing.[113]

In order to obtain an overview of the abundance of Swiss *Volkskalender* a catalogue was created, which shows the existing copies of each calendar. The catalogue only covers the time span from the mid-17th century, because of my special interest in the retrospective information, which can be found in the non-calendrical part. As this part only developed in the second half of the 17th century (see Chapter 2.1.1., *Origin and Development*), the *Volkskalender* and their copies before 1650 were omitted. An overview of the different sources can be found in the annexe (see Chapter 7.1.). It is a summary of the collection of Norbert D. Wernicke (2011a).

During the period 1650–1848, 75 different volumes of *Volkskalender* could be found in the archives of the German-speaking part of 'Switzerland'. To show the lengths of the different series, four categories were established: 48 *Volkskalender* include less than 20 existing volumes; 17 consist of 20 to 50 volumes; six consist of 51 to 100 volumes; and four series have a length of over 100 volumes. In total, 1,837 volumes are listed. To give an idea about the regional distribution, the different calendars were listed according to their printing place (Figure 2). The printing places were concentrated mainly in the bigger cities such as Bern, Lucerne, Schaffhausen and Zurich. The printing places do not necessarily reflect the regional spread of the *Volkskalender*.

It should be understood that connections across borders existed, for instance the city of Constance and Freiburg i. B. was the printing origin of a lot of (Catholic) calendars used mainly in the Old Swiss

[111] Cf. ibid. 2012: 13.
[112] Cf. ibid.: 17.
[113] Cf. ibid. 2011a: 80–81.

Confederacy. On the other hand, some publishers in the German-speaking part of 'Switzerland' published French calendars. As a result, there was an exchange of ideas between different areas. While the (cantonal) libraries largely collect literature of regional importance, only private archives can deliver more information about the extent of exchange beyond borders.[114]

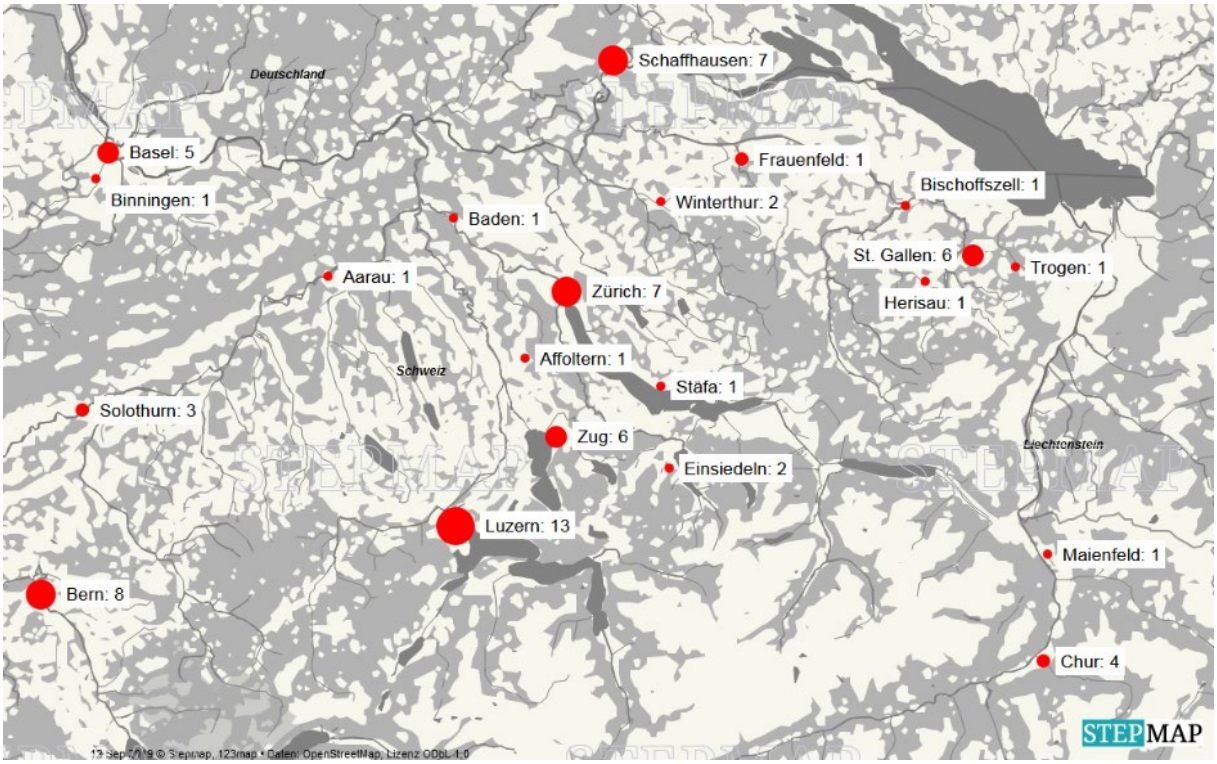

Fig. 2: Printing places of the 73 in 'Switzerland' printed German Volkskalender *from 1650 to 1848, according to the list of Wernicke 2011a. Some of the calendars indicate more than one printing place; the one appearing mostly was taken for this figure. Two calendars do not indicate a printing place. Therefore, they were excluded.*

2.2. Appenzeller Kalender 1722–1865

The *Appenzeller Kalender* is, along with the *Berner Hinkender Bote*, the *Jährlicher Haus-Rath* and the *Schreibkalender Solothurn*, one of the longest series in the period from 1650 to 1848. The high number of volumes (126) and their continuity, the digital availability and the large number of copies as an indication of its popularity made it the ideal source to answer my research questions. In the following, a short introduction about the Appenzell is given (Chapter 2.2.1.), to better contextualise the calendar as a source (see Chapter 2.2.2.).

[114] Cf. ibid. 2012: 69.

2.2.1. Appenzell – the Framework

2.2.1.1. History

"Land Appenzell äussern Rhoden" emerged in 1597 from the former canton of Appenzell – one of the *Dreizehn Alten Orten* of the Old Swiss Confederacy due to a religious dispute between the Catholics and the Protestants. From then on, the political system of Appenzell Ausser Rhoden (AR) was Protestant, while Appenzell Inner Rhoden (AI) followed the Catholic Church. During the Helvetic Republic, AR was reunited with AI in the new canton of *Säntis*. Again, conflicts and riots arose; eventually, the Mediation in 1803 separated the two again into the former half-cantons.[115]

In the 18th and 19th centuries, Appenzell Ausser Rhoden was economically primarily influenced by the textile industry. Being part of an economic area[116] around Lake Constance – which constituted a hub for interregional/-national trade[117] – Appenzell Ausser Rhoden was involved early on in the production of canvas. Additionally, cotton processing gained ground in AR from the 1740s onward. This led to an increase in industrial homework. The textile industry also influenced the prevailing agriculture. The cultivation of grain lost importance and was replaced by flax or grass production, which resulted in a higher dependency on Swabia for grain imports until the 1860s.[118] While in the north-eastern part of AR (*Vorderland*[119]) subsistence farming was prevailing, an exception was the wine-growing area of Kurzenberg – in the south-western part of AR, below the Sitter (*Hinterland*[120]). A third of the farmers produced for the markets. Here livestock production and dairy farming were the main foci of agricultural production.[121] Young cattle were bought in Vorarlberg, whereas St Gallen was important for sales. Until the middle of the 19th century the economic situation was mainly dependent on the agriculture as well as the textile industry.[122] Economic slumps and booms in these two sectors were decisive for the population.[123] This economic interdependence between the Appenzell and the region of Lake Constance has historically grown since the 15th century. Positive reinforcement led to a growing

[115] Cf. Witschi 2017 (e-HLS). Another detailed contemporary description of the administration and politics of Appenzell Ausser Rhoden can be found in "Kurze Beschreibung der XXII Kantone der schweizerischen Eidgenossenschaft, und deren Eintheilung, Bevölkerung und Regierungs-Behörden.", AK 1826: [5, 7, 9, 11, 13].

[116] Nicole Stadelmann not only speaks of an economic but also of a cultural area; cf. Stadelmann 2017: 220.

[117] Cf. Göttmann 1997: 237.

[118] The increasing industrialisation and the advance of railways greatly increased the import from Hungary, which led to a loss of importance for the 'trading place Lake Constance'; cf. ibid.: 240; Tanner 1997: 289–297.

[119] *Vorderland* described a former district of AR (until 1995); it included the municipalities of Grub, Heiden, Lutzenberg, Rehetobel, Reute, Wald, Walzenhausen and Wolfhalden; cf. Fuchs 2012c (e-HLS).

[120] *Hinterland* described a former district of AR (until 1995); it included the municipalities of Herisau, Hundwil, Schönengrund, Schwellbrunn, Stein, Urnäsch and Waldstatt; cf. Fuchs 2013a (e-HLS).

[121] According to the ecological zones of Daniel Krämer, the Appenzell is classified as "Wiesland" (grassland). The classification is based on parameters such as altitude, slope and soil quality; cf. Krämer 2015: 370.

[122] Very often, families worked in both sectors and were therefore even more vulnerable; cf. Tschui 2009: 235–237.

[123] Cf. Witschi 2017 (e-HLS).

number of homeworkers, who were fully dependent on buying food, as they had no more cattle or land for subsistence farming. Especially in times of need, the increase in grain prices and the limitations of exports were fatal for the homeworkers.[124]

The population of AR experienced a relatively continuous increase during the proto-industrialisation – on average around 2.2‰ – from 1734 to 1794. Only in 1740 and 1771 (due to a famine) did the increase in the population slowdown. The population numbered about 39,000 inhabitants in 1794. In 1800, AR was the most densely populated canton. The demographic development was always strongly linked to the textile industry. As the immigration balanced out emigration due to famine, increases in prices and economic crises, AR's population reached 39,789 in 1836. In the 18th century the population was composed of a large upper class – merchants, fabricants, master craftsmen, a few big farmers, and some doctors and landlords. Smaller fabricants, priests, self-employed craftsmen, livestock farmers, Alpine herdsmen and dairymen with a larger number of livestock belonged to the middle class. People from the lower class were mostly (home-)workers from the textile industry, small farmers, servants and industrial workers.[125]

The Enlightenment led to a development in public life in the middle of the 18th century. On the one hand, streets, schools, the military and caring for the public were promoted; on the other hand, cultural reforms took place: literary and music societies were founded, and the *Appenzeller Kalender* was first published. In 1828, the first Appenzeller journal appeared, and more were to come in the following decades.[126] Prior to that, only journals from Schaffhausen, Zurich and from abroad were available. Printed material was subject to censorship.[127] The censorship in the Old Swiss Confederacy was carried out from the 1520s onwards to restrict the publications of confessional opponents. In the 18th century, the censorship was more or less strictly realised. In 1746, the first journal in Ticino was not allowed to publish information about the Old Swiss Confederacy – only content concerning foreign affairs was allowed. Criticism of authorities could be punished by banishment or beheading.[128] In AR, the censorship publications board consisted of three officials and two priests in 1766.[129] Only in the 1830s was a limited freedom of opinion permitted. From then on, an increase in the number of political journals can be observed.[130]

[124] Cf. Göttmann 1997: 237–238, 271.
[125] Cf. Witschi 2017 (e-HLS).
[126] Cf. ibid.
[127] Cf. Tschui 2009: 235–237.
[128] Cf. Bollinger 2015 (e-HLS).
[129] Cf. Schläpfer 1978: 19. Two diary entries by Mathias Sturzenegger verify that the censorship publications board was active, as he had to call on them in 1781 and 1803; cf. Brunold-Bigler 1983: 68.
[130] Cf. Bollinger 2015 (e-HLS).

2.2.1.2. Topography[131] and Climate

The canton of Appenzell Ausser Rhoden covers an area of 243 km^2. In the east, it borders the canton of Appenzell Inner Rhoden, both being surrounded by the canton of St Gallen (see Figure 3). The maximum altitude is 2502 m a.s.l. on the Säntis, with the lowest point in Lutzenberg being at 450 m a.s.l.[132] The Alpstein massif, including the Säntis, forms the south-eastern cantonal border. The canton is marked by its hilly landscape, the scattered, rural settlements and its main rivers, Sitter, Urnäsch, Rotbach and Goldach. In total, around 4,300 streams with a total length of 1,200 kilometres can be found in AR.[133] The forested area has been decreasing since the 1720s due to the increase in population, the export of timber and the construction activity. The forested area covered only 16% of the total cantonal area in 1850 and was highly scattered. The large decrease in forests led to the foundation of forestry societies, which bought forested areas and were in charge of sustainable production and usage of the timber. Nowadays, the forested areas amount to 30% of the cantonal area.[134]

A rough overview of the climate of the 18th and 19th centuries is given by Pfister et al. taking into consideration the spatial context of Western and Central Europe. The period from 1300 to 1800 is the so-called Little Ice Age (LIA), which indicates a cooling trend, mostly evident in summer temperatures at high latitudes. The effect of the LIA is ascribed to a combination of orbital, solar and volcanic forcing. However, it was not a period of constant cold.[135] The reconstructions of Western and Central European temperatures showed the following picture of the examined time span: the winter temperatures of the 18th century are on average 0.9 °C colder than the reference period (1961–1990) – this is mainly due to the high number of cold and severe winters. Springtime in the period 1739–1749 was denoted as especially cold. In general, spring temperatures were 0.3 °C below the reference period; summers were predominantly wet in 'Switzerland', but neither extremely cold nor warm. Four periods (1761–1766, 1774–1778, 1780–1786 and 1788–1792) of cool or cold autumns led to a clearly colder average autumn temperature (0.7 °C) compared to the reference period.[136] The 19th century, then, was marked by the transition from the LIA towards the recent period of global warming. After a cool phase between the 1810s and the 1830s, the temperatures increased. According to Brönnimann et al., this cooling period has to be assigned to the increased volcanic eruption, and only to a lesser extent to the Dalton Minimum.[137]

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[131] A contemporary description of the Appenzell was written by Gabriel Rüsch: cf. Rüsch 1859: 54–64.
[132] Cf. Kanton Appenzell Ausserrhoden [2019]: 5.
[133] Cf. Kanton Appenzell Ausserrhoden 2011: 4, 6.
[134] Cf. Witschi 2017 (e-HLS).
[135] Cf. Pfister et al. 2018: 268–269.
[136] Cf. ibid.: 280–281.
[137] Cf. Brönnimann, White, Slonosky 2018: 312. The Dalton Minimum denotes minimal solar activity; cf. ibid.: 312.

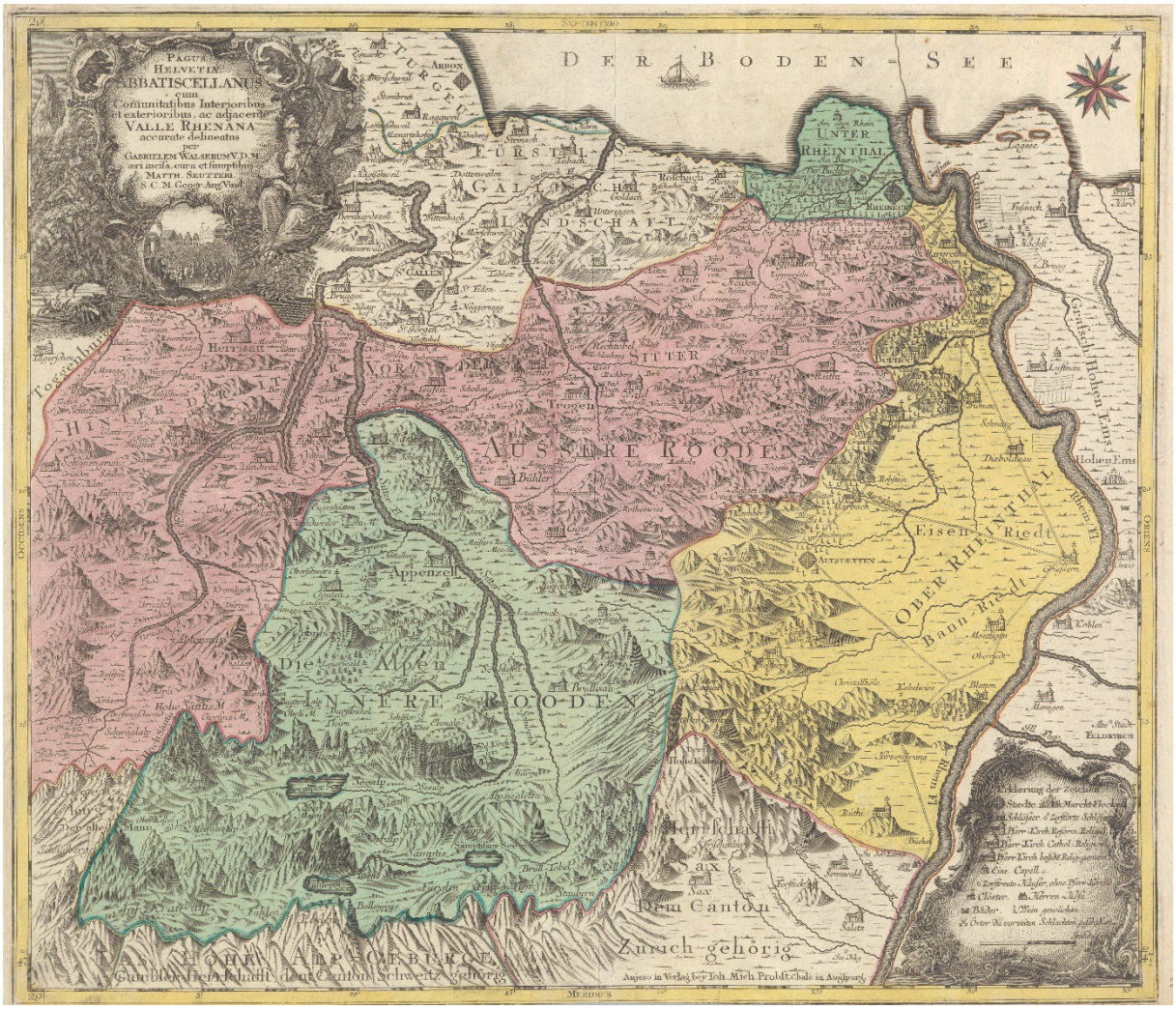

Fig. 3: Map of Appenzell around 1740, copper plate print. Title: Pagus helvetiae Abbatiscellanus: cum com[m]unitatibus interioribus et exterioribus, ac adjacente valle Rhenana / accurate delineatus per Gabrielem Walserum V. D. M.; æri incisa, cura et sumptibus Matth. Seutteri S. C. M. geogr.; Tob. Conr. Lotter sculps; [Titel-kartusche:] G. Eichler, jun: del: Source: Universitätsbibliothek Bern, MUE Kart 400 AP: 2: https://doi.org/10.3931/e-rara-43293, 18.08.2019.

2.2.2. Source Criticism

In the following chapter, a short outline of the history of the *Appenzeller Kalender* is given, and a more detailed introduction to each period and editor is provided.

The first *Appenzeller Kalender* was published in 1722 by Johannes Tobler. His intention was practical, as he wanted to provide a correctly calculated calendar, including market dates for the region. He successfully applied for a permit to print a calendar in 1721[138] and published the first calendar in the

[138] The date on the title page always refers to the date of the calendar and the prognostication. The calendar was usually published in the autumn before. So the calendar for 1722 was published in 1721. All the references will refer to the date on the title page (date of calendar and prognostication), not the date of the publication.

same year anonymously. As Johannes Tobler was politically very active, he was also involved in the *Landhandel*[139], which eventually led to his emigration to North America in 1736. From then on, Gabriel Walser was responsible for the publication of the *Appenzeller Kalender*, while Johannes Tobler was still (partly) editor of the content. Gabriel Walser became a priest in Berneck in 1745 and therefore Ulrich Sturzenegger took over the publication of the *Appenzeller Kalender* in 1746. For almost a century, the publication of the calendar lay in the hands of the Sturzenegger family. Furthermore, Ulrich Sturzenegger set up his own printing press in Trogen, which was the only one in AR until 1828. After his death in 1781, his two sons Mathias (already involved as co-publisher before) and Michael continued to publish the *Appenzeller Kalender*. Johann Ulrich Sturzenegger, son of Mathias, took over the printing press and publication in 1807. Johannes Sturzenegger published the calendar first with his father Johann Ulrich, then on his own (from 1841 to 1860), and from 1861 onwards with Johannes Schläpfer, who bought the printing press in 1834 and eventually became co-publisher. The *Appenzeller Kalender* still exists today and is published by the *Verlagshaus Schwellbrunn*.[140] The *Appenzeller Kalender* developed into one of the most famous calendars in the German-speaking part of 'Switzerland', printing a total of 20,000 copies in the second half of the 18th century, and even 50,000 in 1830. This emphasises the importance of the calendar across the cantonal borders.[141]

From 1767 onwards, there existed different versions of the *Appenzeller Kalender*; they either differ in their extent (small version of 36 pages or full version of 72 pages), in their calendrical part (Julian or Gregorian style in the first place) or in the part of the authorities – as regional issues were produced for St Gallen, Glarus, Winterthur, Grisons and Appenzell. The different versions should meet the needs of the diverse audience.[142] The following discussion of the source is based on the digitised volumes of the *Appenzeller Kalender* available on *e-periodica* – which does not include the different versions of the calendar but provides a complete and continuous series of the calendar.

[139] The conflict of the *Landhandel* had its origin in a dispute about duties with the abbey of St Gallen. Enclosed by St Gallen, AR was not willing to pay all the duties to get access to Lake Constance and the markets. Two parties were formed, *die Harten* and *die Linden*; *die Harten* made their opponents responsible for an unfavourable agreement in 1714 (*Rorschacher Friede*). Between 1715 and 1732 political unrests dominated the domestic policies of AR. Eventually, the *Landsgemeinde* in 1733 was in favour of *den Harten*; afterwards, they exercised their power rigorously. They brought *die Linden* to trial or made them pay monetary fines. Several *Linde* left AR – as Johannes Tobler did with around 100 other persons. Although the conflict officially ended in 1733, the deep rift continued into the 19th century; cf. Schläpfer 1972: 162–181.

[140] Cf. Schläpfer 1978: 9–19; Sturzenegger 2004: 50–52; Tschui 2009: 231, 239–240, 242–243.

[141] Cf. Wernicke 2011a: 83–85.

[142] Cf. ibid.; Tschui 2009: 231–232; Brunold-Bigler 1983: 70.

2.2.2.1. Editors

An overview of the different volumes including editor, printer and number of pages can be found in the annexe (see Chapter 7.2., Table 3).

Johannes Tobler (1696–1765[143])

Johannes Tobler was born in 1696 in Rehetobel AR. He attended school and later became a farmer and weaver. He trained himself in mathematics and astronomy and eventually produced his own calendar. As early as in 1723 he became a councillor with the local authorities in Rehetobel, in 1728 he became *Gemeindehauptmann* (mayor[144] of Rehetobel), in 1730 he was elected as *Landesfähnrich* (executive authority member of the Canton[145]), and finally, in 1731, he was elected as *Landeshauptmann* in the cantonal government of AR. Due to the conflict of the *Landhandel*, Johannes Tobler was deposed from his office and was fined in 1733. He was no longer allowed to participate in the *Landsgemeinde*. Afterwards, the calendar was not only subjected to censorship, but Johannes Tobler experienced a house search including confiscation of printed matter and notes. The political pressure finally led to the emigration of Johannes Tobler to South Carolina in 1736. Although he emigrated and handed over the publication of the calendar to Gabriel Walser, he still contributed as author to the calendar until the mid-1750s.[146] In 1756 he initiated the *Pennsylvania-Almanack* overseas. He died in 1765 in Beech Island, South Carolina.[147]

Gabriel Walser (1695–1776)

Gabriel Walser was born in 1695 in Wolfhalden AR. He was first educated by his father, a priest; then he studied theology from 1712 in Basel, Marburg, Tübingen, Jena and Halle. He ended his studies with an examination in 1717 in Basel and became member of the synod in Appenzell. From 1721 until 1745 he was a priest in Speicher AR. As he was part of *den Linden* (see footnote 139), he was fined in 1732. When Johannes Tobler emigrated, Gabriel Walser took over the publication of the calendar in 1736[148]

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[143] While Tschui 2009: 242 speaks of 1778 as the year in which Johannes Tobler died, others date his death back to 1765. Cf. Schläpfer 1978: 12; Fuchs 2013b (e-HLS); AK 1971: 4.

[144] Cf. Steiner 2012 (e-HLS).

[145] "Der Vorsteher der Landschaft, der Archiv und Siegel verwahrt, die Oberaufsicht über den öffentlichen Schatz führt, der erste Urteilsprecher." Schweizerisches Idiotikon (Online) 2019: 831, col. 2.

[146] It is not entirely clear up to which year Johannes Tobler contributed to the *Appenzeller Kalender*. While Teresa Tschui writes that there existed parallel issues concerning Johannes Tobler between 1753 and 1755, and that he contributed from overseas until 1756, resp. 1766 (see Tschui 2009: 239, 242), Thomas Fuchs (2013b, e-HLS) confirms Tobler's contribution to the publication until 1756. The year 1766 does not seem to be plausible, as most of the consulted literature dates his death back to 1765.

[147] Cf. Fuchs 2013b (e-HLS); Tschui 2009: 239, 242; Sturzenegger 2004: 50–52; AK 1971: [53–56].

[148] The first calendar by Gabriel Walser was produced in 1736 and published in 1737. Karin Marti-Weissenbach (2013, e-HLS) ascribes the publication of the calendar from 1738 to 1745 to Gabriel Walser. The year of his first publication does not seem to be plausible.

until 1745, when he became a priest in Berneck SG. He was author of the *Neue Appenzeller Chronik* published in 1740.[149] Due to the political unrests, the authorities only allowed him to publish the chronicle until 1732. The rest of his chronicle (1732–1772) was published in 1829. His most important contributions lay within natural scientific observations and maps.[150] He died in 1776 in Berneck SG.[151]

Ulrich Sturzenegger (1714–1781)

Ulrich Sturzenegger was born in Trogen in 1714; his father was a councillor at the local authorities and a farmer. He was a farmer and a fabricant himself and was self-taught in mathematics and astronomy in order to perform the calendrical calculations.[152] When Gabriel Walser left for Berneck SG in 1745, Ulrich Sturzenegger became editor of the *Appenzeller Kalender*.[153] For the first four years the calendar was published anonymously – he only describes himself as a farmer and science enthusiast ("Liebhaber diser Wissenschaft"[154]).[155] In 1766, Ulrich Sturzenegger founded his own printing press in Trogen, which led to the appointment of a censorship publications board with two priests and three officials.[156] Between 1757 and 1781 he was a councillor at the local authority of Trogen. In 1780 his son Mathias became co-editor of the calendar.[157] According to the notes within the calendars,[158] Ulrich Sturzenegger and his wife carried out subsistence farming and traded a small amount of dairy products. He noted the dates for sowing and planting wheat, barley, fennel and potatoes, as well as hoar frost dates, blooming/flowering and harvest. The Sturzeneggers also had measuring devices such as a storm glass (reported in 1773) and a thermometer (1789). The family also owned a piece of forest. Their reputation in the region seemed to be high, and they associated with merchant families. Because of the fact that

[149] Cf. Walser 1740.

[150] In 1760 he received the order to produce cantonal maps. Although the 15 maps produced (*Atlas novus reipublicae Helveticae*) were only of fair quality, they became popular; cf. Schläpfer 1972: 258–259. One of the maps is included in this thesis (see Figure 3).

[151] Cf. Tschui 2009: 239, 242; Schläpfer 1972: 256–259; Marti-Weissenbach 2013 (e-HLS).

[152] Pursuant to the obituary, Ulrich Sturzenegger experienced good education in accordance with his social status as a farmer's son. He was interested in mathematics and astronomy, and although his father did not encourage him to continue, he spent the time between work on his studies; cf. AK 1783: [7, 9].

[153] Cf. Fuchs 2012b (e-HLS).

[154] Cf. AK 1746: [1].

[155] Ibid.: [2]: "[…] Nicht daß ich die Astronomie vollkommentlich verstehe/ dann ein Mathematicus muß ein solche Persohn seyn/ die alles gründlich versteht. […] So ist zu wissen/ daß ich mein Lebtag im Bauren-Stand gelebt hab/ werde sehen/ daß einiges Liebe zu meiner Aufgaab tragen werde/ so werde ins künfftig meinen Nammen specivicieren […]".

[156] Cf. Schläpfer 1978: 19. "Es soll der Kalendermacher und Buchdrucker in Trogen keinerlei Schriften, weder geistliche noch weltliche noch Kalender herauszugeben befugt sein, ohne dieselben vorerst von den Zensoren corrigieren und approbieren zu lassen." (Grossratsbeschluss, cit. after ibid.).

[157] Cf. Fuchs 2012b (e-HLS); Tschui 2009: 239–240, 242.

[158] There exist handwritten notes by Ulrich, Mathias, Michael and Johann Ulrich Sturzenegger in the calendar between 1771 and 1819, including weather observations. The entries are mostly short, only a single line in note form. A summary is given in Brunold-Bigler 1983: 63–84, but the transcription is no longer available; cf. Tschui 2009: 237, footnote 31; it is not entirely clear whether the original volumes are still accessible.

they were still able to buy bread in 1771 (during the period of high prices), they must have been quite wealthy.[159] Ulrich Sturzenegger died in November 1781 in Trogen.[160] He was one of the few "Kalendermacher" who did the calendrical calculations, the edition of the non-calendrical part and the printing all on his own.[161]

Mathias Sturzenegger (1751–1807) – Michael Sturzenegger (1747–1820)

After the death of their father they jointly published the *Appenzeller Kalender* from 1783 to 1808.[162] While Mathias is mentioned on the title page, Michael is not. Mathias Sturzenegger also produced some woodcarvings, for example in 1769 and 1771, as well as the zodiac signs, which appeared in the calendars from 1774 to 1809. Both brothers were born in Trogen.[163] Their only educational background was the school in Trogen – the sometimes incorrect orthography and the very informal (dialect) language are evidence of it. Mathias learned mathematics and astronomy from their father. Mathias also produced most of the notes in the calendars between 1771 and 1819. Although less involved in agricultural work than his father, he noted the start of the hay harvest and the aftermath in 1784, and the extraordinary weather in 1776/1777.[164]

Johann Ulrich (Hans-Ulrich) Sturzenegger (1785–1842)

Johann Ulrich Sturzenegger was the son of Mathias Sturzenegger and was born in Trogen in 1785. In 1807 he took over the publisher and printing press after the sudden death of his father. From 1811 to 1822, he was *Gemeindeschreiber*, from 1811 to 1825 councillor of the local authorities and from 1825 to 1828 *Gemeindehauptmann* of Trogen. He died in Trogen in 1842.[165]

Johannes Sturzenegger (1815-1871)

Johannes Sturzenegger was the son of Johann Ulrich and was already involved in the publishing of the calendar when his father died in 1842. Afterwards, he produced the calendar for 20 years on his own. In 1861 Johannes Schläpfer, his printer, became co-editor of the *Appenzeller Kalender*. Johannes Sturzenegger died in 1871.

[159] Cf. Brunold-Bigler 1983: 65, 76–77.
[160] Cf. Fuchs 2012b (e-HLS); Tschui 2009: 239–240, 242.
[161] Cf. Wernicke 2011a: 59.
[162] Cf. AK 1809: [5]; Tschui 2009: 242–243.
[163] Cf. Tschui 2009: 242–243, 251–255; Brunold-Bigler 1983: 69.
[164] Cf. Brunold-Bigler 1983: 64, 77–78.
[165] Cf. AK 1809: [5]; Tschui 2009: 243; Fuchs 2012a (e-HLS).

Johannes Schläpfer (1814–1872)

Johannes Schläpfer was born in Trogen in 1814. He was the son of the muslin fabricant Leonhard Schläpfer. After his apprenticeship as a letterpress printer in St Gallen, he bought the printing press of Meyer and Zuberbühler in 1834, and in 1846 that of Johannes Sturzenegger. From 1861 onwards, he not only printed but also co-published the *Appenzeller Kalender* together with Johannes Sturzenegger. From 1847 to 1850 and 1852 to 1862, Schläpfer was a councillor of the local authorities, and from 1861 to 1863 he was a councillor in the cantonal parliament. He died in 1872.

2.2.2.2. Content

In the following chapter, the content of the *Appenzeller Kalender* is analysed. As already mentioned, the analysis is based on the available sources from *e-periodica*. Since the best-preserved volumes were digitised according to the *Kantonsbibliothek AR*,[166] in most of the volumes no handwritten notes could be found. Fortunately, the *Kantonsbibliothek* also preserves three additional copies for most of the years, some of them from private archives in which handwritten notes might be included. However, the focus of this thesis is on the printed content, not on the notes, so they will not be discussed in the following.

Title and Cover

The title of the first *Appenzeller Kalender* was "Alter und Neuer Schreib-Calender", indicating the calendar style (in this case both styles are included) as well as its use (spaces for notes). From 1725 onwards the regional reference was included in the title "Alt- und Neuer Appenzeller Schreib-Calender". Except for 1746 ("Alter und Neüer Hauß und Bauer Schreib-Calender"), this title continues up to 1764 in slightly different versions. A new title was given from 1765 onwards: "Alter und Neuer Appenzeller Staats- Kriegs und Friedens-Calender", which reflected the disappearance of the space for notes. This title was kept until 1794; although there had been some years with few modifications or supplements – for instance between 1771 and 1773 – the calendar was named "Alter und Neuer Appenzeller Staats- Kriegs- u. Friedens Calender, oder der Hinkende Bott". As Teresa Tschui shows, the different versions of the *Appenzeller Kalender* in the period of Ulrich Sturzenegger had slightly modified titles.[167] During the time of the Helvetic Republic, the title was changed to "Der grosse historische helvetische Kalender". In 1803 the title was abandoned in favour of "Der grosse Appenzeller Calender". Here the new

[166] The digitised calendars comprise one volume; no compilations occur. The difference in colours is due to the different adjustments during scanning or the different paper quality, which led to varying aging of the paper; cf. e-mail Patrick Lipp, 12.12.2019.

[167] Cf. Tschui 2009: 232.

element of the historical aspect of the calendar found its way into the title. In 1838 the title finally changed to the short "Appenzeller Kalender", the title that is still in use today.

The cover usually includes the title, the year of the calendar, some keywords related to the content (until 1799), the editor (not in the early years), the printing place, the place of purchase and a graphical part. In between 1722 and 1736 the graphic displayed a writing person, sitting at a desk in front of an organ; at the centre, one can find the coat of arms of AR. In some years the cover is framed by an ornament. From 1737 two framed bears appear on the cover as a graphical part; in 1751 the frames evolved to be more elaborate and were eventually replaced by a new motif in 1765: two bears standing left and right of a framed picture, which includes a third bear. The covers between 1770 and 1774 are exceptions – these volumes include the motif of the limping messenger. Apart from the limping messenger, the astronomer, landscape, villages, war, moon and stars, the bears referring to Appenzell were displayed.[168] After this short interruption, the motif of the two bears in a frame returned until the end of the examined period, sometimes showing, sometimes lacking a more or less elaborated frame around the whole cover. Exceptions are the volumes during the Helvetic Republic (1800–1802), which show a man with a crossbow and a boy handing him an arrow – possibly referring to the legend of Wilhelm Tell. In some years (for instance 1823–1826, 1846–1848), instead of the two framed bears, the instruments of an astronomer are shown. These motifs reflect the development of covers of the different *Volkskalender* as described by Teresa Tschui.[169]

Structure

Differing from the varying covers of the *Volkskalender*, the calendar within remains the most constant element. Beginning with the cover, and then displaying the Zodiac Man[170] (from 1725 onwards), usually the next element is the calendar. After one page of explanations on the interpretation of symbols and on how to use the calendar, the calendar follows on the left-hand page (verso) and includes the weekdays, the associated saint in both styles (Julian and Gregorian), the stellar constellation and the prognosticated weather (*muthmaßliche Witterung*). The right-hand page (recto) includes the local market dates, the prognosticated weather as a short paragraph and a column for notes (appearing only in the earlier volumes). This space for notes was abandoned in the 1760s. In addition to these elements, there is space for a text, which continues over the calendrical (recto) pages. A new element

[168] A more detailed and exemplary description of the cover can be found in Tschui 2009: 233.

[169] Cf. ibid.: 350–352. She introduced ten different categories of motifs: limping messenger, heraldry, ornaments, saints, allegory, astronomic elements, Swiss motifs (heroes, patriotic attributes), landscape, portrait of the originator of the calendar, and rural motifs (farmhouse room, narrator). Usually one category is dominant, but it can also be a mix of several categories.

[170] More details on the methods of bloodletting and the different versions of the Zodiac Man can be found in ibid.: 95–165.

found its way into the calendar from 1764 onwards: the monthly pictures.[171] They appear in the upper left corner of the recto page. In most of the years 1764–1773 (except for 1767–1768) and 1811–1852, pictures of activities are shown. Between 1774 and 1810 the signs of the zodiac are displayed monthly. Sometimes proverbs are also found at the top of the page, or below the monthly picture.

After the calendrical part, the prognostication follows; the *Praktik* will be discussed in detail in Chapter 3.2.1.3. The last non-calendrical part is mainly dedicated to news, lists of kings/emperors and local authorities. From 1737 onwards the news is mostly reported under the heading "Merckwürdige Begebenheiten" (notable incidents). A new heading followed in 1768, "Allgemeine Zeit und Welt-Betrachtungen" (general view on time and world), which included a short review of the four different seasons and harvest, with a second part briefly summarising the current political conflicts. From 1773 onwards, there is a subtitle "Von der Witterung" (about the weather), which designated a room for information about weather and climate.

The number of pages in the calendar varies over the years (a detailed list can be found in the annexe, Table 3). The volumes of the first four decades range from 36 to 40 pages. In 1765, Ulrich Sturzenegger explained that the expansion of the calendar was wished for by the audience.[172] Afterwards, the calendar consisted of a minimum of 56 pages (peaking in 1770–1771 at 80 pages), but mostly contained between 68 and 76 pages. The number of pages is mostly divisible by four (as one broadsheet ends up in four pages in the 4° format) – a page number not divisible by four is an indication of missing pages; for example, the volumes in 1724, 1726, 1729 and 1733 are incomplete or seriously damaged. The copies of 1727 and 1732 are only missing the cover. Two years are exceptions: the copy of 1846 contains an annexe called *Allgemeiner Anzeiger* with advertisements, and the volume of 1848 includes a long (68 pages) and a short (37 pages) version of the calendar.[173]

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[171] A more detailed introduction to the origin and development of the monthly pictures is given in ibid.: 167, 172–181. She discusses a selection of motifs for January and February, which also includes examples from the *Appenzeller Kalender*; cf. ibid.: 183–197.

[172] "[…] Bis dahin habe ich meinen Calender mit wenigen Bögen ausgefüllt, jedoch war meine gering/einfaltige und meist wahrhafftige Schreib-Art, dem geneigten Leser nicht unangenehm; indeme seit einigen Jahren her viele begehret haben, ich sollte diesen Calender noch mit etlichen Blättern und unterschiedlichen Holtz-Stichen vergrösseren; Demselben zu entsprechen, so mache vor dieses Jahr bildlich den Anfang, und weilen ich schon über 19. Jahr diesen Appenzeller-Schreib-Calender in offentlichen[sic] Druck heraus gegeben, daher genöthiget ware denen geneigten Liebhabern desselben, mich inden darzu dienlichsten sowohl geist- als weltlichen Büchern, je mehr und mehr zu befleissen, so daß ich vermeyne aus allen vier Theilen der Welt, die nutzlichsten und wahrhafftigsten Historien zu beschreiben und dadurch dem lieben Landmann sein Begehren so zu erfüllen, daß er wie bis dahin seine Zufriedenheit zeigen wird [...]." AK 1765: [31].

[173] Teresa Tschui compares the long and short version of the year 1784: Tschui 2009: 234–235. The short version also contains the calendrical part, but less non-calendrical information.

Subjects

> "Es ist bekannt daß die Calender-Liebhaber alle Jahr begierig nachschlagen, was neben denen Mathematischen Sachen für Materien eingesetzt werden, da man nun an einem Calender kein Theologisches Buch sucht, sondern lieber etwas Historisches hat, daß die Neu-Begierd der Leuthen sättigen kann, und sonderlich solche Sachen und Begebenheiten darüber in jedem Jahr viel Redens, oder die etwann in das Allgemeine eine Influenz haben können […]."[174]

As Ulrich Sturzenegger stated in 1760, the content of the *Appenzeller Kalender* should satisfy the curiosity of the audience, as it delivers historical but also current occurrences. Of course, the content of the *Appenzeller Kalender* changed over time – depending on the 'Zeitgeist' as well as the editor. In the following, a short overview of the different phases is given.

In the period of Johannes Tobler (*Appenzeller Kalender* 1722–1736) the calendar contained the calendrical part, the prognostication, a list of rulers and priests, and rules and advice for daily life. He did not include political events and focused on fewer delicate subjects such as (moral) stories,[175] nature, fire and catastrophes.[176] From 1727 to 1733, in every year a natural topic is examined, such as earthquakes, volcanoes, thunderstorms, fire, water, air and precipitation.[177] Johannes Tobler also included descriptions of North America and his new life overseas.[178]

The first volumes published by Gabriel Walser mostly discussed the origin of the Old Swiss Confederacy's freedom and battles.[179] In the following years, the subjects changed towards the two calendrical styles, the marvels of God (rainbow, comets and earthquakes) and the origin of Christianity.[180] Besides this, main topics such as exceptional weather phenomena, wars in foreign countries and bizarre stories found their way into the calendar. In this period (1737–1749) the extent to which Johannes Tobler was still involved in the choice of topics is not entirely clear.

During the three decades in which Ulrich Sturzenegger was editor (*Appenzeller Kalender* 1750–1782), the subjects broadened and the number of pages increased, with more space being given to different topics and longer texts. The contributions included informative contents (about coffee, tobacco and slavery[181]), natural descriptions (about the earth in general, the sun and the planets[182]),

[174] AK 1760: [19].
[175] He tells the story of Robinson Crusoe in the AK 1724, 1725.
[176] Cf. AK 1971: 4–8.
[177] Cf. AK 1727–1733.
[178] Cf. AK 1736.
[179] Cf. AK 1737–1743.
[180] Cf. AK 1744–1749.
[181] Cf. AK 1778, 1782, 1777.
[182] Cf. AK 1759, 1774, 1775, 1776, 1781.

patriotic descriptions of battles, heroes, and the origin and organisation of the Old Swiss Confederacy,[183] moral stories and curiosities from all over the world. Only in the 1750s and 1760s were political issues from within the Old Swiss Confederacy discussed in the *Appenzeller Kalender* – for example the campaign of Uri against Leventina.[184]

In the period between 1783 and 1799, patriotic content was predominant in the *Appenzeller Kalender*; again, the origin of the Old Swiss Confederacy's freedom was a topic, as well as various battles, heroes such as Wilhelm Tell and the origin of the language. In the years 1800–1802, harmless, apolitical content such as the different periods of life was included. From 1803 onwards, a Helvetic chronology described the history of the French Revolution in the Old Swiss Confederacy, including new laws and orders. After the death of Mathias Sturzenegger in 1807, Johann Ulrich Sturzenegger continued the chronicle until 1815. Apart from the above-mentioned themes, which continued over several years, the usual short news, curiosities and moral stories can be found in these volumes.

The next subjects, which were discussed from 1816 to 1822, can be summarised by the words 'time' and 'calendar': the origin of the monthly names and weekdays was discussed, as well as the seasons and religious festivals. From 1823 until 1845, Johann Ulrich Sturzenegger (and after his death Johannes Sturzenegger) provided a description of the different cantons of the Swiss Confederation[185] during Restoration and Regeneration, including statistics regarding the military and administration and their cantonal constitutions.

After Johannes Sturzenegger took over the publishing of the calendar, not only did the title page change (1842) but he also modified the 'first story' appearing in the columns between the calendrical parts. When the series of the cantonal constitution ended in 1845, he did not continue to publish a thematic series as his precursors did. From then on, the column was called "Mannigfaltiges" and consisted of different news and stories. With the foundation of the Swiss federal state in 1848, new topics concerning Switzerland found their way into the calendar, including tables of scale units, tariff regulations, population and military numbers – best seen in the volumes of 1856/57. No remarkable changes can be noted in the years when Johannes Schläpfer co-edited the volumes.

To sum up, while in the early years no political conflicts of the Old Swiss Confederacy were discussed, they slowly became part of the content in the 1760s. From the 1780s onwards, a theme spread over several volumes was often chosen for the first text in the calendrical part. It seems likely that this continued content would motivate the audience to buy the calendar in the following year and to collect

[183] Cf. AK 1761, 1762, 1765, 1766, 1767, 1768, 1769, 1770.

[184] Cf. AK 1971: [56]; 1756: [36]. In the review of 250 years of *Appenzeller Kalender* it is mentioned that the article was in 1765 (cf. AK 1971: [56]), but this is wrong. The correct year of publication is 1756.

[185] The term *Swiss Confederation* is used in this thesis for the time span of 1814 to 1847, denoting the time of Restoration and Regeneration after the Helvetic Republic and before the Swiss federal state was founded.

the volumes, so as to have a reference work over several years. In every other decade, patriotic content was included – most likely to unite the people and rouse national consciousness in difficult times.

Source of Information

The information in the calendar can be categorised into three different sources: firstly, content the editor witnessed himself; secondly, information garnered either through letter or oral accounts; and thirdly, information copied from another source. Unfortunately, in most cases, no source is stated within the text. The three categories are introduced in the following.

The first listed type of information gathering is the most important, as the reliability of data can be estimated as the highest. One example can be seen in the calendar of 1763, where Ulrich Sturzenegger writes that he witnessed sheet lightning on his own.[186] Also, the part about past weather ("Allgemeine Zeit und Welt-Betrachtungen") seems to have been written by the editor. At least, the regional connection is given, often referring to Appenzell (AR/AI), Toggenburg and the Rhine Valley or other regional places.[187]

Often mentioned in the calendar was the fact that a letter had informed the editor about a particular past event. Letters are mentioned from Chile (Santiago de Chile [1852]), Cuba (Santiago de Cuba [1768]), the Czech Republic (Bohemia [1764]), France (Bayeux [1732], Meaux [1732]), Germany (Leipzig [1773], Zwickau [1773]), Hungary (Zemplén [1814]), Italy (Messina [1767], Sicily [1788]), Lithuania (Vilnius [1778]), the Netherlands (Utrecht [1800]), Portugal (Lisbon [1773]) and 'Switzerland' (Chur [1771], Lucerne [1764], Zurich [1765]). It is not entirely traceable whether the editors – mainly the Sturzenegger family – had such a large social network around Europe, or if these letters were not directed to him, but to merchants or traders whom he met at the markets. Although Mathias Sturzenegger travelled (but only in 'Switzerland' and to nearby foreign countries such as Austria, Italy and Germany[188]), it does not seem very likely that he was in contact with people all around the world. Another indication for the latter is the following sentence from the *Appenzeller Kalender* of 1758:

> "In den Zeitungen aber liset man folgenden Artikul: Mayland den 6. Augstm. verspürte man in hiesiger Stadt eine Erderschütterung, welche aber, Gott sey Danck! Keine weitere Folgen hatte; Hingegen haben unsere Kauffleuthe aus Sicilien die betrübte Zeitungen erhalten, daß die Stadt

[186] Cf. AK 1763: [35].

[187] Cf. AK 1769: [36], 1779: [36]; 1803: [36]; 1813: [37]; 1816: [34]; 1818: [37]; 1823: [37]; 1825: [38]; 1826: [37]; 1827: [38]; 1828: [38]; 1829: [38]; 1830: [38]; 1831: [38]; 1832: [38]; 1835: [38]; 1842: [35]; 1844: [34]; 1845: [34]; 1853: [34]; 1854: [34]; 1855: [34]; 1858: [34]; 1859: [34]; 1861: [36]; 1863: [35]; 1864: [35–36].

[188] Cf. Brunold-Bigler 1983: 66.

> Syrakusa durch ein an gedachtem Tag geschehenes Erdbeben grossen Theils eingestürzt, und viele Menschen unter dem Schutt begraben worden."[189]

The report on the earthquake in the quotation above includes, on the one hand, information from journal articles and, on the other hand, information provided by merchants.

Nevertheless, there is a wide range of reliability within this second category, covering letters from overseas (Santiago de Chile) to eyewitness accounts from nearby (Zurich).[190] But the letters – at least the ones from 'Switzerland' – seemed to be sent directly to the editors of the *Appenzeller Kalender* to inform them about past events. Here, of course, caution is advised, as the writers might have exaggerated to make the story more interesting to the editor of the calendar.

A lot of information must have been copied from other sources such as journals, broadsheets, books or chronicles. An indication of this is provided by Ulrich Sturzenegger in 1765, who writes that he wants to report on all four parts of the world, with the help of religious[191] and secular books.[192] More evidence of the copying of news from journals can be found in 1768, 1814, 1829, 1830 and 1837;[193] chronicles as a source of information were the basis in the following years: 1806, 1807, 1813, 1847, 1850 and 1851.[194] Furthermore, within different calendars contents were also copied – especially the calendrical part. An example is given in the *Appenzeller Kalender* of 1844, where Johannes Sturzenegger included a wrong calculation in his calendar, to see whether it was copied or not. The *Neuer Appenzeller-Kalender*, printed by R. Unteregger in St Gallen, included the same error and therefore revealed his calendar as a copy of the original *Appenzeller Kalender*, whereupon Johannes Sturzenegger stressed that "ehrlich währt am längsten" (honesty is the best policy).[195]

Although the content of the non-calendrical part was often copied from other sources, the subject of "truth" often appeared within the volumes. Ulrich Sturzenegger emphasised the importance of useful, informative content instead of lies and tomfoolery in the calendar of 1767.[196] Another example of

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189 AK 1758: [36]. Emphasis added by I.V.

190 Cf. AK 1852: [53]; 1765: [52–53].

191 A lot of passages were borrowed from the Bible, for instance: AK 1772: [7, 9].

192 Cf. AK 1765: [31]. The original quote can be read in footnote 172. Another example of books as a source of original information can be found in AK 1757: [36]. Here, Ulrich Sturzenegger writes about the earthquake in Lisbon, where he names the two sources.

193 Cf. AK 1768: [50–51]; 1814: [55–56]; 1829: [39]; 1830: [39]; 1837: [37–38].

194 Cf. AK 1806: [38–39]; 1807: [40–41]; 1813: [38]; 1847: [35]; 1850: [5]; 1851: [46]. Some of the entries are also based on the chronicle of Gabriel Walser. He states the sources underlying his chronicle in his "Vorbericht". The version published in 1740 is accessible via Google Books. Walter Schläpfer assumes that it is also based on the notes of Bartholomäus Bischofberger; cf. Schläpfer 1972: 257–258.

195 AK 1844: [66].

196 "Es ist unstreitig daß ein so nöhtiges Buch ein Buch welches so gmein und in so vielen Leüthen Händen ist, welches von so veilen[sic] tausenden gelesen wird wie unser appenzeller Calender, von sehr grossen[sic]

stressing the reliability of the information in the calendar can be found in an earthquake report of 1824, where it is emphasised that it is based on a credible eyewitness account.[197] The emphasis on reliability could be an indication of the fact that the calendar often included wrong or exaggerated information in these times. Having said that, it is also possible that Johann Ulrich Sturzenegger just wanted to emphasise the reliability of his information.

2.3. Other Calendars

For the case study in Chapter 3.3., three other calendars, apart from the *Appenzeller Kalender*, were considered as sources. In the following, a short introduction will be given about these calendars, only considering the volumes between 1770 and 1774.

2.3.1. Solothurner Schreibkalender

The *Solothurner Schreibkalender* first appeared in 1662. Although *Schreibkalender* is in its name, it is considered a *Volkskalender* according to the definition of Norbert D. Wernicke (see Chapter 2.1.2.). The volumes are mostly accessible in the *Zentralbibliothek Solothurn* (shelfmark: XR 42). The volumes between 1770 and 1774 contain between 30 and 36 pages. While the verso pages show the calendrical part, the recto pages are filled with text. Apart from the Zodiac Man, the list of officials from every canton, the arrival and departure of the postmen and the prognostication, no further content is included. Almost no retrospective information is available within the *Solothurner Schreibkalender*. The texts mainly consist of moral stories. As already mentioned by Norbert D. Wernicke, the calendar has almost no literary texts and has a poor own profile.[198] The examined volumes were printed by Philipp Jakob Scherer. The cover mentions that this is the "Hoch-Obrigkeitliche Buchtruckerey".[199] The indicated editor for the volumes from 1771 to 1773 of the calendar is Gregor Schmeler.[200] However, as he had already appeared as editor in 1669, this is not very plausible. No further details about him are known.[201] The volume of 1770 is edited by Martinum Dechendorff (Martin Dechendorf), who appears

Nutzen sein kan, wenn es mit lehreichen[sic] und dem Lieben Landmann verständlichen und nutzlichen Sachen, und nicht wie es leider meistens geschieht mit Lügen und Narrenspaßen angefüllt ist. […]" AK 1767: [33].

197 "Im verwichenen Spätjahre erhielt man Nachricht von einem schauervollen Erdbeben, das sich am 13ten Augstmonat zu Aleppo, in der türkischen Provinz Syrien, ereignete. Ein glaubwürdiger Augenzeuge, Hr. Beni. Barker (Agent der brittischen Bibelgesellschaft in Morgenland) welcher sich in jenem grausenvollen Augenblick dort befand, gab hierüber folgender Bericht […]." AK 1824: [38].

198 Cf. Wernicke 2011a: 102–103.

199 Cf. Neuer Schreib-Kalender [Solothurner Schreibkalender] 1770–1774; Zentralbibliothek Solothurn XR 42.

200 Different versions of the name can be found over time: Gregorivs Schmelervs or Gregor Schmelerum.

201 Cf. Wernicke 2011a: 103; Herbst 2019 (Bibliographisches Handbuch der Kalendermacher Online).

as editor after 1730. As with Gregor Schmeler, it is not clear whether Martin Dechendorf refers to a real person or a pseudonym.

2.3.2. Berner Hinkender Bote

The *Berner Hinkender Bote* is the most famous and successful *Volkskalender* in the region of Bern. The first accessible volume dates back to 1714, although there are indications that it already existed before. From the 1730s onwards, the volumes are preserved, except for some single years in between, and are accessible online via *e-periodica*, a website run by ETH Zurich.[202] The volumes from 1770 to 1774 were printed by the widow of Victor Emanuel Hortin, Elisabetha Hortin-König.[203] No editor is indicated on the cover page. Except for the volume of 1772, which consists of 78 pages, the calendars span 86 pages. The structure and content of the *Berner Hinkender Bote* are very similar to those of the *Appenzeller Kalender*: the first part is dedicated to the calendrical part on the verso page, filled with text and forecasted weather, with the signs of the zodiac on the recto page. The second part lists the prognostication, the Zodiac Man, and the kings, rulers and officials of the inland as well as abroad. In the third non-calendrical part, more reports, explanations and stories can be found. As in the *Appenzeller Kalender*, retrospective information is available to a large extent.

2.3.3. Jährlicher Haus-Rath

Another typical representative of the *Volkskalender* is the *Jährlicher Haus-Rath*, which first appeared in 1715 or 1716. From then onwards, the volumes are preserved almost without any gap. From 1766 onwards, the calendar was produced at Hans Rudolf Füssli's (1709–1793) printing press. In 1771, Füssli joined with *Orell, Gessner und Co.* to form a new publishing house, *Orell, Gessner, Füssli und Co.*[204] Johannes Müller (1733–1816) was responsible for the calendrical calculations in all of the five volumes.[205] The structure and content of the *Jährlicher Haus-Rath* are very similar to those of the *Appenzeller Kalender*. After the Zodiac Man and the list of postmen, the second part is the calendrical part,

[202] Cf. Historischer Kalender, oder, Der Hinkende Bot [Berner Hinkender Bote], 1718–2017: Informationen zur Zeitschrift, https://www.e-periodica.ch/digbib/volumes?UID=hib-001, 29.11.2019.

[203] Cf. Wernicke 2011a: 88; Wernicke 2018: 35; Graf 1896: 70. The book of the *Stämpflische Buchdruckerei* (Graf 1896) gives a general overview of the different subjects in the volumes. The selection is not systematic, but as a first impression on its content and treated with caution, it is helpful. A detailed book on the development of the *Berner Hinkender Bote* can be found in Wernicke 2018.

[204] Cf. Bhattacharya 2005 (e-HLS).

[205] Cf. Marti-Weissenbach 2009 (e-HLS): Johannes Müller was editor of the "Zürcher Taschenkalender" from 1759 to 1804. It is not clear to what extent he might also have been author of the content in the *Jährlicher Haus-Rath*.

including proverbs and texts on the recto page. This is followed by the non-calendrical part, which includes different sorts of text, but to a large extent "Weltgeschehen": retrospective information including the coronation of kings, the sighting of a comet, war history or regional reports on floods and fire. The last two pages of the calendar are dedicated to the prognostication. The number of pages in the *Jährlicher Haus-Rath* is 44.[206]

[206] The years from 1761 to 1770 were examined. Only the volumes of 1764–1765 deviated from the 44 pages, only consisting of 42 pages. Cf. Jährlicher Haus-Rath 1761–1770; ZB [Zentralbibliothek Zürich] Alte Drucke, Kal 1910: c, 1761–1770. Unfortunately, the collection of volumes from 1771 to 1784 was not available for a second consultation. The book was in a bindery for repair. The librarian could not tell me when the book will be available again. The Landesmuseum Zürich has only the volumes from 1771, 1772, 1775, 1776 and 1778–1780. The volumes of 1773–1774 and 1777 are missing. Furthermore, at least the volume of 1775 seems to be a short version of the calendar, only containing 24 pages: Jährlicher Haus-Rath 1771–1772, 1775–1776, 1778–1780; Schweizerisches Nationalmuseum Zürich [Landesmuseum] Rara Kal ZH 21, 1771–1780 [except for 1773, 1777].

3. Climate- and Weather-Related Data

3.1. Perception of Nature

The following chapter provides an introduction to the perception of nature over time. There were several different movements. At times, some were perceived as being stronger than others. Moreover, usually the perception of the more highly educated classes and their view on the world as a result of the existing sources are represented. The following aims to provide a chronological overview of the perception of nature over time mainly in 'Switzerland' (sometimes extended to Europe). However, the explanations are not exhaustive. After a short summary, a deeper look will be afforded to different concepts.

The perception of, and dealing with, nature can be denoted as the view of the world.[207] On the one hand, the perception is based on the use of nature and its role in society, and on the other hand, it is based on the idea of the world as a natural system.

In the second half of the 16th century a growing number of travellers, missionaries and merchants brought plants, animals and minerals from all the different parts of the world back to their cabinets of wonder. The natural sciences – at that time still called 'natural philosophy' – were dominated by the three attributions of *amazement*, *respect* and *fear* according to Kaspar von Greyerz. Within the context of the Enlightenment, the beginning of the 17th century saw an increasing interest in medicine and natural history, focusing mainly on extraordinary single objects. The extraordinary was seen as the omen of the Last Judgement. This new evolving interest in the creation of God led to a boom of the cabinets of wonder. Towards the end of the 17th century, new movements[208] emerged from the former natural philosophy, leading to a change from qualitative to more quantitative methods. New sciences such as mathematics, chronometry and cosmography evolved.[209] Nature's function and the extent to which it follows its own laws led to a conflict with the belief in divine sovereignty. This debate – also triggered by the publications of René Descartes (1596–1650) – did not lead to the abandonment of God, but to a different idea of God and the causalities. Further, a new branch of theology arose – physicotheology – which tried to unite nature and biblical history (see below).[210] While at the beginning of the 17th century the extraordinary was the focus of studies, at the end of the century, a change towards more trivial objects and their aspects of utility occurred. Nevertheless, with divine ordination,

[207] Cf. Winiwarter 1999: 184.
[208] Including alchemy and atomism; cf. Greyerz 2009: 47.
[209] Cf. Trepp 2009: 399–402; Greyerz 2009: 41, 47.
[210] Cf. Greyerz 2009: 44, 50–53.

nothing was meant to be random. The extraordinary slowly lost its role as the sign of the Last Judgement.[211]

The new motifs of utility and order were characteristic of the 17th and 18th centuries in regard to the conception of nature. Especially in agriculture, the intensification of usage was predominant, resulting in a more economical view on the use of nature. In 1735, Carl von Linné (1707–1778) published his classification of animals, plants and minerals (*Systema Naturae*) – putting the world in a new order. Thus nature had to serve humans, as they were seen as the highest servants of God.[212] The growing knowledge about nature and the improved instruments for observations and measurements led to the creation of chairs at universities, while still showing an affiliation with the philosophical faculty.[213] In the second half of the 18th century, newly created societies distributed useful knowledge for a rise in output – the first one in the Old Swiss Confederacy was the *Berner Ökonomische Gesellschaft*, founded in 1759 by Johann Rudolf Tschiffeli.[214] The distribution of knowledge appeared at the same time as the increasing shortage of resources due to the industrial production, the fabrication of charcoal and the increasing population.[215] The 19th century brought the secularisation of science, creating new natural scientific societies, for the first time speaking of *scientists* instead of *philosophers*. This separation also led to the creation of natural scientific societies at universities.[216] The new century was dominated by a strong optimism, thanks to all the new possibilities that arose from these new sciences and technics. The subjugation of nature seemed to come true. This also found expression in the intensified agriculture, the drainage of landscapes and the cultivation of new land. This belief in technology and progress stood in contrast to the discovery of the forces of nature.[217] Several dreadful natural catastrophes (see chapter below) took place during the 19th century[218] and led to a new movement to protect nature – or rather to protect from nature – in the middle of the 19th century.[219]

To conclude, the perception of nature over time can be described in three patterns, not following a linear development, but rather appearing simultaneously in different classes of society. The model was developed by Rolf Sprandel and modified by Christian Rohr. The first pattern is the rudimentary understanding of nature. Extreme natural events are seen as a thread and are therefore, if possible, avoided. In the case of an extreme natural event, it is often interpreted in a moralising/religious way. In the second pattern, humans perceive nature as wild and unpredictable, but recognise natural laws.

[211] Cf. Trepp 2009: 403–408.
[212] Cf. Walter 1996: 19, 26, 39.
[213] Cf. Steinle 2019 (Enzyklopädie der Neuzeit Online).
[214] Cf. Erne 2017 (e-HLS).
[215] Cf. Walter 1996: 20–21.
[216] Cf. Steinle 2019 (Enzyklopädie der Neuzeit Online).
[217] Cf. Walter 1996: 52–54, 65, 68.
[218] For example, the rockfall in Goldau in 1806 and the flooding in 1834 and 1839. Cf. Walter 1996: 54.
[219] Cf. Walter 1996: 49.

They try to avoid natural forces or are aware of the risk. The technique allows them to make use of nature (for example as energy). The knowledge about the origin makes religious interpretation obsolete. The third pattern describes humans that develop an interest in natural events (such as an eruption of a volcano) and document it visually. The interchange within pattern one and two is possible in both ways – increasing experience leads to the change of a group to pattern two. So, there is a parallelism of different explanatory models: either natural scientific or religious.[220]

Astrology[221] and Astronomy

> "Among these early systems of explanation was the cult of the stars, which was to grow in the course of time into the complex science of astrology. The obvious link between the sun's movements and the changing rhythms of the seasons led very naturally to an interest in the heavens. The moon and the immensity of the stars must have made an equally powerful impact on the imagination, heightened by such dramatic phenomena as meteors, eclipses and comets."[222]

As Bernard Capp states, astrology studies the impact of the stellar constellation on humans. The concept of astrology is very old, but after the decline of the Roman Empire it fell into oblivion until the 11th century. In the Late Middle Ages, astrology became a recognised science and was accepted in all social classes. Astrology was first incorporated into the Christian medieval belief system with little difficulty. Two systems of explanations were used: the first explanation was God, the stellar constellation was assumed as a secondary explanation. In the middle of the 15th century the prognostications – especially the prediction of the Deluge or epidemics – were widespread. Solar and lunar eclipses, comets, specific stellar constellations and atmospheric phenomena were interpreted as precursors of death, crop failures, extreme natural events or war.[223] On the one hand, the 15th century led to an increased belief in these prognostications; on the other hand, it also produced opponents of astrology. The reformers disagreed about the astrological prognostications. In particular, the prognostication of the Deluge in 1524 (and its non-arrival) led to huge mockery by the astrological sceptics. Nevertheless, the prognostications found their way into the first calendars around 1500. The so-called *Praktik* and the Zodiac Man were based on the stellar constellations. Also, the proverbs are assigned to astrology.

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[220] Cf. Rohr 2007: 53–55. The development of the different explanatory patterns since the ancient world is presented as a graph in Glaser 2013: 31; based on Glaser, Vincelli, Militzer 1993: 468.

[221] In some of the literature it is referred to as 'astrometeorology', which is "[t]he study of the (supposed) influence on the weather and climate of planetary and stellar phenomena, such as sunspots, the phases of the moon, comets, and planetary conjunctions". Therefore, astrometeorology is a branch of astrology, specifically denoting the prognostication of weather. This term was first detected in the 17th century but was earlier subsumed within astrology; cf. Oxford English Dictionary 2012.

[222] Capp 1979: 15.

[223] Christian Rohr delivers a detailed description of different events and their perception in the Late Middle Ages in his book "Extreme Naturereignisse im Ostalpenraum" (2007: 517–538).

They mix exact weather observations with astrological predictions.[224] Throughout the 17th and 18th centuries astrology slowly started to lose importance, first rejected by the Church (Catholic and Protestant Churches) as superstition and later suppressed by the proponents of the Enlightenment. The astrological part disappeared from the calendars in the first half of the 19th century; only the proverbs remained.[225]

In contrast, astronomy is the exploration of the cosmos and matter (mainly celestial bodies) based on measurable laws. The Copernican system was only slowly accepted in the Old Swiss Confederacy. In the second half of the 16th century, the teaching of this system was still prohibited and still fought against at the beginning of the 17th century. Astronomers were mainly in demand for their astronomic determination of time as well as for the calendars. In the late 17th and 18th centuries, astronomy became relevant for the development of the mathematical and physical sciences. The first observatory in the Old Swiss Confederacy was built in Geneva, where meteorological observations were carried out. More observatories in Bern, Zürich and Basel were to be built during the 19th century.[226]

Physicotheology

Physicotheology as a movement first appeared at the end of the 17th century, becoming most prominent in the 18th century, and slowly disappearing at the beginning of the 19th century. While the natural philosophers were mainly more highly educated, exclusive people, physicotheology was more mainstream: doctors, jurists, teachers, theologians and priests were among its supporters. The early proponents of the Enlightenment often belonged to the group of physicotheologians. According to the physicotheologians, knowledge should be comprehensible for everyone – therefore, their publications were in the language of the respective countries and were communicated broadly.[227]

The aim of physicotheology (Greek *physikós*: concerning nature) was to observe nature and prove the existence of God. Their object of investigation – nature – was called *the book of nature* and was equally important as the Bible. The idea was that nature has to be studied to recognise the natural laws and principles in order to use them and evoke benefit. The increasing interest in, and enthusiasm for, automats and machines was also taken as a basis for the understanding of the world, which should

[224] Cf. Glaser 2013: 32.

[225] Cf. Jorio 2001 (e-HLS); Rohr 2007: 540–546; Capp 1979: 15–17; Glaser, Vincelli, Militzer 1993: 474.

[226] Cf. Steinlin 2006 (e-HLS). However, Kelly M. Smith argues that in the 17th century, the two ideas were still close, belonging to the same field; cf. Smith 2012: 476.

[227] Cf. Biehler 2019 (Enzyklopädie der Neuzeit Online); Trepp 2009: 306–307, 315; Greyerz 2009: 46–47. While Kaspar von Greyerz argues that the physicotheological movement lost most of its persuasive power in the middle of the 18th century, Birgit Biehler ascribes it a longer importance, only disappearing in the early 19th century.

be understood as a mechanical construct. The new guiding principle was to empirically research causalities. According to Anne-Charlott Trepp, the connection between the systematic approach, empirical analyses and the emergence of this new knowledge cannot be generally stated. It was an attempt to combine religion and natural science, which was not seen as contradictory for many contemporaries at that time. The exploration of nature can be seen as religious practice.[228] The following quotation aptly summarises the necessity of this movement for the contemporaries:

> "In einer Zeit, in der die Natur kaum mehr als bedrohlich und als zunehmend berechenbar erfahren wurde, in der immer mehr Ereignisse erklärbar und immer weniger als Wunder erschienen, wurde es besonders dringlich, Gottes permanente Gegenwart und sein jeder Zeit mögliches Eingreifen plausibel zu machen. Genau darin sah die Mehrzahl der Physikotheologen ihre Aufgabe."[229]

The increasing knowledge about natural laws and causalities deprived the divine miracles of their mystique and made the proof of the creator and his presence even more urgent. This task was self-ascribed by physicotheologians.[230] A critique concerning physicotheology was theodicy. The argumentation on the part of physicotheologians was that evil finally contributed to good – therefore, even in his disadvantageous acts, God proves his kindness.[231]

A 'Swiss' representative of the physicotheological movement was Johann Jakob Scheuchzer (1672–1733). "Natur-Histori des Schweitzerlandes" was published from 1716 to 1718 and consisted of natural observations, combined with literature and knowledge, but also constituted an appreciation of God.[232] Analogous to the *Royal Society*, Johann Jakob Scheuchzer explored his environment with questionnaires consisting of almost 200 questions about the air, animals, minerals, mountains, plants, population, vegetation and waters. His perception of nature was a positive picture of a wild nature – no longer seen as punishment, but rather as part of the divine providence. Johann Jacob Scheuchzer introduced a new perception of the environment – a romanticised view of the wild countryside – occurring in the second half of the 18th century.[233]

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[228] Cf. Biehler 2019 (Enzyklopädie der Neuzeit Online); Boscani Leoni 2009: 184–185, 194; Greyerz 2009: 55–56; Trepp 2009: 315–316, 323–324, 333. Anne-Charlott Trepp elaborates in detail the hypotheses of different authors concerning the reasons for the emergence of the physicotheological movement as well as reconciliation of religion and natural science in her book "Von der Glückseligkeit alles zu wissen" (2009).

[229] Trepp 2009: 338.

[230] Cf. ibid.

[231] Cf. Trepp 2009: 461; Biehler 2019 (Enzyklopädie der Neuzeit Online).

[232] Cf. Boscani Leoni 2009: 183–184.

[233] Cf. ibid.: 188–190; Walter 1996: 34. François Walter describes in detail the change in perception of the Swiss Alps from the 17th to the 19th century. Whereas the mountains before were regarded as cairns, not meant for living, they became attractive and positively connoted in the 18th century. The increasing number of extreme natural events in the 19th century led to a new perception of the mountains as a threat and, as a

Natural Catastrophes

As mentioned above, the extraordinary seemed to be of particular interest to scholars and writers. Therefore, this chapter aims to give an overview of the perception of natural catastrophes, as they tell us a lot about the general contemporary understanding of nature. In a first step, the term *natural catastrophe* will be defined. Secondly, an overview of the different interpretative patterns is given. Afterwards, different strategies for coping with these extraordinary situations are presented.

Reports of natural catastrophes fascinate people, produce fear, empathy and solidarity depending on the geographical, cultural and ideological closeness, but also tell us a lot about a political system, and how it reacts and responds to the situation.[234] The history of natural catastrophes can be analysed by means of their perception, interpretation and the coping strategy employed.[235] It was only in the late 20th century that historians became interested in analysing natural catastrophes – before, it was mainly the realm of natural sciences and engineering. From then on, the interest of the humanities and social sciences lingered mainly on the societal impacts.[236]

Firstly, the term *natural catastrophe* must be defined. There exist several definitions originating from different authors. In the following, a synthesis of the different definitions will be given. The term appeared – albeit used occasionally – by the end of the 18th century; before then, it was not a part of contemporary language use.[237] Bruno Weber defines the term as serious natural events (such as crop losses, droughts, earthquakes, fires, floods, mudflows, periods of cold/heat, pests, rockfalls, tsunamis, volcano eruptions etc.) that threaten or destroy livelihoods. They lead to extensive changes in the landscape within a short time.[238] Christa Hammerl divides them into two categories: climatic natural events, such as droughts, floods, hail, (thunder-)storms etc., and geophysical events, which include landslides, rockfalls and volcanic eruptions.[239] Extreme natural events are not natural catastrophes per se, as they only describe the magnitude of natural forces, but not the reception and perception of the society.[240] Christian Rohr goes further and defines criteria for the perception of a natural catastrophe: the most basic criterion is that the event concerns humans in a direct or indirect way and produces damage or losses. There is a lack of help and external aid is needed. Furthermore, people are looking

consequence, the widely accepted *Abholzungsparadigma*. This paradigm denotes the hypothesis that increased deforestation due to the rise in population led to more frequent flood events because of erosion (cf. Walter 1996: 29–31; for the *Abholzungsparadigma* see Summermatter 2012: 162–165; Pfister, Brändli 1999).

234 Cf. Hammerl 2009: 14–15.

235 Cf. Rohr 2007: 50–51.

236 Cf. Pfister 2002: 15–16.

237 Cf. Rohr 2007: 56. Christian Pfister even argues that the term was not used until the 20th century – instead people speak of miracles ("Wunderzeichen Gottes"), misfortune or sad events ("traurige Begebnuß"); cf. Pfister 2002: 15–16.

238 Cf. Weber 2003: 237–238.

239 Cf. Hammerl 2009: 18.

240 Cf. Pfister 2002: 15–16.

for an explanation and might interpret the event in a religious, supernatural way, or they even look for someone to blame due to their own helplessness. In early modern times, there was often a symbolic connotation. Comets or solar and lunar eclipses were often interpreted as precursors of such events (see Chapter 3.2.1.2.). Additionally, there is the factor of surprise, which often leads to a large number of fatalities and extensive property damage. If a society is used to a certain natural event (for example avalanches every year), it is usually not perceived as a catastrophe. Nevertheless, an accumulation of different natural events can result in a natural catastrophe due to the reduced resilience of a society. And finally, natural catastrophes result in a mood of crisis and evoke solidarity. In contrast to the term *disaster*, which also indicates a drastic event, where only a few people are affected, a catastrophe is a collective crisis.[241] According to Christian Pfister, there exist three phases: firstly, the acute phase (the occurrence of a natural catastrophe); secondly, the phase of clearing; and finally, the phase of reconstruction. The reconstruction phase can also be seen as an impulse for modernisation.[242] The most recent studies often separate the terms 'danger' and 'risk'. While risk denotes a (at least thought to be) well-known potential to which oneself is exposed to, danger is more diffuse and cannot be influenced. The natural catastrophe is then the occurring event.[243] The extent of the impact of a natural catastrophe depends on the vulnerability of a society. Vulnerability after a natural catastrophe reveals itself in the social and political organisation of a society. A detailed concept of vulnerability was developed by Daniel Krämer within his study of the hunger crisis of 1816/1817. According to him, vulnerability is based on three criteria: exposition, sensitivity and resilience. Vulnerability is highly dynamic and also depends on the society, the region, the history, etc., and therefore the perception of a natural catastrophes differs.[244]

Secondly, a brief overview of the development of the perception of natural catastrophes over time will be given in the following section.[245] Extreme natural events and natural catastrophes have been reported since the ancient world and medieval times. While there exist few sources originating in the 13th century, there is an increase in the number of sources until the Late Middle Ages. Generally speaking, the more exceptional the event (and the greater the amount of damage) was, the more detailed the report turned out to be.[246] As the societies of the premodern age were mainly based on agriculture,

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[241] Cf. Rohr 2007: 33–34, 55–62. Several formulations are listed by Christian Rohr showing indications when an event was perceived as a catastrophe within the population: for example, the denotation of an event as an extraordinary, unprecedented occurrence; cf. ibid.: 92–97.

[242] Cf. Pfister 2002: 16–18.

[243] Cf. Pfister 2002: 15–16; Rohr 2007: 61–62.

[244] Cf. Masius 2010: 153–154; Krämer 2015: 205–208.

[245] While the patterns presented above should give an idea of the general perception of nature, the following interpretative patterns specifically occur in the case of natural catastrophes. Naturally, similarities between these patterns can be found.

[246] Cf. Rohr 2007: 19, 69–71; Pfister 2002: 15–16; Masius 2010: 161–164. Bruno Weber describes the visual perception of different events in his article "Das Elementarereignis im Denkbild"; cf. Weber 2003: 237–260.

the vulnerability to natural catastrophes was high.[247] Depending on the time, social class and education, different interpretations were predominant. Three different interpretative patterns will be presented in the following. The first pattern is the *religious* and, moreover, biblical interpretation of natural catastrophes. The idea was that natural catastrophes cannot be influenced or averted. They were perceived as divine punishment and as the rod of God. Floods and plagues of locusts in particular were connected to biblical passages. The reaction within this interpretative pattern includes church services, ordered days of prayer and repentance, and a ban on dancing and music (festivity) to soothe the wrath of God. This pattern was predominant until the middle of the 18th century, and even survived into the 19th century.[248] A second, quite closely related pattern is the *magical-animistic* interpretation. According to this explanation, nature is led by magical powers, while natural events are caused by good or evil ghosts, witches and dragons. The ringing of bells (*Wetterläuten*) and the letting off of guns (*Wetterschiessen*) against thunderstorms can be seen as a reaction within this magical-animistic interpretation. Although this explanation mainly occurred in the Middle Ages and the early modern period, elements still existed in the 19th century.[249] A 'new' third *natural scientific* pattern occurred within the time of the Enlightenment. This explanatory model, which analysed natural and physical processes, was at first mainly predominant in the more highly educated classes and therefore in a parallel existence with the religious pattern. The development of economical societies (*Ökonomische Gesellschaften*) in the second half of the 18th century helped to spread the natural scientific ideas.[250]

Thirdly, in addition to these different interpretative patterns, Verena Twyrdy defines five coping strategies for natural catastrophes (based on the categories of Martin Gudd).[251] These coping strategies take the threat of natural catastrophes, but can also let the danger sink into oblivion, if natural catastrophes do not occur for too long. The first is the *mental-religious* strategy, which has already been raised in the first two interpretative patterns (see above). Additionally, high-water marks, or commemorative plaques, as well as writing or painting (for instance as votive pictures) are a way of coping with a natural catastrophe mentally and religiously. Another way of dealing with a natural catastrophe is in a *material-oriented* way: here the focus lies on the reduction of the financial burden through collections, calls for donations or insurances. While collections in churches have existed since the 14th century, larger calls for donations only came into use in the 18th century.[252] Moreover, the *spatial-oriented* strategy denotes emigration: especially after hunger crises, people migrated to other

[247] Cf. Twyrdy 2010: 13.
[248] Cf. ibid.: 16, 28–29; Rohr 2007: 92–97; Pfister 2002: 212–215.
[249] Cf. Twyrdy 2010: 14, 16; Pfister 2002: 212–215.
[250] Cf. Twyrdy 2010: 14, 28–29; Pfister 2002: 238–241.
[251] Some of these strategies are also exemplarily discussed in Richter 2019: 168–194.
[252] Christian Pfister developed a matrix in order to categorise the different forms of aid in cases of catastrophes. He distinguishes between the personal and the institutional level of aid, as well as its different motifs. It covers mainly financial coping strategies. Cf. Pfister 2002: 18–20.

countries or even continents (for example after the 'year without summer' 1816). The preventive measure of crop rotation and diverse production was an *economically oriented* strategy, which was in use until the beginning of the 19th century. This agricultural system allowed compensation of different yields, when some crops were affected by natural events. The agricultural modernisation led to a new relationship with nature. Eventually, the natural scientific interpretative pattern led to a new way of coping with natural catastrophes in the 19th century. Increasingly, technical measures were used to prevent natural extreme events endangering societies. The increasing trust in technology led to stream corrections, afforestation and embankments, resulting in a more *technically oriented* strategy of coping with catastrophes.[253] Although preventive measures had existed since the 14th century, attempts to protect against these events were seen as encroachment on the sovereignty of God until the 18th century. The increasing separation of the interpretation and measures of natural events over time led to this finally predominant strategy in the 19th century.[254] To fully conclude the different strategies, a prospect on the 20th century is given, which introduces a sixth strategy: only in the 1970s did an *ecological* turn lead to a discussion on the negative side effects of these technical strategies, especially in flood management. A new consensus gained popularity: respecting the natural dynamics of waters and giving them more space. In 1991 a new act (*Bundesgesetz über den Wasserbau*) came into force, which set the focus on the prevention of these natural events.[255]

To sum up, natural catastrophes are extreme natural events that concern and harm people in a direct or indirect way and produce helplessness. Three different interpretative patterns can be found in how contemporaries attempted to explain these events. Very often, the different patterns occurred in parallel. According to Verena Twyrdy and extended by Christian Pfister's idea, there exist six coping strategies regarding natural catastrophes. Despite this attempt to categorise perception and coping strategies, these patterns of interpretation and handling of natural catastrophes cannot always be clearly separated.

Meteorology and Instruments

Meteorology denotes the natural scientific analysis of weather and physical processes within the earth's atmosphere. The invention of meteorology is usually coupled to the invention of modern instruments in the middle of the 17th century. Climatology in its modern understanding is a sub-branch of meteorology.[256]

[253] Cf. Twyrdy 2010: 16, 18–23; Walter 1996: 52–54; Rohr 2007: 66–68.
[254] Cf. Masius 2010: 154–156; Pfister 2002: 238–241.
[255] Cf. Pfister 2002: 212–215.
[256] Cf. Bader 2009 (e-HLS).

Even in the ancient world and the Middle Ages, systematic weather observations[257] were already being undertaken. William Merle, an English scholar, even attempted to forecast weather from the regularities of his observations in the middle of the 14th century. Weather proverbs (such as the 'frost saints'[258]) were seen as regular features in the theory of weather observation until the 18th century.[259] The first instruments to measure weather data, which can be seen as the forerunners of today's devices and triggered its development, came into use in the 16th century. They opened up a new perspective of objective, metrical data measuring. Galileo Galilei (1564–1642) invented the first temperature-measuring device;[260] the first mercury barometer followed in 1643, developed by two pupils of Galileo, Evangelista Torricelli and Vincenzo Viviani.[261] But the early measurements of air pressure, precipitation and temperature were not very systematic and therefore difficulties in terms of comparison arose. Technical problems, different scales, a lack of data, error in reading the devices or the wrong placement make the data hardly comparable. Hence, the measuring data of this early period have to be very critically analysed; consequently, proxy data are still of importance in that time span.[262] Nevertheless, the idea of a systematic measuring network was born in the 17th century and promoted by the *Royal Society*. The early observers of weather were very well connected and soon simultaneous daily measurements were undertaken. Johann Jakob Scheuchzer attempted to initiate a network of weather observers in the Old Swiss Confederacy in 1697 – but with little success. The oldest time series of weather observations is from Geneva from 1753 onwards – followed by Basel from 1755. Towards the end of the 18th century, an increasing number of observers were contributing to a rise in the volume of data. The *Societas Meteorologica Palatina* – founded in 1780 – was the most promising attempt to systematically collect data mainly focused on Europe and to gather information from a large number of individual observers (scholars, doctors, physicists, mathematicians, astronomers, teachers and clerics).

[257] Weather is defined as the state of the atmosphere at a certain time in a specific place – for instance, occurring as sunshine, rain, hail, storms, cloudiness etc.; cf. Fritscher 2019 (Enzyklopädie der Neuzeit Online).

[258] "In France, Poland, Germany, Austria, Switzerland and other parts of Europe: according to popular belief they designate a period in May with an increased likelihood of night frost falling on the feast days of certain saints, thus jointly nicknamed 'Frost Saints' or 'Ice Saints'." Cf. LEO, English Dictionary: https://dict.leo.org/englisch-deutsch/eisheilige, 17.09.2019.

[259] Cf. Fritscher 2019 (Enzyklopädie der Neuzeit Online); Dictionary of Medieval Latin from British Sources: http://www.dmlbs.ox.ac.uk/web/william-merle-consideraciones-temperiei.html, 26.12.2019.

[260] The first liquid thermometer was invented by Jean Rey in 1632 and improved by Daniel Gabriel Fahrenheit (1686–1736), René A. F. de Réaumur (1638–1757) and later by Anders Celsius (1701–1744) in the first half of the 18th century. The Réaumur scale, which is filled with wine spirit, was widely used in Europe until the late 19th century. The freezing of water is at 0° R. and the boiling of water at 80° R. under normal conditions. For conversion into degrees Celsius, a factor of 1.25 is applied. It should be borne in mind that the Réaumur calibration had a bias reaching -5 °C at 30 °C in warm climates. Camuffo 2018: 85; Lexico 2019: https://www.lexico.com/en/definition/reaumur_scale, 27.09.2019.

[261] Cf. Camuffo 2018: 85. Dario Camuffo gives a detailed overview of the first instruments, including images of the instruments, in his article: cf. ibid.: 83–92.

[262] Rüdiger Glaser describes a possible procedure for the critical analysis of early instrumental data in his book "Klimageschichte Mitteleuropas"; cf. Glaser 2013: 43–44. Another plea for the critical interpretation of instrumental data is made by Ingeborg Auer; cf. Auer 2018: 99–105. A global inventory of early instrumental meteorological measurements is done by Brönnimann et al. 2019.

Throughout the 19th century, faster communication and the routine use of measurement devices improved the analysis of data.[263] In 1823, another attempt at a systematic collection of data in the Swiss Confederation was initiated by the *Naturforschenden Gesellschaft*. Unfortunately, this project also failed. Only in December 1863, with the help of the newly founded Swiss federal state, did a nationwide network of 88 measuring stations come into use. The aim was the investigation of weather and climate in different regions of Switzerland. Agriculture in particular demanded daily weather forecasts, as was known from France. Although scientists were sceptical at first about the scientific nature of these forecasts, they finally came into use in 1878 and were printed in daily newspapers. Together with the institutionalising process in Switzerland, the middle of the 19th century eventually led to an increasing number of national meteorological institutions throughout the world.[264] The technical improvements in instruments led to the development through which "meteorology became a mature, technologically advanced discipline carried out by trained professionals. With its professionalization came a shift from local to national and finally international organization."[265]

3.2. Appenzeller Kalender

After introducing the concepts and presenting the available instruments in Chapter 3.1., the following section focuses on the perception and status of nature derived from the *Appenzeller Kalender*. While the first subchapters concentrate on a quantitative analysis of climate- and weather-related data within the calendar, Chapter 3.2.1.2. will give a qualitative overview on how nature was perceived over time.

3.2.1. Analysis

3.2.1.1. Quantitative Analysis of Retrospective Content

Amount of Climate- and Weather-Related Information

As seen in Chapter 2.2.2.2., the *Appenzeller Kalender* covers several subjects. It is expected that, depending on the editor and time, nature will have a different value and therefore receive more or less attention within a volume. To get an impression of how important the topic of climate and weather

[263] Cf. Glaser 2013: 18–21, 43–44; Behringer 2007: 25–26; Fritscher 2019 (Enzyklopädie der Neuzeit Online); Bader 2009 (e-HLS). A recent study on early instrumental data in Switzerland is provided by Brugnara et al. 2019.

[264] Cf. Fritscher 2019 (Enzyklopädie der Neuzeit Online).

[265] Camuffo 2018: 88–89.

was within the calendar, a few quantitative analyses were undertaken. Due to their different (dis-)advantages, different approaches were chosen. When looking at the different analyses, it always has to be borne in mind that the indicated year is the year of the calendar. The publication of the volume was in the autumn of the previous year. For example, the volume of 1771 was published in autumn 1770, but contains the calendar of 1771. Therefore, events such as the famine in 1817 might be reflected in 1818 or 1819. Furthermore, sometimes retrospective information is given about past events that are further in the past (chronicles etc.). Consequently, the results must be interpreted carefully.

First, Figure 4 shows the total number of pages in each calendar. As already stated in Chapter 2.2.2.2., there was a strong increase in the number pages during the 1760s, peaking in the years 1770/1771 at 80 pages. Afterwards, the total number of pages remained between 68 and 76. Naturally, the increase in the number of pages allowed the editors to report in more detail on climate- and weather-related topics. The years indicated in red show an estimated number of pages since pages were missing (as text stops suddenly, or months in the calendar are missing). Therefore, it was assumed that they have the same number of pages as the average years in the period of the same editor.

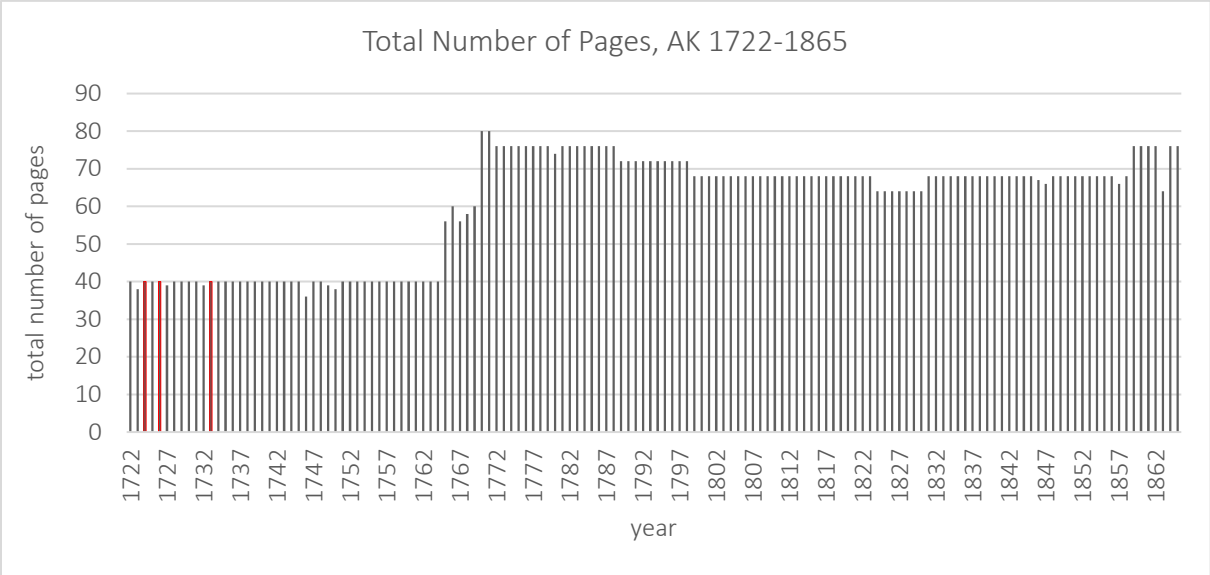

Fig. 4: Total number of pages of the Appenzeller Kalender *of 1722–1865. The red years indicate incomplete volumes (1724, 1726 and 1733). During these years, the calendar indicated missing pages and therefore the number of pages was corrected to 40.*

In a next step, the required space for the weather- and climate-related texts was counted in fractions or tenths. The title was included in the estimation of the required space. Further, the whole text on a climate- and weather-related topic was also counted, which means that if an article on fire included information about wind, the whole article was counted as relevant; or the prognostications – including non-climate- and weather-related topics – were fully counted and not excluded from this analysis.

Apart from that, as the size of the font varies from time to time, not every page contains the same number of lines. Therefore, the method of counting lines was rejected, as no general statements about the average number of words can be made. Due to this disadvantage, other quantitative analyses (for example, the counting of different entries) will be presented in the following. Nevertheless, the estimation of space, which is required by climate- and weather-related topics, can give an idea about how much space the publishers wanted to give this subject. Figure 5 shows the number of climate- and weather-related pages over time. To simplify the interpretation, the text parts were loosely categorised into four types of texts: *prognostication*, which denotes the textual forecasts in the different fields of weather, war, diseases etc.; *astrology*, which marks text types including predictions and forecasts other than the prognostication; *general knowledge* about weather and climate (for example: explanations about the occurrence of hail); and the *look-back section*, which covers texts containing information about past events. What is not included in this number of pages is the actual calendrical pages (overview on dates with the presumed weather forecast, as this is an integral and fixed part of the *Volkskalender*). The categorisation system will be introduced in more detail in Chapter 3.2.1.1., *Categorisation and Keyword Distribution*.

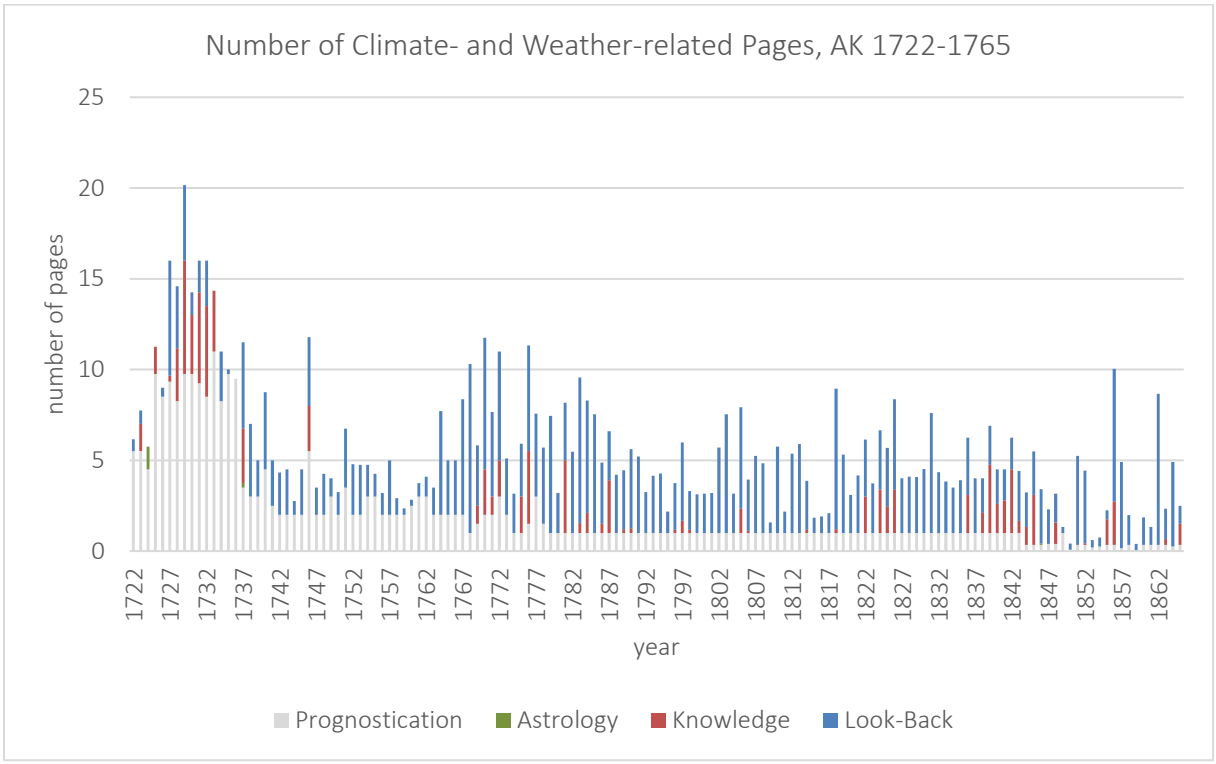

Fig. 5: Number of climate- and weather-related pages in the Appenzeller Kalender *of 1722–1765.*

When looking at the data (see Figure 5), the peak in the number of pages in the early years is remarkable. It is mainly due to the large number of pages belonging to the prognostication. While in the early

years the prognostication peaked at 11 pages (in 1733), it slowly decreased towards the end of the investigated period. Four different phases can be detected: between 1722 and 1736 the prognostication varied between 4.5 and 11 pages; within the next phase between 1737 and 1773 it only dropped twice below two pages; the volumes in the third phase, which lasted until 1843, mainly contained one page of prognostication. After 1844, the actual prognostication dropped out of the calendar (an exception was the year 1849, where a prognostication was included); only the forecasts of the solar and lunar eclipses survived, covering between a third and half of a page. This is in line with the argumentation of Marco Jorio, who situated the loss of importance of astrology within the first half of the 19th century (see Chapter 3.1.).[266]

While the prognostication part required less space over the years, the other categories – mainly the look-back section – increased (see Figure 6). The median of the look-back section is 2.8 pages; a longer period of a larger number of pages can be detected between 1764 and 1808 – only dropping once below two pages (1795); and again, between 1818 and 1846, only dropping slightly below two pages in the years 1738 and from 1840 to 1842. Contributions over six pages can be found during the years 1767, 1768, 1770, 1779, 1783–1785, 1803, 1818, 1831, 1856 and 1862. A high variability can be detected in the last phase from 1847 to 1865, as very low values (> 0.5 pages) are registered for the years 1849, 1850, 1853 and 1859, but also 1856 and 1862 represent two peak years. Referring to the grey shaded areas in Figure 6, it does not appear that the number of pages filled with retrospective reports of natural events is driven by the general interest of the editor in the subject. The number of pages does not correlate with the change in editors. Some of the peak years can be easily connected to external factors such as the 'Laki' eruption with increased reporting in the calendars of 1784–1785,[267] as well as the hunger crisis with the peak number of pages in 1818. Less obvious, but still correlating, is the year 1767, reported in 1768, where a cold anomaly caused the freezing of waters and led to wild animals approaching the cities. The reporting of flooding in the volume of 1803 coincided with a warm temperature anomaly in August 1802. The numerous reports of coldness and frozen waters (peak in 1831) match the winter anomaly of 1829/1830 reported by Christian Pfister.[268] On the other hand, no confirmation of an anomaly can be found for the year 1862, where the *Appenzeller Kalender* reported a severe heatwave and flood events in the Netherlands.[269] While the peaks in the number of pages in 1779 and 1856 are due to a large flooding event in the Rhine Valley, and therefore

[266] Cf. Jorio 2001 (e-HLS).

[267] Volcanic eruptions are one of the main external factors influencing the climate. The large amount of sulphur that reaches the stratosphere eventually forms sulphate aerosols. The poleward transport takes up to three years. The aerosols lead to a direct cooling effect due to the scattering of short-wave radiation. The indirect effect can lead to an alternation in stratospheric circulation; cf. Brönnimann 2015: 124–132.

[268] Cf. Pfister 1999: 297.

[269] Cf. AK 1862: [56–58]; temperatures over 20 °R. (around 25 °C.) in the shade, for 40-50 days.

linked to a natural catastrophe, the peaks in 1767 and 1770 are caused by extensive reporting from natural events from abroad (1767) and the talk of a comet as well as weather-related reports (1770).

In summary, the peak years of page numbers in the look-back section coincide with larger natural events (such as a volcanic eruption, a hunger crisis or reported anomalies). Although most of these peak years can be linked to anomalies, caution is advised, as of course not every anomaly is reported in the *Appenzeller Kalender*.

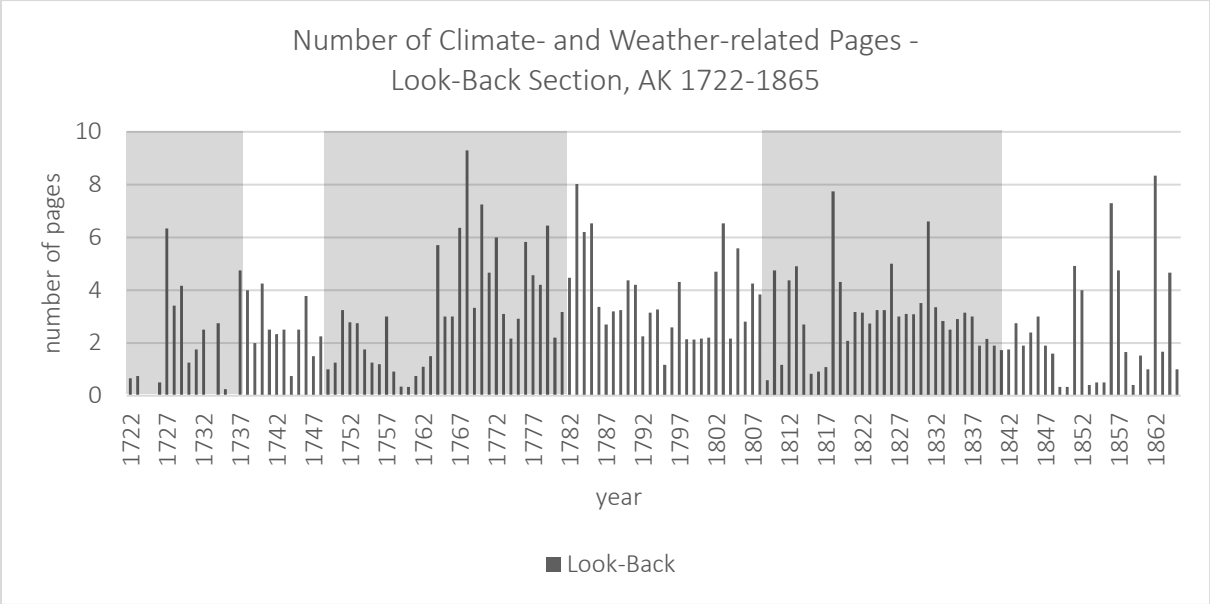

Fig. 6: Number of climate- and weather-related pages – only showing the retrospective reporting of events (look-back section) in the Appenzeller Kalender *of 1722–1765. The different shaded backgrounds indicate the change in editor(s).*

After the absolute number of pages, a relative percentage of the required space in comparison to the total number of pages is given in Figure 7. Here, no differentiation between the different categories is made. While the number of pages seems to be quite variable, the trend of the percentage of the number of pages is more stable. The highest percentages are reached in the first period, when the content was mainly based on the prognostication, which reached its greatest extent in these years. Afterwards, a constant decrease in percentage can be observed. The peak years in percentage mainly go along with high numbers within the look-back section (see explanation above).

Although there is a clear decrease in the percentage of climate- and weather-related subjects in comparison to the total number of pages, the lengths of the texts tend to increase over time. Of course, the increase in the total number of pages also allows an increase in climate- and weather-related texts. It is remarkable that longer reports increased, thereby giving more detailed information about past

events.[270] A plausible explanation for the increase in information (additionally to the increased available space) is the improved availability of information. While information was only received by letters or broadsheets in the earlier phase of the investigated period, the appearing journals provided additional information, allowing the editors a more detailed report.

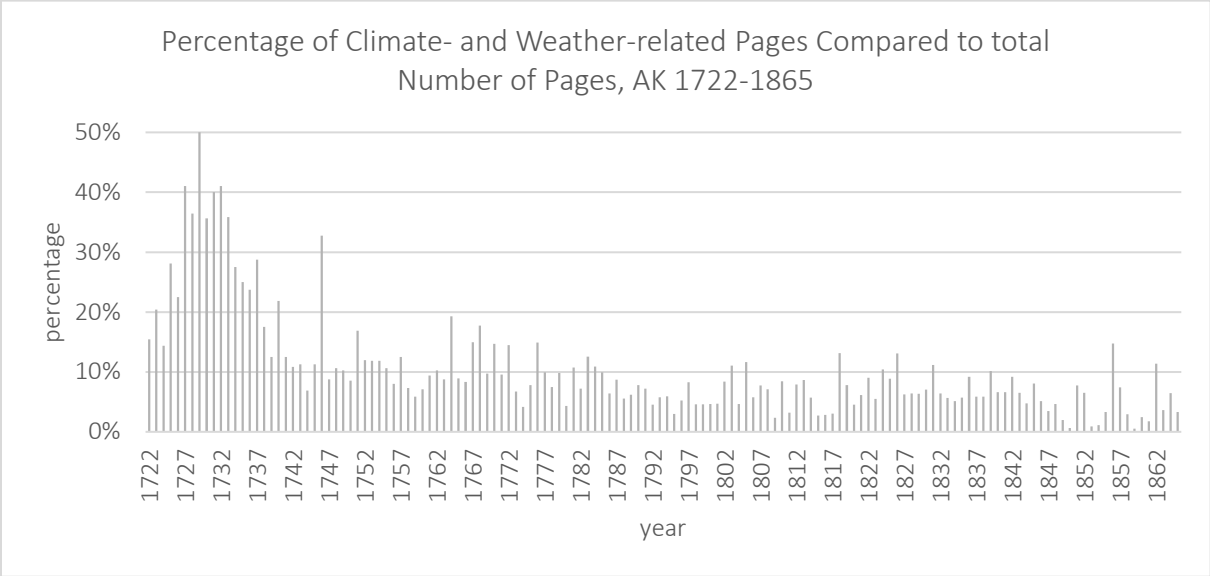

Fig. 7: Percentage of climate- and weather-related pages compared to the total number of pages in the Appenzeller Kalender *of 1722–1865.*

Another quantitative approach is the counting of different entries related to climate and weather within a volume. In the following, some comments on this method will be made: generally speaking, one event or piece of information is counted as one entry. Very often, different reports on one event are summarised in one 'article' (for example, heavy rain led to flood events in different regions); whenever a new region or date is mentioned, it is counted as a new entry. But if the article covers different villages from the same region experiencing the same weather event, it is only counted as one entry. A single listing of dates is not counted as several entries, unless there is at least some additional information (in general, a whole sentence). The prognostication is counted as one entry (not reflecting the different subheaders). The presumed weather forecast (*muthmaßliche Witterung*) is only counted as one entry, even if it appears on the calendrical pages (verso) and in a summarised version on the recto page. To sum up, the disadvantage of this method is that the number of entries does not let us conclude anything about the lengths of the text. The results of the number of entries throughout the whole

[270] Examples can be found in the following years: 1776: 39–40 (earthquake in Guatemala); 1831: 58–61 (frozen Lake Constance); 1833: 39–41 (thunderstorm on the Säntis); 1843: 36–38 (fire in Hamburg); 1852: 53–54 (earthquake in Santiago de Chile); 1857: 50–53 (flood in Lyon).

investigation period show a less clear development (see Figure 8).

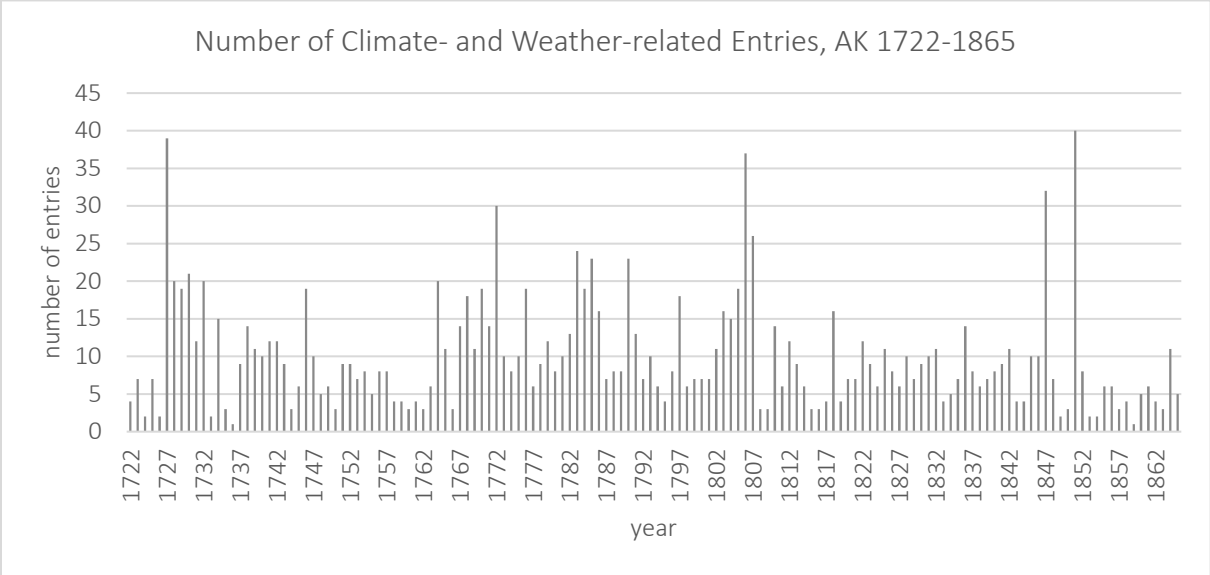

Fig. 8: Number of climate- and weather-related entries in the Appenzeller Kalender *of 1722–1865.*

Six extraordinary peak years (< 25 entries) can be distinguished: 1727, 1772, 1806, 1807, 1847 and 1851. In five out of these six years, the high number of entries can be explained by a chronicle listing of events: 1727 (earthquakes), 1772 (inflation), 1806 (list of wet summers, crop loss), 1807 (continuation of 1806) and 1847 (hot and dry summer). Although not directly related to a large number of events in that particular year, the creation of a chronicle was often due to an unusual weather event; as Ulrich Sturzenegger mentioned in 1772, the current inflation was the trigger for the listing of inflation events in the past: "[…] darzu mir Anlaß gibt die im abgelauffenen 1770 Jahr eingefallene grosse Theuerung […]".[271] A comparison to the weather anomalies collected by Christian Pfister reveals that at least four out of five years – 1772,[272] 1806/1807 and 1847 – coincide with weather anomalies. The year 1851 is not a chronicle but a very detailed report of the flooding in Europe in the summer of 1850. In contrast to the other years, no direct link to an observed weather anomaly can be found in the *Wetternachhersage*.[273] A generally higher number of climate- and weather-related entries can be found within the period 1867 to 1807, which falls within the editing period of Ulrich and his son Mathias Sturzenegger.

Overall, it can be said that while the number of pages per volume increased, the percentage of climate- and weather-related pages slowly decreased over the years. Despite the importance of the

[271] AK 1772: [5]. Very similar in AK 1806: [38] "Bey Anlaß der diesjährigen ungewöhnlich nassen Witterung mag es manchem Leser interessant seyn, einen Rückblick in die Vergangenheit zu thun […]".
[272] See also the case study in Chapter 3.3.
[273] Cf. Pfister 1999: 297–298.

prognostication (for the number of pages) at the beginning, the loss of reputation of astrology led to the dropout of the prognostication towards the middle of the 19th century. The different quantitative approaches showed different peak years. Most of them show a clear link to a natural event or at least an observed weather anomaly.

LOC Distribution

The retrospective look-back section of the *Appenzeller Kalender* covers different levels of spatial references. The information on past events can be either on a *regional*, *'national'* or *global* scale; the fourth category *unclear* denotes entries, where the spatial reference is not specified. This differentiation was included in the categorisation system (see Figure 13). This categorisation system is only applied to the weather- and climate-related texts – it does not include the whole content of the volumes. In a next step, LOC tags were assigned to each entry to identify more clearly the country or community concerned. In the following, this procedure will be introduced in detail, and some analyses on the distribution of data according to the different levels are presented.

The most important level of spatial reference is the regional information. As already discussed in Chapter 2.2.2.2. (*Source of Information*), the regional information is expected to be the most trustworthy and therefore the most interesting for this thesis. Consequently, the focus in the following analysis is on the regional level. In the case of the *Appenzeller Kalender*, the regional level was defined according to the economic importance and entanglement of the Lake Constance region (see Chapter 2.2.1.1.). Very often the market of Rorschach is mentioned, which had an important role as a trading port.[274] Therefore, the regional level includes what is considered as the cantons of Appenzell Ausser/Inner Rhoden, St Gallen and Thurgau. Furthermore, villages (for instance Lindau or Bregenz) that border Lake Constance were also considered regional. Phrases such as "in unsern Landen",[275] "in hiesigen Landen"[276] and "bey uns"[277] also indicate a regional reference.

Although the orientation of the Appenzell was more driven by its economic entanglement, there still existed a political linkage to the other cantons through the Old Swiss Confederacy, the Helvetic Republic and later the Swiss Confederation, before Switzerland as a nation was formed in 1848. Even if the denotation as 'national' is clearly wrong for the period before 1848, it is still used to denote the spatial level of the other cantons of the Old Swiss Confederacy, respectively the Helvetic Republic and

[274] Cf. Göttmann 1997: 237–245. Check the LOC index (see annexe, Chapter 7.3.2.) to find the years when Rorschach was tagged within the calendar.

[275] AK 1745: [33]; AK 1752: [33]. These are only examples. More entries were denoted as regional because of phrases such as those mentioned above. This is also true for footnotes 276–278.

[276] AK 1747: [33]; AK 1780: [36].

[277] AK 1727: [6]; AK 1746: [21].

the Swiss Confederation. Information concerning places that are considered part of Switzerland nowadays were consequently described as ‘national’. Terms such as "in unserem Schweitzerland" and "Schweitz"[278] also indicate a ‘national’ reference. Whatever was reported from other countries was marked on the global scale.

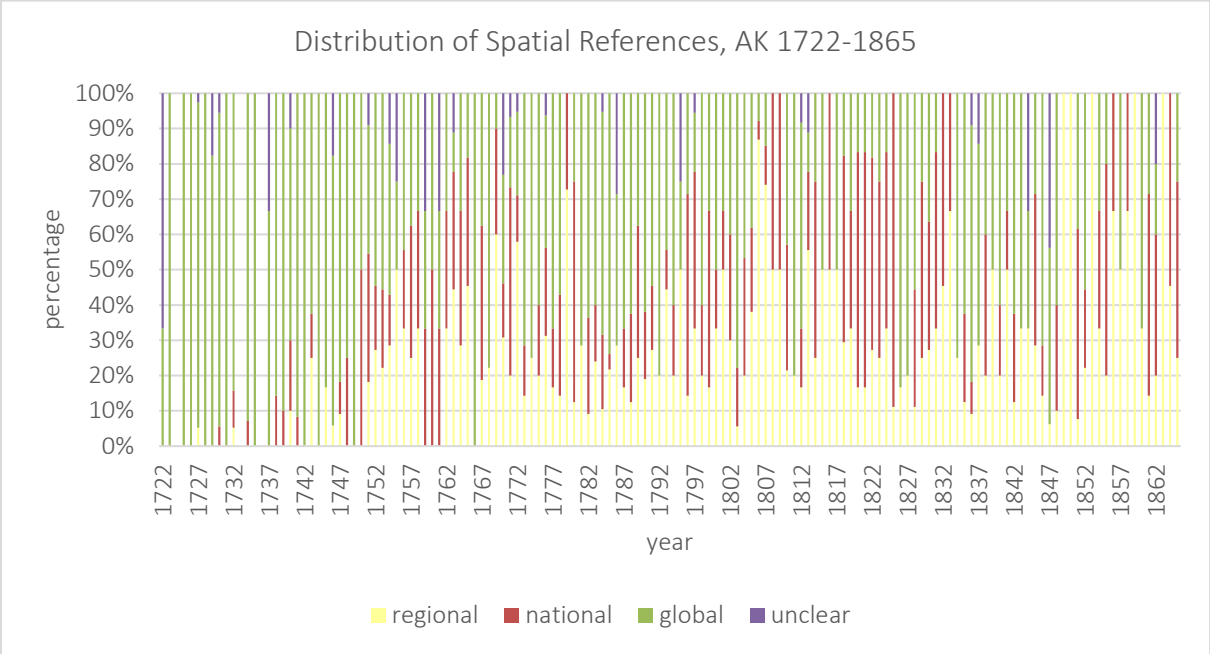

Fig. 9: Relative distribution of the different spatial levels in the Appenzeller Kalender *of 1722–1865.*

Figure 9 shows that initially the information on a global scale dominated. Firstly, this was because of the small number of entries (which did not allow a high variability); secondly, this was clearly explainable by the political difficulties that were present during the starting period of the *Appenzeller Kalender*. Johannes Tobler was taught not to report on political difficulties; consequently, the reporting on a global scale was less delicate.[279] On the other hand, the reporting on a global scale might also have been a question of prestige. The information from abroad brought a glimpse of the wide world into the countryside. Generally, a relative increase in regional and ‘national’ entries can be detected throughout the investigated period. Despite that trend, a decrease in the 1770s and 1780s can be observed. The increase in global reporting in these years goes together with the rising number of climate- and weather-related entries (as can be seen in Figure 8). So, it is not essentially a decrease in regional, but rather an increase in global reporting.[280] Again, in 1826–1827 and 1834–1843, there was

[278] AK 1732: [38]; AK 1741: [35]; AK 1772: [5/7]; AK 1803: [60].

[279] See Chapter 2.2.2.1.

[280] The high percentage of global entries between 1783 and 1785 can be explained by weather phenomena on the macroscale: strong heat and cold in 1782 (reported in 1783), heavy thunderstorms in 1783 (reported in 1784), floods in 1784 (reported in 1785). During these years a large number of entries are given, and a relatively high percentage of them are on a global scale.

a dip in regional and 'national' reporting. Here, no increase in entries can be observed. Hence, a shift in the spatial distribution occurs.

After this loose categorisation of three different spatial levels, in a second step, LOC tags were distributed to each entry. While the spatial reference, as explained above, is assigned to one entry, one entry can refer to several LOC tags. On a global scale, the LOC tags are the currently existing countries or even continents, if not further specified. If the place could not be identified clearly, because, for example, the Danube flows through several countries, the river was tagged separately (the same is true on a cantonal level for valleys and rivers). On a 'national' and regional scale, communities were identified. A place was tagged with its current political community, which means that a part of a village – which was independent at that time (for example St Fiden) – was tagged as St Gallen.[281] The places were identified with the help of different websites.[282] An exception is made in the case of the canton of Glarus, as it only consists of two political communities. Here, the original community names, such as Schwanden, Engi etc., were used as tags. In contrast to the global scale, whenever more than one place is mentioned on a 'national' or regional scale, several tags were assigned to one entry, whereas on the global scale, there is only one tag for the country. Consequently, there is an expected disproportion between the tags on a global scale and the tags concerning 'Switzerland'.

In total, 2,194 LOC tags were assigned to the different entries. Apart from the cantons, 359 places were tagged on community levels; additionally, three mountain passes, three rivers, five areas, seven lakes, ten mountains and 29 valleys were tagged in the area of Switzerland. On a global level, 56 other countries (not including 'Switzerland') were tagged. Figure 10 shows the number of LOC tags per country. Basically, the closer to AR, the more tags seem to be correct in the case of the spatial distribution within the *Appenzeller Kalender*. The largest number of tags – outside of 'Switzerland' – are assigned to Germany (239 LOC tags), followed by Italy (117), France (99) and Austria (55).[283] This underlines the relevance of (Southern) Germany as an economic and cultural area, which had a huge influence on the region of the *Appenzeller Kalender*. Quite often 'German' journals were copied, which is another indication of its importance to the editors of the calendar.[284]

[281] Cf. AK 1758: [35].

[282] Historical places can be identified through www.ortsnamen.ch or www.hls-dhs-dss.ch/ghh/ (*Glossarium Helvetiae Historicum*). The current names of places can be found at www.map.geo.admin.ch; for places on an international scale, www.maps.google.com was used.

[283] All the LOC tags can be studied in the LOC index in the annexe (see Chapter 7.3.2.).

[284] Cf., for example, AK 1727: [38]; AK 1829: [39]; AK 1837: [37].

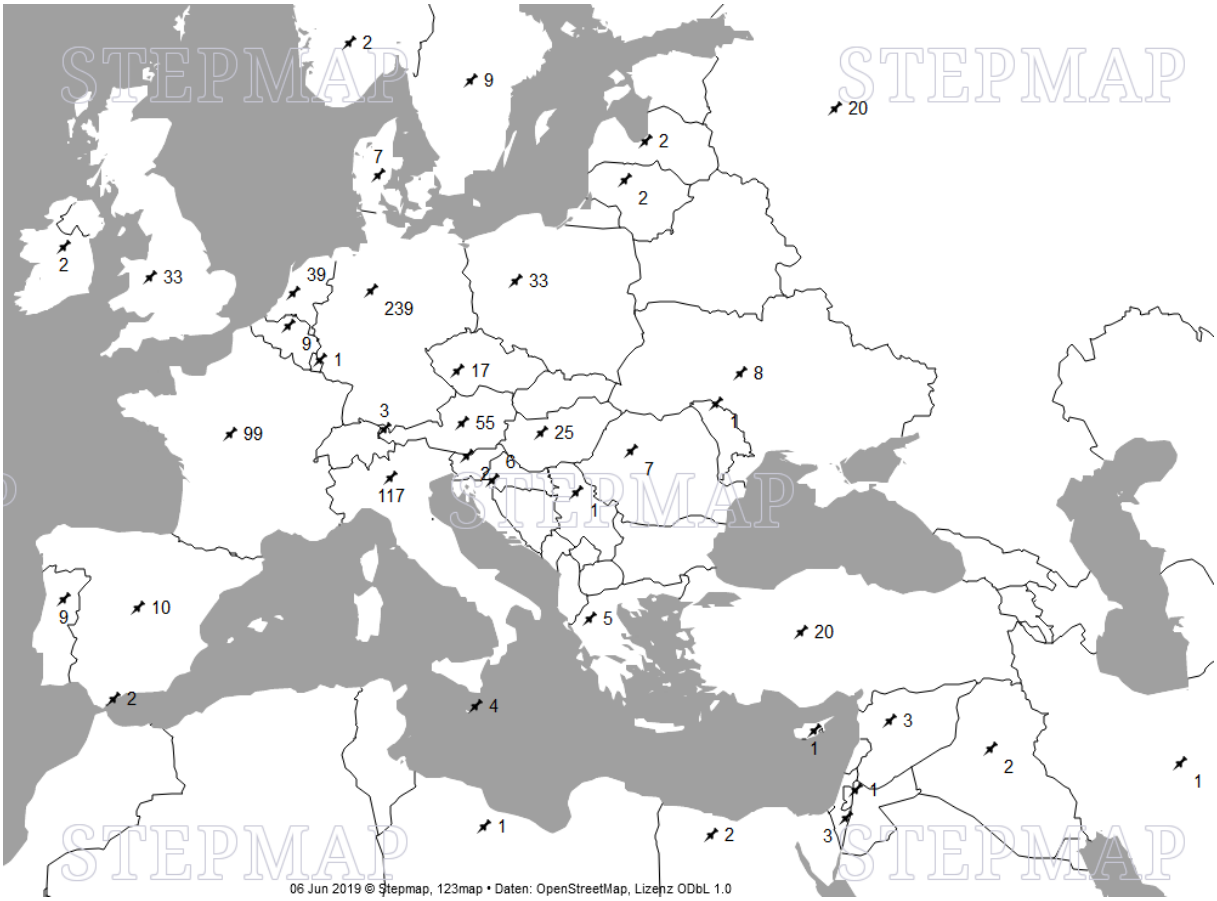

Fig. 10: Map extract of Europe indicating the number of LOC tags per country mentioned in the Appenzeller Kalender *of 1722–1865. The numbers of 'Switzerland' are not included, as they will be discussed in detail below.*

The following Figure 11 gives an idea of the development of LOCs over the investigated period. As already seen in Figure 9, global tags dominated in the beginning, while there was an increase in tags concerning the current area of Switzerland from the 1750s onwards. The peak years of 1764 (74 LOC tags), 1818 (61 LOC tags) and 1851 (84 LOC tags) are dominated by 'Swiss' tags.[285]

[285] The peak year of 1764 is explained by heavy rain that led to several flood events in different parts of the Old Swiss Confederacy: AK 1764: [9]: "[…] Darauf folget ein recht schön fruchtbar Wetter, bis den 23. und 29. Brachmonat Alt. Cal. an welchen Tagen dermassen regnete, als ob eine neue Sündfluth kommen wolte, von welchem grossen Wasser zum Angedencken der Nach-Welt einige Exempel beschreiben will: Als Donnerstags den 27. Brachmonat An. 1762. fielen allbereit hefftige Platz Regen in Pündten, Oberland, Rheinthal und Appenzellerland etc. ein. […]." The other two years have already been discussed above.

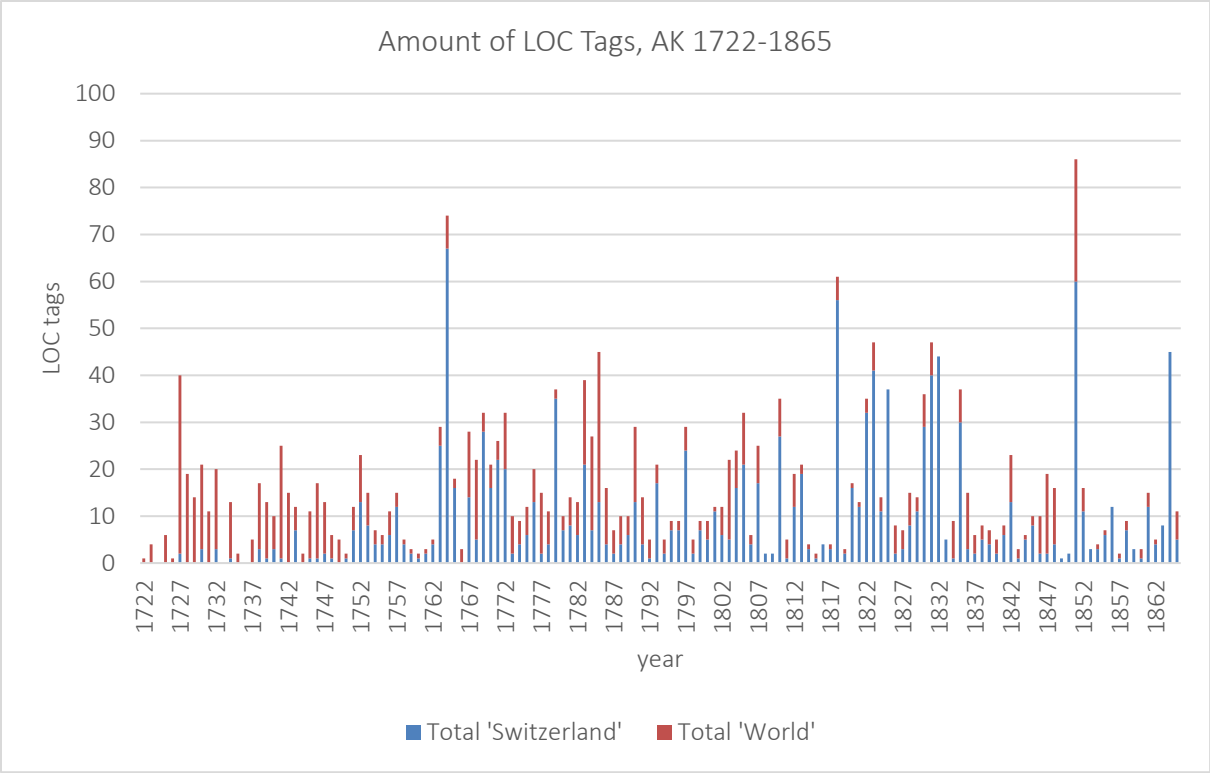

Fig. 11: Amount of LOC tags in the Appenzeller Kalender *of 1722–1865. 'Switzerland' includes all the areas, lakes, mountains, mountain passes and valleys that are excluded in Figure 12. The 'World' tags do not include 'Switzerland'.*

The following Figure 12 shows the distribution on LOC tags in the *Appenzeller Kalender* on a cantonal level throughout the whole period. As expected, most of the entries are within the regional level: 248 tags are located in St Gallen and 222 in Appenzell Ausser Rhoden. All the cantons of the regional level (AI, AR, SG, TG) together add up to 555 LOC tags – which is about half of all the cantonal LOC tags and a quarter of all the LOC tags. The large amount in Zurich (ZH), Bern (BE) and Grisons (GR) is also remarkable. While Zurich and Grisons seem quite obvious as neighbouring cantons, Bern seems less explainable. Almost half of the Bernese LOC tags are between 1818 and 1825 (41 LOC tags). It is not clear where the accumulation of reports on Bern has its origin. One possible explanation is an informant who stayed in contact with Johann Ulrich Sturzenegger within the mentioned period. This hypothesis is supported by a report in 1825, where he writes that he got a message from the Bernese Oberland.[286]

[286] Cf. AK 1825: [39].

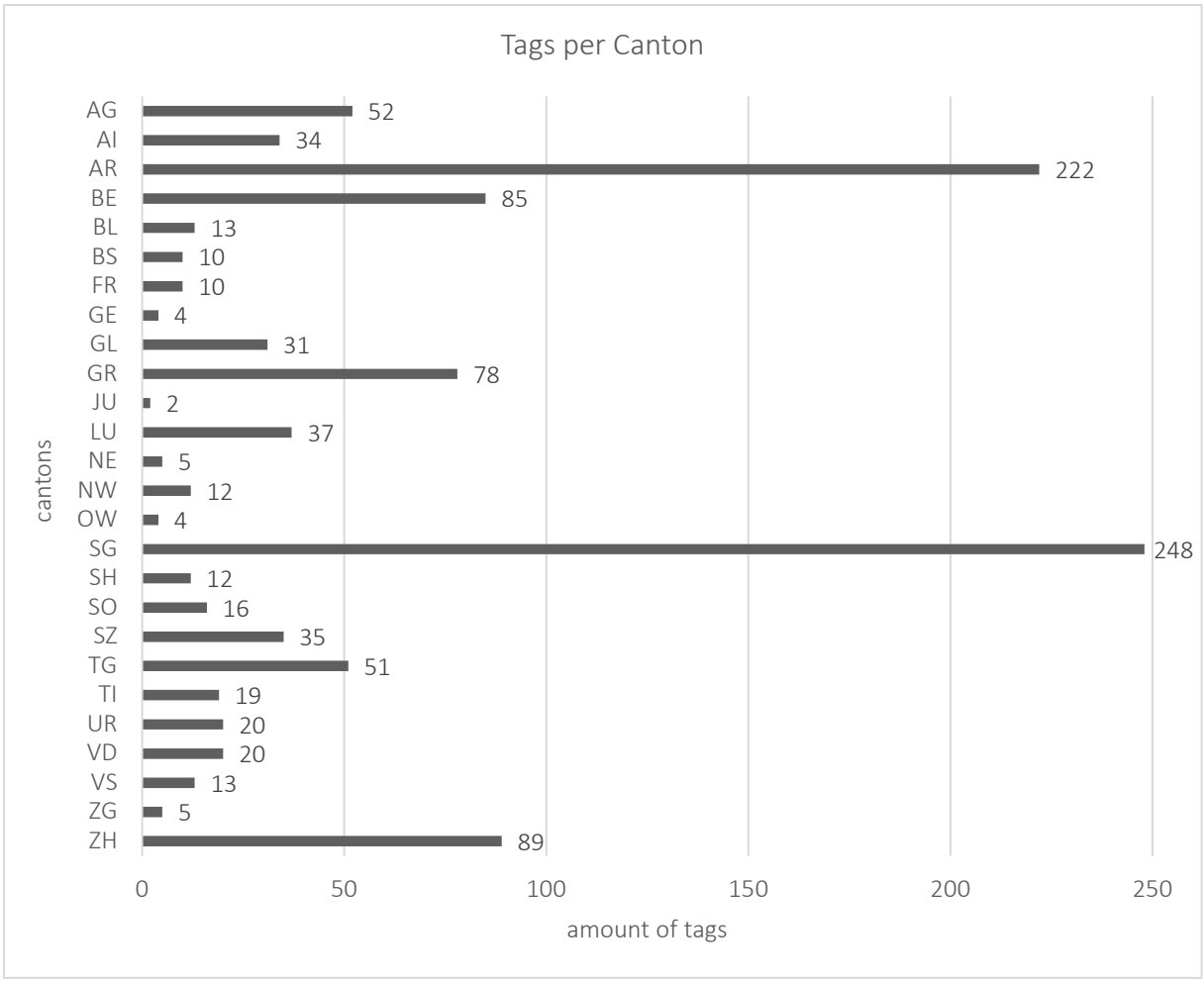

Fig. 12: Amount of tags per canton in the Appenzeller Kalender *of 1722–1865. Locations that cannot be clearly allocated to one canton, such as areas, lakes, mountains and valleys, have been excluded.*

Categorisation and Keyword Distribution

In a next step, keywords and categories were assigned to the different entries with the aim of categorising the content thematically. The categorisation system is based on the coding system of the *Euro-Climhist* database. As the numerical codes are not very easy to decode, a simpler system was developed, only including up to the second level of categorisation (as can be seen in Figure 13 for categories 1–5 within the look-back section). So not every single possible event was broken down into subcategories, but a coarse frame is given. The two categories on the left (forecasts and general) were added to distinguish content that is not retrospective information, but either a forecast (such as the prognostication and the proverbs) or a general explanation of a phenomenon or the monthly pictures. On the right, the system was extended with two other columns: firstly, place, which has already been introduced above (see Chapter 3.2.1.1., *LOC Distribution*), and secondly perception. Whenever there is clear information on how the author perceived the event, the category religious or natural scientific was marked. The column severity was marked whenever there was not only a description of the event, but also of its damage. As can be seen in Figure 13, the categories are only applied to the look-back section.

Very often, more than one category is assigned to an entry.

forecast		general		look back																												
				1. descriptive data						*2. measurements*					*3. proxy data*					*4. econ. data*			*5. sociopol.*			*place*				*perception*		
proverbs	*astrometeorolgy*	*knowledge*	*months pictures*	*weather*	*meteor. damage*	*climatol. damage*	*geol. and geom. hazards*	*atmos. phenom.*	*extraterr. phenom.*	*pressure*	*air temperature*	*precipitation*	*hydroclimatological data*	*cloud cover*	*phenol. data (wild)*	*phenol. data (cultural)*	*glacial, ice, snow coer*	*tree rings*	*proc. / rogation serv.*	*agricultural production*	*price dynamics*	*prices*	*famine*	*govern. policies*	*indiv. strategies*	*regional*	*national*	*global*	*unclear*	*religious*	*natural scientific*	*severity*

Fig. 13: Categorisation system based on the Euro-Climhist *coding structure, extended by the columns forecast, general, place and perception.*

In almost 150 years, a total of 2,559 categories were assigned in the look-back section. Excluded are the columns forecast and general, which will be discussed in Chapter 3.2.1.3. Most entries were categorised as descriptive data (mentioned 1,555 times, subcategory 1); this includes weather observations (451), meteorological damage, which includes damaging avalanche, flood, hail and (thunder)storm events (593); additionally, geological and geomorphological damage (338), which includes hazards such as earthquakes, fires, landslides, pests and volcanoes; climatological damage was categorised 128 times, which includes damage due to heat, frost, wetness etc.; extraterrestrial phenomena such as comets and solar or lunar eclipses were registered 40 times. The second prominent subcategory is economic data (mentioned 378 times). This is because of the information on agricultural production (quality or quantity of harvest); less relevant are the reports on price dynamics (inflation and deflation, mentioned 64 times), and actual prices (71). Compared to this relatively large subcategory, there are almost no measurement data (only 77); most of them (39) are hydrological data, usually indicating by how many feet water increased during floods; temperature measurements are reported 33 times.[287] The categorised proxy data[288] (subcategory 3) are mainly based on information about snow and ice cover (mentioned 171 times), reporting early or late snow, or the condition of the *Schlittbahn* (snow-covered road way); 108 entries are categorised as proxy data on cultural plants, such as the early or late blossoming of specific trees or grapes, or in general advanced or delayed

[287] Not only absolute measurement data was categorised as *measurement*, but also relative data such as *very low*, for example.

[288] A general introduction to the different proxies of the natural archives is given in Brönnimann, Pfister, White: 28–34. A detailed description of plant- and ice-phenological data is delivered by Pfister, White 2018: 58–60: "Plant phenology is the study of plant life-cycle events […]." A change in climate can lead to a change in the plant cycle, "because every plant species requires a specific sum of positive daily temperatures to achieve a certain phenophase […]". Frozen rivers and lakes, as well as their break-up dates, allow calculation of the sum of negative daily temperatures, which led to the freezing. For Lake Constance and Lake Zurich the negative temperature sum was calculated: Lake Constance requires > 440°, while for Lake Zurich > 350° is sufficient. Long snow cover as proxy data can be an indication of extremely low temperatures in the months of November and March, as well as in April for higher altitudes; cf. Pfister 1999: 38.

vegetation. The last subcategory to be discussed is the socio-political data, which was the least used subcategory. A governmental approach (for instance, collections of donations, bans etc.) is registered 51 times, while hunger crises or famines are mentioned 39 times.

As can be seen in Figure 14, throughout the whole period, the majority of the data is descriptive. This seems logical, as most of the reports were on damages due to weather and climate. The economic data seem to decrease over time, while the proxy data subcategory and measurement data increase. The increase in proxy data can be explained by the introduction of the seasonal review in 1768, and respectively 1774, which mostly included proxy data on vegetation, as well as snow cover. As is to be expected, the spread of measuring devices led to a rise in measurement data. Additionally, as Ulrich Sturzenegger was in possession of meteorological devices, at least one observation can probably be attributed to Mathias Sturzenegger.[289] A peak year of economic data can be found in 1772, where the chronicle of inflation years gave a lot of price information; the discussion on the famine in the *Appenzeller Kalender* of 1773 explains the high percentage of socio-political data.

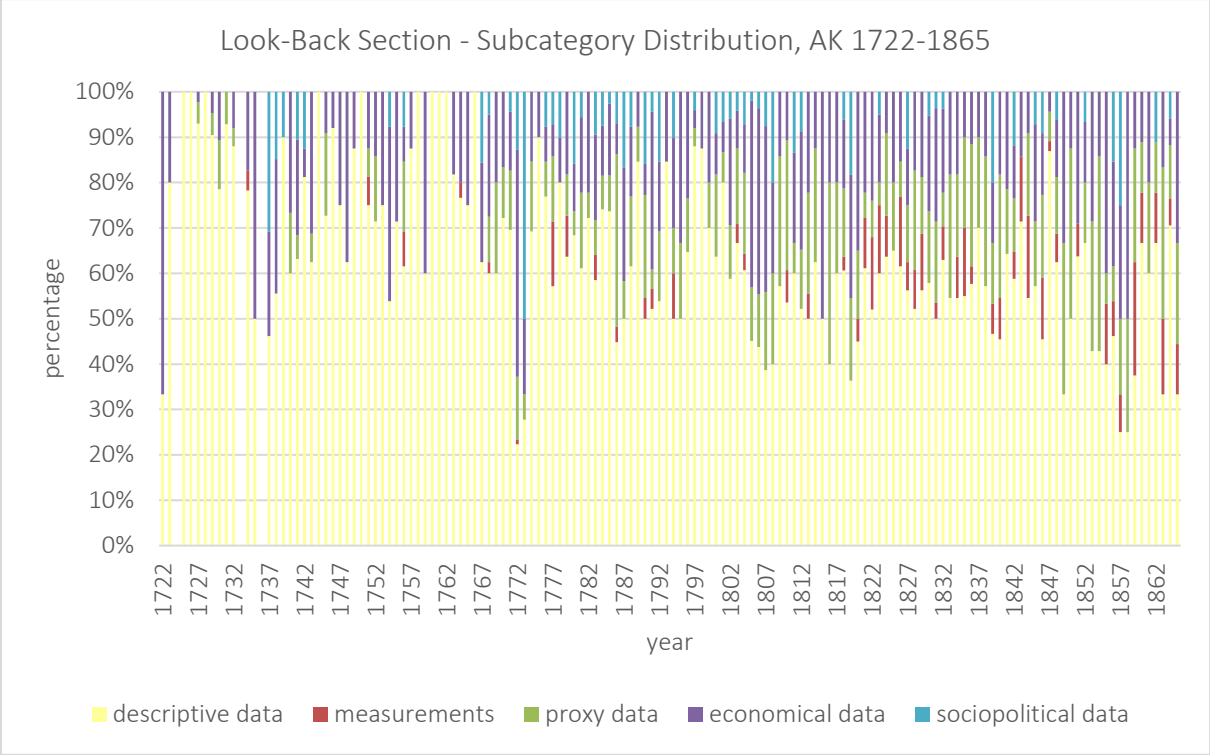

Fig. 14: Relative distribution of subcategories in the Appenzeller Kalender *of 1722–1865.*

[289] AK 1786: [39]: "In diesem 1785. Jahr in der Nacht von 28 Hornung bis auf den ersten neuen Merz, hatten wir auch eine der grösten Kälte, die wir in dem ganzen Jahrhundert gehabt hatten; in den Chronicken findet man verschiedene Jahrgänge von grossen Kälte als in An. 1709. 1740. 1776. u. s. w. aber keine war so stark gewesen, als die in diesem Jahre, man fand hier den Termometer 2. Grad tiefer als in An. 1709 […]".

In a further step, after the application of the categorisation, keywords were given to the entries in order to allow a more specific analysis of certain types of events. The selection of keywords follows the codes of the *Euro-Climhist* database, although the same level of detail is not aimed for. In contrast to the categorisation system, the keywords are also applied to the knowledge and forecast section, as they should help in the case of a specific interest. The index of keywords allows all the subject-related entries to be found – for example for *hail* – including retrospective information, but also knowledge entries on how hail is produced. The use of a keyword is not necessarily associated with one event. Several keywords can be assigned to one single event, and on the other hand, one single event can be mentioned more than once if the region varies. In total, 106 different keywords were given to define more precise single events or phenomena. The following explanations of how the keywords were assigned should help in understanding the (dis-)advantages of this method and some specialities of certain keywords.

The assignment of keywords was either explicit or implicit. Explicit means that the keyword *hail* is used in the report. The keyword *crop loss*, for example, was assigned implicitly in the following cases: "alle Feld-Früchte in Grund zerschlagen"[290] (field crops damage due to hail), "alle Weinberge und Felder verwüstet"[291] (fields devastated), "für viel 1000. Gulden an Reben verschlipfft"[292] (landslide led to the loss of vineyards). The keyword *heavy rain* incorporates different terms for strong precipitation such as "Wolkenbruch", "grosse Regengüsse", "Platz-Regen", "Wasserguss" or "starker Regen".[293] There exist three keywords that are snow related: *snow cover* is used when there is an estimation of how much snow there is, or if there is a statement on snow-covered road way (*Schlittbahn*); *summer snow* is tagged whenever there is reported snowfall in the months from June to August; if the report on snow does not refer to one of these two it is simply tagged as *snow*. The keyword *review* has been used to tag the yearly look back on the different seasons, which was first published in 1768. A last clarification has to be made concerning the keyword *wine*: it only denotes information about the final product (quality or price information). Any other information concerning the grape is not included in this keyword.

The example below shows how the keyword tags were assigned:

> "Von der Witterung und Fruchtbarkeit.
> Der Herbst 1828 hatte abwechselnde Witterung. Die Weinlese war sehr ergiebig, die Qualität aber im allgemeinen gehörte nicht zu den vorzüglichen. Der Winter war äußerst schneearm und bis Neujahr sehr gelind; der Jänner war größtentheils und bis in die Mitte Februar kalt,

[290] AK 1728: [39].
[291] AK 1731: [38].
[292] AK 1770: [46].
[293] AK 1730: [39]; AK 1740 [36]; AK 1743: [38]; AK 1747: [33]; AK 1767: [34].

> doch nicht erheblich. Im März trat mildere Witterung ein. Der Frühling 1829 entwickelte sich langsam, hatt auch noch Schnee. Der May war kühl und trocken, und es erschienen wieder verderbliche Insekten an den Obstbäumen. Der Sommer hatte sehr abwechselnde Witterung; vom 5ten bis 7ten Juni fiel Schnee in die Gebirge; die Blüthe des Weinstocks war spät; am 20ten und 21ten Juli fiel wieder Schnee in die Gebirge; am 16ten erfolgte ein Gewitter mit Hagel, das im untern Rheinthale (z.B. in Thal) auch am Weinstock ziemlichen Schaden verursachte."[294]

The following keywords were allocated in this case: crop loss, hail, harvest, lack of snow, pest, snow, summer snow, thunderstorm, review, vegetation delayed, warmth, weather and wine.

A total of 3,650 keyword tags were assigned to the entries. The complete index of keywords can be found in the annexe (see Chapter 7.3.1.). Thirteen keywords were mentioned over 100 times, amounting to almost 60 per cent of all the keyword tags (2,119 tags). These keywords are listed in Figure 15. One thing that is not very surprising is the fact that the keywords mentioned most are on sensational topics, such as earthquakes and floods. They seem to satisfy a desire for sensation,[295] while the other keywords reflect actual concerns of the readership, mostly farmers. This could explain the finding regarding how many precipitation- and harvest-related keywords were used (for example, crop loss, thunderstorm, snow etc.).

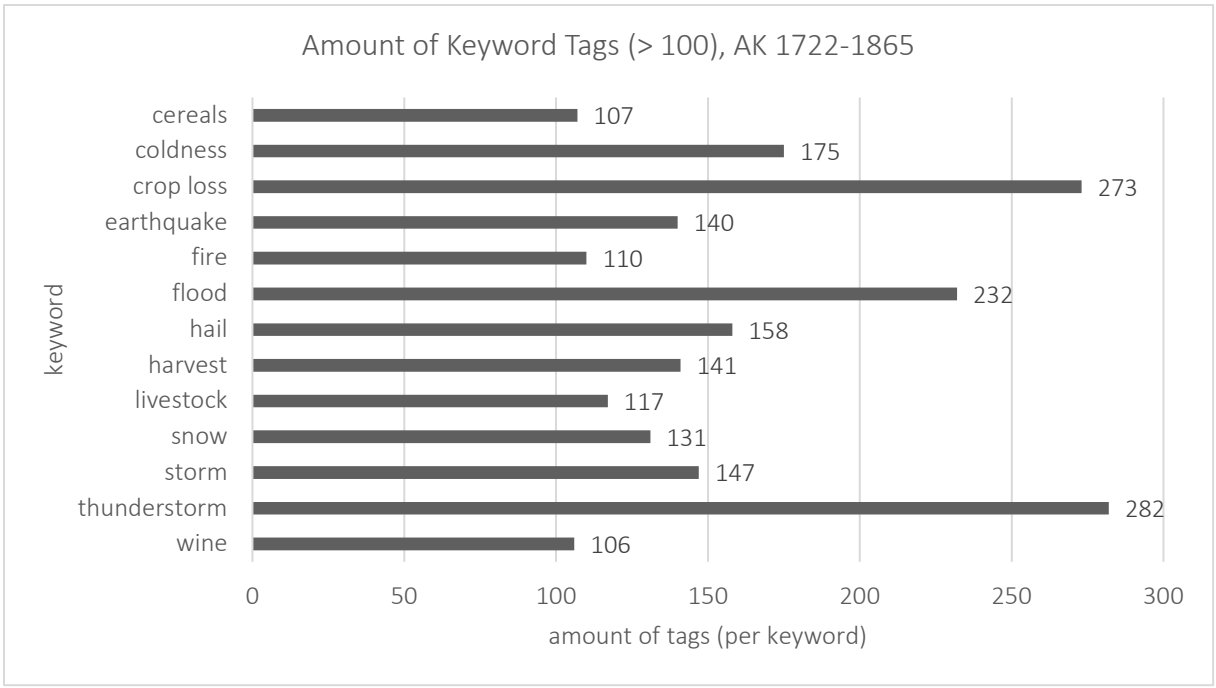

Fig. 15: Keywords that were tagged more than 100 times in the Appenzeller Kalender *of 1722–1865.*

[294] AK 1830: [38].
[295] "Der Reiz des Wunderbaren" as it is denoted by Sorel 2006: 208.

Instead of looking at the individual keywords, however, it may be more informative to have a look at the different clusters that occur. Therefore, four main keyword clusters have been defined: harvest-related, precipitation-related, temperature-related and wind-related terms. Not every keyword is part of a cluster and some terms could be assigned to different clusters. Here, the most obvious cluster has been chosen. The clusters are of different sizes: the temperature cluster is the largest, consisting of 19 keywords;[296] the harvest cluster contains 15 keywords;[297] the precipitation cluster includes 13 terms;[298] and the wind cluster consists of 10 keywords.[299] Forty-nine keywords are not included in any cluster.

When the different clusters are shown, the results are even clearer. Here, a significant dominance of precipitation-related keywords is observed (see Figure 16). Four peak years can be identified: 1772, 1806–1807 and 1851. In 1772 – within the chronicle of the inflation years (already discussed in 3.2.1.1, *Amount of Climate- and Weather-Related Information*) – 72 harvest-related, 25 temperature-related and 16 precipitation-related keywords were tagged. In the years 1806/1807 – chronicle of wet summers and crop loss – 48/53 (first number refers to 1806, later to 1807) harvest-related, 34/37 temperature-related and 38/32 precipitation-related keywords were assigned. The last peak year, 1851, which included a detailed report on the flood events of the summer of 1850, accounts for 54 precipitation-related and 24 harvest-related keyword tags. Smaller peaks can be detected in the year 1790, where the temperature cluster peaks at 27 tags. A closer look at the calendar shows that an extraordinarily large-scale coldness was experienced in the winter of 1788/1789.

> "Diese ausserordentlich grosse Kälte übersteigt alle Beyspiele dieses Jahrhunderts. Unter denen die Jahre von 1709. 1740. und 1776. Hauptsächlich zubemerken waren. – Von allen Gegenden, besonders aber aus dem Nördlichen Europa; sind viele betrübte Nachrichten von Erfrohrnen; und sonst bey dem grossen Schnee umgekommenen Menschen eingegangen. Auch in der Schweiz und hiesigen benachbarten Gegenden; ereigneten sich deshalben viele traurige Umstände. Der Reaumürsche Termometer kam in den lezten Tagen des 1788 Jahres bis auf 7 Grad

[296] The cluster of temperature-related keywords includes the following terms: bear, coldness, dew, frost, frozen waters, heat, hoar frost, ice, ice flood, inversion, late bloom, melting water, snow cover, summer snow, temperature, vegetation advanced, vegetation delayed, warmth and wolf.
Animals such as bears and wolves are often related to an extreme in temperature when they approach civilisation for food. Cf. Siemer 2003, a work on the perception of wolves in the city of Paris.

[297] The cluster of harvest-related keywords consists of the following terms: bees, bread, cannibalism, cereals, crop loss, grasshopper, hardship, harvest, hay, inflation, lack of feed, pest, plant disease, trade and wine.

[298] The precipitation-related keywords are as follows: drought, dryness, flood, hail, heavy rain, high water, lack of water, lack of snow, rain, snow, thunderstorm, water level and wetness.

[299] The cluster with wind-related keywords includes the following terms: fire and forest fire (as fires were only considered in this thesis when weather related, and this usually indicates winds), hurricane, storm, storm tide, tornado, whirlwind, wind, wind break and windthrow.

> tiefer als A. 1709. zu stehen. Am 30 Christmonat und die folgenden Tage bis auf den Montag von 4ten neuen Jenner ward die Kälte bereits am grösten."[300]

This quotation by Mathias Sturzenegger conforms to the observed weather anomaly reported in Christian Pfister's "Wetternachhersage", where November and December were indexed as -3, as well as March 1789. The very low temperatures can be explained by an extreme meridional circulation, which led polar and Arctic air towards the south.[301]

A high number of keyword tags within the precipitation cluster (28) can be observed in the *Appenzeller Kalender* of 1832. A severe summer flood (due to heavy rain and thunderstorms) and hail event in a large area of the Swiss Confederation (in AG, BE, BL, GL, SH, Central and Eastern 'Switzerland') led to that large number of tags. Here, no weather anomaly coincides with the high amount of tags.

In 1847, the temperature and precipitation clusters peak at 25 and 20 keyword tags, respectively. As already discussed in Chapter 3.2.1.1. (*Amount of Climate- and Weather-Related Information*), this is because of the chronicle on hot and dry summers.

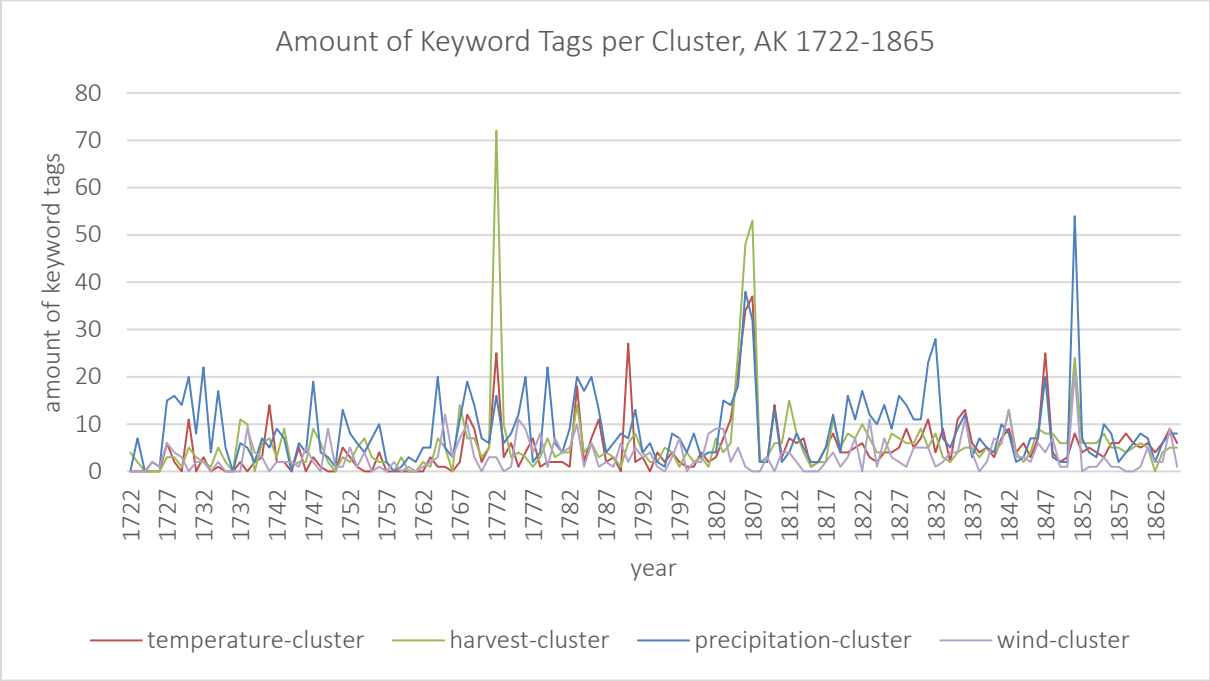

Fig. 16: Absolute amount of keyword tags per cluster in the Appenzeller Kalender *of 1722–1865.*

[300] AK 1790: [37].
[301] Cf. Pfister 1999: 92, 297.

Overall, it can be seen that the precipitation-related keywords are the most tagged (1,251 tags). This is explainable by the high number of thunderstorm (282), flood (232), hail (158) and snow tags (131).

To conclude, the content of the entries is mainly descriptive, reporting on climate- and weather-related damage etc. The most frequently mentioned keywords are either sensational or strongly linked to agriculture, which possibly reflects the interest of the readership in the case of the *Appenzeller Kalender*. The keyword cluster analysis suggests that the precipitation cluster seems to be the most important. In comparison to the other quantitative approaches (number of entries, LOC tags etc.), they mainly show the same peak years, reflecting special years (in the case of natural events, or anomalies).

3.2.1.2. Qualitative Analysis of Retrospective Content and Knowledge

After the quantitative examination of the *Appenzeller Kalender*, the focus now rests on the content. In this chapter, the perception of the different events during the time span of almost 150 years will be discussed. Firstly, the different explanatory models (which have already been discussed in Chapter 3.1.) are compared to the perception within the *Appenzeller Kalender*. Secondly, some typical events and motifs will be chosen from the calendar to include a closer discussion of their interpretation.

The following discussion on the perception of nature is not exhaustive. The calendar will be analysed partially. The categorisation system allowed me to indicate a religious or natural scientific link within each case of a look-back entry. The *religious* category was applied whenever the word *God* appeared within the text, or another supernatural explanation was found as a trigger of the event. Entries were denoted as *natural scientific* when they clearly argued against superstition or a supernatural explanation. While 143 entries were categorised as *religious*, only in 31 entries were natural scientific explanations found. It must be borne in mind that it is easier to find an indication on a religious or superstitious interpretation of a natural event than to prove the absence of it. Therefore, these numbers should be interpreted carefully.

Religious and Supernatural Explanations

The development of natural sciences during the 18th century (see Chapter 3.1.) as expected led to a clear accumulation of religious interpretations at the beginning of the investigated period. The religious or supernatural interpretation of events decreased in the 1780s and only occasionally appeared in the 19th century.[302] Within this religious and supernatural explanation, different motifs appear. The different ideas will be discussed below.

[302] Nevertheless, God was never fully abandoned within the observed time span. God as creator can be detected in the middle of the 19th century, although a natural scientific approach had been chosen: AK 1856:

Divine Punishment

One of the main motifs that can be found within the religious interpretation of events is the divine punishment. God appears as an inflictive figure, punishing humanity for their sins. The punishment can be either on an individual or a collective level. In the *Appenzeller Kalender* several reports of individual punishment can be found, where the protagonist was punished by lightning, flooding or a plague for his profane or godless life.[303] Here, it seems obvious that the focus lies on the moral aspects of these stories. The protagonists were blamed themselves and therefore served as an example of warning to others to follow a God-fearing life. Many more examples can be found of collective punishment. Very often extreme natural events – which affected a larger area – were perceived as divine punishment, for example in the case of earthquakes, floods, hail, unpleasant weather and volcanic eruptions.[304] The following footnote by Ulrich Sturzenegger after the report of a volcanic eruption shows the clear divine allocation: "Man sihet hieran ein recht erschröckliches Bild des Göttlichen Zorns und des Höllischen Feuer-Offens […]."[305] Although the figure of the punitive God is negatively connoted, an ambivalence can also be detected: "daß dieselbe seyen ein Zeichen deß Göttlichen Zorns/ wegen Sünden der Menschen/ den Frommen eine Vätterliche-Züchtigung und Heylsamme Seelen-Artzney/ den Gottlosen aber ein Heilige und gerechte Straff."[306] In a few cases reference to the Bible legitimised the divine punishment.[307] For God-fearing people the punishment is even salutary. The influence, which the contemporaries attributed to God, is also made visible in the numerous examples of calming methods that were undertaken, such as processions, prayers or begging for the grace of God.[308]

Within this picture of the divine punishment, comparison to the Deluge or the Judgement Day often occurred. Flooding events were often described as "Sünd-Flut" to illustrate the huge impact of the damaging water.[309] Although there is a clear biblical connotation for this comparison, the extent to which the events were perceived in this way, or whether it merely displayed a visual analogy (especially in the mentioned reports in the 19th century), is not entirely clear. The other element – the fear of

[36–37]; AK 1862: [53–54]. This supports the idea of the parallel occurring explanatory pattern introduced in Chapter 3.1.

303 AK 1722: [33–34]; AK 1729: [17, 19]; AK 1729: [21]; AK 1729: [21, 23]; AK 1729: [25, 27]; AK 1729: [27]; AK 1729: [28]; AK 1741: [36]; AK 1767: [45].

304 Cf. AK 1729: [38–39]; AK 1737: [32]; AK 1737: [33–34]; AK 1746: [29]; AK 1748: [33]; AK 1751: [35–36]; AK 1752: [34]; AK 1753: [34, 37]; AK 1755: [34]; AK 1764: [17, 27, 36–37]; AK 1765: [52–54]; AK 1768: [37–38]; AK 1770: [39]; AK 1772: [45]; AK 1790: [38]; AK 1804: [38–39]; AK 1811: [38]; AK 1824: [38]. In one instance of this, Johannes Tobler clearly classifies hail as an instrument of divine punishment: "Ein Wunder und schröckenlich dinge ist der Hagel; ja gar ein Instrument der Raache Gottes, wormit er die gottlose Welt zu züchtigen pflegt." AK 1733: [21].

305 AK 1753: [34].

306 AK 1746: [29].

307 Cf. AK 1746: [29]; AK 1752: [34]; AK 1753: [33–34]; AK 1765: [52–53].

308 Cf. AK 1729: [38–39]; AK 1731: [38]; AK 1740: [38]; AK 1746: [25, 27]; AK 1756: [35]; AK 1763: [39]; AK 1771: [76]; AK 1778: [39]; AK 1782: [39]; AK 1842: [36].

309 Cf. AK 1725: [39]; AK 1737: [33]; AK 1742: [33]; AK 1747: [33–34]; AK 1751: [35–36]; AK 1764: [9]; AK 1803: [57]; AK 1804: [38–39]; AK 1851: [47]

Judgement Day – can also be detected in nine volumes, indicating the religious perception of the contemporaries.[310]

Plagues are another variation of the divine punishment. In the *Appenzeller Kalender*, only twice is there an association of pests with the biblical plagues. The first case can be found in volume 1755, when reams of field mice appeared in England and Germany, which led to crop loss, "[…] daß man sie billig unter die von Gott zugeschickten Land-Plagen zehlen kan […]".[311] The other example from 1783 is the locust plague, which led to a famine in Ukraine and Moldavia.[312] It is not very surprising that only a few pest incidents are associated with the plagues, as the biblical explanation was already fading away at this time.[313] In the years 1798 and 1811, the plagues of insects were denoted as being of natural origin and linked to hot weather.[314]

The Gracious God

While several examples of the divine punishment were found within the *Appenzeller Kalender*, the motif of the gracious God and his divine mercy or providence is also widely represented in the calendar.[315] Moreover, these two motifs are often interchanged in the same report.[316] God showed his anger, but at the same time prevented humankind from further damage: "[…] das Wasser nicht geringen Schaden gethan, jedoch hat uns der liebe Gott unser Vatterland vor Hagel gnädiglich erhalten und einen guten Graß und Heu Sommer nebst Obs[sic] und Wein zimlich wohl gerathen lassen […]".[317] This motif is found very often within the calendar. Phrases such as "Gott sey Dank!" and "Gott Lob" were also interpreted as a positive and active influence of the creator.[318]

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310 Cf. AK 1727: [20]; AK 1732: [38]; AK 1743: [37], AK 1746: [27–28]; AK 1753: [34]; AK 1756: [35]; AK 1763: [39]; AK 1783: [72]; AK 1845: [36].

311 AK 1755: [36]. See also Herrmann, Sprenger 2010: 98.

312 AK 1783: [54].

313 Cf. Jakubowski-Tiessen 2003: 106–107; Rohr 2007: 453–454. More details concerning the biblical association of the different plagues can be found in Rohr 2007: 457–462.

314 Cf. AK 1798: [39]; AK 1811: [38].

315 Cf. AK 1726: [37]; AK 1727: [16]; AK 1729: [39]; AK 1737: [32]; AK 1738: [38]; AK 1741: [35]; AK 1742: [34, 39]; AK 1743: [37–39]; AK 1747: [33]; AK 1748: [33]; AK 1752: [33]; AK 1753: [33–34, 37]; AK 1754: [36]; AK 1755: [34]; AK 1758: [35]; AK 1760: [40]; AK 1762: [39–40]; AK 1764: [13, 15]; AK 1764: [36–37]; AK 1765: [5, 7]; AK 1767: [53]; AK 1768: [36]; AK 1768: [55]; AK 1770: [51]; AK 1771: [39]; AK 1772: [15, 23]; AK 1774: [38–39]; AK 1775: [37]; AK 1776: [37–38]; AK 1778: [42]; AK 1779: [52]; AK 1808: [61–62]; AK 1829: [41]; AK 1836: [40–41]; AK 1842: [36]; AK 1847: [54]; AK 1862: [56–57].
The whole discourse on theodicy – which appeared again in the context of the Enlightenment, and was intensified after the earthquake in Lisbon in 1755 by the poem of Voltaire – has been fully excluded in this thesis due to the limited space. For more information on the discourse in the context of the earthquake of Lisbon: cf. Gisler 2008: 230–243; and more generally on theodicy: Link 2016.

316 Cf. AK 1737: [32]; AK 1742: [39]; AK 1753: [33–34]; AK 1764: [7, 9]; AK 1764: [36–37]; AK 1765: [52–53].

317 AK 1753: [33–34].

318 AK 1767: [53]; AK 1842: [36].

Omen

In some cases, natural events, such as solar or lunar eclipses and comets, have symbolic connotations.[319] This pattern is also found in the *Appenzeller Kalender*: not only extraterrestrial phenomena[320] but also floods,[321] the death of kings or other important persons[322] and atmospheric phenomena were read as signs of war, earthquakes[323] etc. The examples of bad omens were mainly detected at the beginning of the investigated period. The exception of 1850 is because of a citation of an old publication, which therefore does not represent the actual perception of a comet as a bad omen. The development of the perception of comets will be discussed in detail below.

Natural Scientific Approaches

After the discussion of the religious and supernatural interpretation of events, the natural scientific approaches will be discussed in the following. As sketched out in Chapter 3.1., very often the two explanatory patterns overlap. After some general remarks on their understanding of nature, as well as some textual and linguistic characteristics, the change in interpretation of the events will be shown with the help of different phenomena such as comets and thunderstorms, as well as the general idea of weather and climate. As the interpretation is usually based on the current understanding of nature and its processes, the *knowledge* category is also included within this chapter.

An important role of the calendars can be found in its educational mission.[324] In six volumes (1731–1733, 1759, 1775, 1781), there is a detailed discussion of the earth, the universe and natural processes. These years can give an exemplary insight into how nature was perceived at a specific time. Johannes Tobler described the element 'air', the origin of water and precipitation in volumes 1731–1733. The view of the world as communicated by Johannes Tobler will be summarised in the following section. During these three years, a clear link to the Almighty God is constantly visible, even if there are text parts that are mainly of a descriptive nature. God placed the sun in the sky to allow humans, animals and plants to grow.[325] The air is described as a transparent, liquid body that surrounds the earth and underlies the forces of gravity. Two different layers are distinguished: the upper layer is clean air, called *Himmelslufft* or *Aeter*; the lower one is what he calls 'atmosphere' or *Wetter-Lufft* (where the weather takes place). In the upper part, clouds are developed and thunderstorms are produced; within the

[319] Cf. Rohr 2007: 55–62; Rohr 2013: 361–362, 364–372.
[320] Cf. AK 1770: [37]; AK 1850: [21].
[321] Cf. AK 1742: [34].
[322] Cf. AK 1742: [39].
[323] Cf. AK 1744: [40].
[324] Patricia Sorel argues that the calendars had a pioneering role in the communication and popularisation of scientific and technological progress in the first half of the 19th century. However, initially the calendars propagating educational content constituted the minority; cf. Sorel 2006: 202–203.
[325] Cf. AK 1733: [5].

lower layer there are vapours.[326] Vapour emerges from the earth to moisten the air, resulting in rain,[327] thunderstorms or other weather phenomena. This concept of rising vapour has its origin in the theory of Aristoteles, who thought of them as being responsible for different weather such as thunderstorms, precipitation and winds, as well as earthquakes and halos. Depending on their constitution and the degree of humidity, the results could differ.[328] According to the explanations on vapour in the *Appenzeller Kalender*, regions lacking vapours or having only few of them are drier. Snow has the same origin as rain. Nevertheless, the complex structure of snow is not entirely clear yet.[329] The clear link to God in all of the three subjects is remarkable: "Das muß ein grosser Herr seyn, der sie gemacht hat! Syr. 43. Denn sie können ja unmüglich von sich selber seyn[…]."[330]

A next insight into the perception of the world and its processes is given by Ulrich Sturzenegger. In the volume of 1759, the universe is the subject of his descriptions. The three systems (Ptolemaic, Tychonic and the Copernican) were presented. Ulrich Sturzenegger himself argued for the Copernican system, which was favoured by the scholars at that time.[331] In 1721, Johann Jakob Scheuchzer was still forbidden to promote the Copernican system due to censorship.[332] Furthermore, according to Ulrich Sturzenegger and his sources, there are 16 known planets, and the Earth is a tiny point within the whole universe.[333] Although here, a more explorative atmosphere can be detected, relativising the role of the Earth, there is still a quote from the Bible that the Earth cannot have been created on its own, but only God could have done that.[334] The biblical reference was still very important, and efforts were undertaken to link the new knowledge to the Bible, thereby legitimating it. In the case of heliocentrism, several problems arose, as some biblical text passages speak against it. However, in the calendar a justification is offered, so that it is congruent with the new findings.[335]

Sixteen years later, another volume was dedicated to the subject of Earth. The introduction is notable, as Ulrich Sturzenegger argued that the readership does not want to read superstitious content,

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[326] Cf. AK 1732: [18, 20, 26–27].

[327] Johannes Tobler distinguishes between natural and unnatural rain. Unnatural rain can be blood, iron or stone rain, which had already been relativised by himself, saying that these unnatural rains are mainly of the imagination; cf. AK 1733: [7, 9].

[328] Cf. Oeser 2003: 14–15. Erhard Oeser provides a very detailed overview of the different theories over time, accompanied by a lot of illustrations and source material.

[329] Cf. AK 1733: [13, 15].

[330] AK 1732: [6]. See also AK 1731: [7].

[331] Cf. AK 1757: [13, 15, 17, 19].

[332] Cf. Greyerz 2009: [55].

[333] Cf. AK 1759: [7, 9].

[334] AK 1759: [5, 7]: "Die Welt ist ein pur Materialisches leidenhafftes, das ist kein selbst würckendes Wesen, daher könnte sie sich nicht selbst hervor bringen, sondern muß ihre Würcklichkeit von einem andern haben. […] Gott ists, der die Welt durch seine Macht ohne jemands Hülfe aus nichts hervor gebracht. Her 11. 3. Röm 4, 17."

[335] AK 1759: [21, 23]: "Wann ihr dieses voraus setzet, so werdet ihr begreiffen, daß man aus der Bibel den von uns verworffenen Lehrsatz nicht bestätigen kan […]. Derowegen könnet ihr aus dem stille stehen der Sonne, welches in der Bibel beschrieben wird, nicht schliessen, daß sie sich würcklich um die Erde bewege […]."

but explanations about the planets and the Earth.[336] The report on Earth covers different subjects, such as the shape of the Earth (flattening at the poles), the distribution of land and water (the quota of land mass is slightly underestimated, reported as ¼), the atmosphere, minerals and rocks, fauna and flora, as well as the current political and religious situation in the different continents.[337] Ulrich Sturzenegger was of the opinion that vapours (*Dünste*) are responsible for the creation of winds, but they are no longer linked to the creation of precipitation or lightning.[338]

In 1781, another extensive report on Earth was provided by Ulrich Sturzenegger. The report is not only a description but a list of 18 questions and answers. According to the questions, it seems that although a lot of it had already been explained in the volume of 1775, it is repeated. This may be an indication that the readership had not yet adopted the perception of nature, as propagated by Ulrich Sturzenegger. The questionnaire contains a characterisation of Earth.[339] Despite these natural scientific approaches, a divine explanation can be found within the question of why the water is salty:

> "Diese Salzigkeit des Meerwassers, welche es vom Anfang der Welt her hat, ist eine weise Verfügung des Schöpfers; denn es wird dadurch vor der Fäulniß bewahret, es kann grössere Schiffe tragen, und gefrieret nicht so leicht, als das süsse Wasser […]. Unser Leben ist daß[sic] Schiff, darauf wir selbst die Reisende: das Grab ist der allgemeine Haven; der Himmel aber das begehrte Land […]. Herr wilst du, so laß das Schiff untergehen, wir werden nicht ertrinken, sondern vielmehr hierdurch das begehrte Vaterland erreichen."[340]

The salty oceans are a wise choice made by the Almighty God to avoid the rotting of the water. This quote shows exemplarily that whenever something could not be explained, the Almighty God was considered to be the originator.

Worth mentioning are the different sorts of text. Different ways of teaching, explaining and arguing can be found throughout the period 1722–1865. Along with the questionnaire form (as mentioned above), more sorts of texts can be detected: first, in most of the cases, it is an explanatory report –

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[336] AK 1775: [5]: "[…] der geneigte Leser lieber etwas nutzliches, gründliches und angenehmers, als aber abergläubige, ungebründte[sic] und langweilige Sachen lesen. […] Dieser vermuthliche Beyfall des geneigten Leser ist auch ein starker Beweggrund für den Appenzeller Calendermacher allen Fleiß anzuwenden, damit diesen Beyfall beybeahlten werde, und ihn je länger je besser verdienen möge; so habe mich deßwegen entschlossen für dißmal (unseren wohnplatz die Erde) in Betrachtung zu ziehen […]."

[337] Cf. AK 1775: [7, 9, 11, 13, 15, 19, 21, 27].

[338] Cf. AK 1775: [11].

[339] The following questions are answered within the calendar: Why is the Earth round? How big is the Earth? Can one fall through the Earth? Are there people living 'below' us? Can somebody go around the whole planet? Of how many parts does the Earth consist? Are there unknown countries? Which part is larger, the landmass or the sea? Are there also mountains and valleys in the sea? Are there animals in the sea? How deep is the sea? Are the sea animals as numerous as those living on land? Of what does the seawater consist?

[340] AK 1781: [27].

where it is denoted as a natural process and explained in this way.[341] Secondly, the dialogue can be found in 1776 where a scholar answered the questions of a farmer. In the so-called *Schulgespräch*, a hierarchical difference can be found between the two speakers. Whereas this type of text is mainly used to teach about the typical subjects of the Enlightenment (hygienic-medical, economic and child education), in this case it was used to pass on knowledge about comets, meteorites and will-o'-the-wisps.[342] The farmer in this example clearly represented the rural readership, still believing in the old superstitious interpretation of the phenomena. A third type can be detected in 1814 and 1852 in the category *Lustige Historien und scherzhafte Einfälle* (funny stories and jokes).[343] In both cases a natural phenomenon occurred (a comet in 1814 and a solar eclipse in 1852) and the joke was on account of women, which still gave the wrong idea about these two phenomena.[344] Despite the amusement related to this superstitious and ancient perception of events, it might also indicate that these views still existed within the population.

The linguistic personification of natural events is also striking. This can mainly be observed in the second quarter of the 19th century, when Johann Ulrich and Johannes Sturzenegger edited the *Appenzeller Kalender*. The slow change in explanatory patterns seems to result in a new way of reporting: it is no longer God, but nature, that is responsible for the events. This is expressed with different actions, which are ascribed to the elements. Very often the motif of the punishing nature is used. In most cases, the angry element is spoken about,[345] while in other examples the element is mentioned by its name (storm, Rhine, Föhn, etc.). For example, in 1837: "da naht urplötzlich und mit Sturmeseile die Windesbraut und schleudert mit Macht die Mutter in das Zimmer zurück."[346] This development is in line with the hypothesis of François Walter, who described the new movement of nature protection within the 19th century not predominantly as protection *of* nature, but as protection *against* nature. The accumulation of natural catastrophes led to the perception of nature as danger.[347]

Comet

As previously shown above, comets used to be interpreted as bad omens. The development of the interpretation of a comet is particularly suitable for showing the progress over time. Although it was

[341] Some examples of this sort of text can be found in the following volumes: Cf. AK 1778: [40–41], AK 1782: [39]; AK 1785: [41–42]; AK 1797: [39]; AK 1803: [64]; AK 1841: [37–38]; AK 1845: [36], AK 1847: [35]; AK 1848: [52].

[342] Cf. Wernicke 2011a: 211–213.

[343] More information about the text sort "Witz" (jokes) can be found in Wernicke 2011a: 368–374.

[344] Cf. AK 1814: [65]; AK 1852: [67].

[345] Cf. AK 1831: [40–41]; AK 1835: [39–40]; AK 1843: [37]; AK 1846: [36]; AK 1851: [52]; AK 1864: [44–45].

[346] AK 1837: [37]; for more examples, see AK 1836: [41]; AK 1842: [36]; AK 1852: [53–54]; AK 1856: [36–38, 45]; AK 1862: [49–52].

[347] Cf. Walter 1996: 49–51.

already known that comets have a certain orbit, in 1742, a comet was still perceived as a sign of God.[348] In 1743, Gabriel Walser wrote that "[…] die Cometen sind nicht allemahl Vorbotten des Unglücks, vielmehr haben wir sie als Zeichen der unendlichen Macht und Weißheit des Grossen Schöpffers anzusehen […]"[349] – which means that they do not necessarily represent a bad omen, but are a sign of the divine power. Three years later, in the calendar of 1746, it was argued that comets are not a bad omen, as no proof of this argumentation can be found within the Bible. In fact, a biblical reference is even given that says you shall not be afraid of extraterrestrial phenomena (*Himmelszeichen*),[350] while in 1770 it was again emphasised that comets are not a bad omen, as most comets are only seen by a few people.[351] However, the extract from AK 1770 (see Figure 17) shows that people still feared bad consequences after seeing a comet. Finally, they were denoted as natural phenomena in 1785:

> "In den vorigen Zeiten der Alten, wurden alle natürlichen Erscheinungen an unserm Horizont oder in irgend einer Gegend der obern Luft vor Himmelszeichen angesehen, und darauf geschahen wol hunderterley Prophezeyungen, die erfolgen sollten, ohngeacht es doch nicht geschah. Allein heut zu Tage denkt man von dergleichen Begebenheit ganz anderst, indem man aus Erfahrung fand, daß solches ganz natürlich geschiehet, und weiters keine Bedeutung hat; man nennet es Naturbegebenheiten oder Lufterscheinungen […]."[352]

However, this knowledge did not seem to be taken in by the uneducated classes, as it was mentioned repeatedly. It was also emphasised that only gullible, superstitious people or old women would still believe in comets as omens.[353] While Kaspar von Greyerz argues that the religious and supernatural perception of comets prevailed until the 18th century, it seems to have lasted longer among the readership of the *Appenzeller Kalender* since the calendar still highlighted the natural process and the non-heraldic character of comets up to the middle of the 19th century.[354]

[348] Cf. AK 1743: [36]; AK 1746: [13, 15].
[349] AK 1743: [36].
[350] Cf. AK 1746: [17, 19].
[351] Cf. AK 1770: [39].
[352] AK 1785: [41].
[353] Cf. AK 1803: [37–38]; AK 1812: [41]; AK 1837: [38]; 1844: [35].
[354] Cf. Greyerz 2009: 41–42.

Fig. 17: AK 1770: [38], "Vorstellung des 1769. Grossen Commetsternen.", caption: "Von den Drey mahl einen Gott, haben wir viel Zeichen und Gebott. Aus Fix Planet, und Commetsternen, Auch durch Erdbedem kann man ihn kennen lehrnen. Viel tausend Menschen wurd es bekandt, daher verwundert sich das ganze Land. Vielerley fragen gibt's unter den Leuthen, was dieses alles doch möchte bedeuten. Krieg Hunger oder auch Pest zugleich, macht viel bedencken bey arm und Reich."

Thunderstorm

A thunderstorm, especially with lightning, is another phenomenon that can be studied over decades, as it was an often reported subject. In 1729, Johannes Tobler argued that many scholars studied thunderstorms, but they were still not able to explain this strange phenomenon. He clearly states that a natural approach is not sufficient, but the Almighty God uses thunderstorms as an instrument for the godless world.[355] Furthermore, the miraculous survival after a lightning strike was perceived as divine power; scholars still had no explanation for it.[356] Almost 40 years later, a clear change can be observed within the argumentation. Here, a natural scientific approach can be detected, even if some of the explanations do sound somewhat implausible in retrospect. In 1780, one can find four cases in which lightning strikes cause death: firstly, due to burning within the fire; secondly, when fire gets into the blood vessels through lightning; thirdly, through suffocation; and finally, through the increase in volume of the blood vessels.[357] With the increasing examination of thunderstorms, the lightning conductor came into use in the mid-18th century.[358] Although the lightning conductor was unquestioned among scholars, the population was suspicious, as thunderstorms were still connoted religiously.[359] An example of this mistrust can be found in 1783, where it is told that the farmers of Alsace blamed the lightning conductor for the drought

Fig. 18: A sketch of a lightning conductor on a tower. Source: AK 1787: 39.

[355] "Die Materi des Donners, Blitzes und Wetterschlags ist sehr subtil; die Ursach aber alles dessen zu erforschen ist noch subtiler, und bißweilen schier über die Natur. Es haben zwar viele gelehrte Männer, in dieser Materie ihren Fleiß angewandt, den Grund derselben außzufinden; gleich wie sie aber nicht allerdings überein kommen; so folget daraus, daß ihrer viele noch nicht recht hinter die Wahrheit kommen sind. Und gewiß wann man die Historien durchgehet, so ist leicht zu sehen, daß offtmahls die Natur (aus welcher man solche Sachen erkläret,) nicht zulänglich, zu Beweisung solch wunderlicher Begebenheiten, wie in den Historien ausgezeichnet. Glaubwürdig ist es, daß der Allmächtige solche Sachen geordnet, zu einem Rüstzeug seiner Kirche wieder die gottlose Welt: Das folglich dieselbe offtmahls weit über unsere Vernunfft gehe, und viele ungewöhnliche fremde Händel mache, deren Würckungs-Ursachen unser Verstand entweders[sic] gar nicht, oder doch nicht völlig begreiffen kann […]." AK 1729: [5].

[356] Cf. AK 1742: [39].

[357] Cf. AK 1780: [64].

[358] Cf. Twyrdy 2010: 20–23.

[359] Cf. Schmidt 1999: 282.

that summer.[360] In 1787, a report of a successful lightning conductor in Zurich can be found in the calendar, followed by a detailed explanation of how it works. Additionally, a picture (see Figure 18) and further literature, which explains in detail how to install one on its own, are provided.[361] According to the diary notes of Mathias Sturzenegger, *Landammann* Jacob Zellweger-Wetter was the first to have a lightning conductor in Vordersitter in 1795.[362] Despite the propagation of the effectiveness of lightning conductors, one might conclude because of a short story within the calendar that in 1818, people still thought that the conductor influenced thunderstorms.[363] Andreas Schmidt defined different phases of the examination of thunderstorms and lightning conductors. The first phase, in which a lot of literature appeared on the function of lightning and the prevention of further damage through conductors, lasted until 1820.[364] In the volumes of 1789 and 1797, two additional supposed findings on lightning were added by the editor of the *Appenzeller Kalender*: firstly, sweat attracts lightning, and secondly, trees should not be considered as protection in the case of lightning.[365] Another insight into the current perception of thunderstorms is given by a report on how the Chinese interpret thunderstorms: "Wie ganz verschieden in der Erkenntniß der Naturmerkwürdigkeiten man heut zu Tage noch ist, und ganze Nationen nach sehr verkehrte Begriffe davon haben, beweißt diese Vorstellung die[sic] Donnergestalt der Chineser[sic] […]."[366] Mathias Sturzenegger noticed that some countries still assigned a natural phenomenon such as a thunderstorm to a supernatural figure and at the same time distanced himself from this false interpretation. A detailed description of the origin of thunderstorms, their process and prevention measures were given in the calendar of 1838. Compared to the first explanatory attempt, here a detailed observation of the phenomenon was given. The author described the speed and the colour of the clouds, as well as the sound of the thunder. Despite the partial incorrectness of the information, there is a clear change in the explanatory pattern of a natural phenomenon.[367]

[360] Cf. AK 1783: [42].
[361] Cf. AK 1787: [38–39].
[362] Cf. Brunold-Bigler 1983: 78.
[363] Cf. AK 1818: [64]. This is also observed by Schmidt 1999: 283. He argues that in 1826 scholars still ascribed the lightning conductor's influence to the occurring thunderstorm. The actual distribution of lightning conductors was socially and spatially clearly differentiated and therefore an overall conclusion on the perception of lightning conductors is difficult; cf. Richter 2019: 184–185.
[364] Cf. Schmidt 1999: 283.
[365] Cf. AK 1789: [39]; AK 1797: [56].
[366] AK 1805: [55].
[367] Cf. AK 1838: [38–39].

Weather and Climate

One of the most interesting topics regarding the research questions of this thesis is how the contemporaries understood the concepts of weather and climate. This might give an insight into how to classify their reports on these two subjects. However, not many text passages directly relate to these subjects. An early idea of weather is given in the volume of 1723 where Johannes Tobler argues that although the "Kalendermacher" forecast the weather, it is God who is responsible for the actual weather, so therefore no one can be blamed for wrong prognostications: "Hieraus ist klar zu sehen/ daß es nicht in des Menschen Vermögen ist/ gewiß vorher zu sagen/ wie es auf dises oder jenes Land wittert/ sonder[sic] es ist mehr an dem gelegen/ nachdem Gott der Herr ein Land züchtigen und straffen will."[368] Notably, Johannes Tobler was aware of the existence of microclimates, resulting in different weather observations within one region. The different amounts of precipitation (as part of the climate) are linked to the availability of vapour within the atmosphere (see Chapter 3.2.1.2., *Natural Scientific Approaches*).[369] A more detailed description of the idea of climate[370] is given by Mathias Sturzenegger:

> "Es ist eine alte Erfahrung, daß die Menschen, sobald die Witterung von der gewöhnlichen abgeht, auf allerley Prophezeyeung gerathen, auch manche wohl gar in ehrlicher Einfalt glauben die Erdkugel seye verrückt worden.
> Was unsere Erdkugel betrift[sic], so hat sie noch eben den Abstand und die nemliche Laufbahn um die Sonne, die sie seit allen Jahrhunderten hatte, und unfehlbar, so lange sie und die Sonne besteht, noch viele Jahrtausende behalten wird. Unsere Atmosphäre und jeder Erdstrich verbleibt dennoch immer das nemliche, weder kälter noch wärmer, als selbige von jeher abwechselend[sic], in manchen Jahren mehr oder weniger gewesen sind."[371]

He argued for a generally constant climate, despite the experience of some extreme years. He suggested that the origin of prolonged cold or hot periods is found within the processes inside the Earth. The vapour and sulphur content below the Earth's surface could change the composition of the atmosphere and therefore result in changed weather conditions.[372] A detailed report on weather processes

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368 AK 1723: [33].

369 Cf. AK 1723: [33]; AK 1733: [11].

370 Although interpreted as the idea of climate, the term is not used by Mathias Sturzenegger. The term *climate*, understood as the average weather, only came into use in the 19th century. A paradigm shift led to a new understanding of climatology as a theory of heat distribution and humidity across the globe, replacing the concept of astrometeorology in the second half of the 18th century; cf. Mauelshagen 2018: 581.

371 AK 1786: [37].

372 Ibid.: "Das aber verschiedene grössen der Hitze und Kälte in manchen Jahren sich ereignen, dieß könnte seinen entstehungsgrund auch in dem Eingeweide der Erde haben. Es gehen darin viele unterirdische Entzündungen bald mehr, bald weniger vor, welche die aufgelösten Schwefel- und Salztheile durch Erdbeben oder feuerspeyende Berge, oft durch ganze Brände von vielen Meilen im Umfange, in die Luft ausstossen, und sie voll laden oder schwängern. Dieses kann Wärme und Hitze verursachen, so lange sie noch zerstreut in der Atmosphäre schweben: sie wirken hingegen desto grössere Kälte, wenn sie durch Gewitter, Regen und Schnee wieder zur Erde nieder geschlagen werden." This explanation is still based on the concept of the

was delivered in 1840 by Johann Ulrich and Johannes Sturzenegger. They distanced themselves from weather prognostications, which are not based on natural laws. According to them, the trustworthy indicators for weather are winds, the colour of the sky, the appearance of the sun, moon and stars, the shape and colour of clouds, air moisture, current weather, and the behaviour of plants and animals. Some rules deviated from convention, such as winds from the north usually bring cold and dry air, while southern winds bring warm and moist air. The barometer is considered the most trustworthy instrument regarding weather forecasts.[373] More rules can be found in the volume of 1863, where colours and shapes of the sky and clouds are connected to future weather.[374] The increasing observations and natural scientific approaches sometimes mix with old proverbs. The proverbs will be discussed in more detail below (see Chapter 3.2.1.3.).

The newly introduced header "Allgemeine Zeit und Welt-Betrachtungen" in 1768 fits in this new understanding of observing the world in the 18th century.[375] It included a short review of the four seasons and the harvest. A second part briefly summarised the current political conflicts. While in the first five years (1768–1773), there was only one continuous text, from 1774 onwards, a subheader, "von der Witterung", separated the weather-related text from the rest. The review of the weather usually contained a comment on the year starting in the autumn of the past year until the summer of the ongoing year, during which the calendar for the following year was produced. Usually no measurements were included, except for some extreme temperatures. Otherwise it was mainly a subjective perception of the weather (wet/dry, cold/warm) and the outcome of the harvest. An indication on weather and temperature is also given by some phenological data as well as the date when cattle were put out to pasture.

> "Von der Witterung.
> Der 1772. Herbst war ausserordentlich gut und bis ausgang des Weinmonats Sommerwarm[,] der Winter war auch warm, so daß es in der mitte des Jenners zimlich warme Sommertage hatte[,] der Frühling war unbeständig zuweilen sehr kalt, der Brachmonat war ausserodentlich naß und kalt so daß es in den Bergen Schneegestöber hatte, daher das Vieh erbärmlich Frost

world as described by Martin Lister (1639–1712) or Gottfried Wilhelm Leibniz (1646–1716), where they suggest that below the Earth's surface, there are inflammable materials (such as sulphur), which are responsible for earthquakes, volcanoes etc. Cf. Lyster 1684: 512–515; Leibniz 1749: 53.

373 Cf. AK 1840: [38–39].

374 Cf. AK 1863: [17].

375 An interesting excursus on the figure, which accompanied the newly created heading in 1768–1770, can be found in Tschui 2009: 83–84.

> und Hunger leiden müßte desnahen viele Schaafe und Ziegen umkommen, jedoch der wunderbaren Witterung ungeachtet sind in allen Ländern die Früchte meistens wohl gerathen und waren darbey aller Orten gesunde Zeiten."[376]

The review usually covers around a fifth to a quarter of the whole page (around 4–7 lines). A large increase in the amount of information can be found in the years 1809 and 1810, where the information covers almost a third of the page (11 lines). After a short decrease, a more elaborate report is again found in the years 1816, 1817 and 1819. From 1819 onwards around half of the page was dedicated to weather-related topics (2/3 even in 1827). Although there is plenty of information available concerning weather and climate within these seasonal reviews, the biggest challenge is making comparisons. There is no consistency in the reported data that would allow clear comparisons to be made over several years or even decades. The information is chosen randomly, which seemed particularly striking to the author at that time. Nevertheless, the reviews can give an idea of the perception of weather on a regional basis. This new rubric can be interpreted as an expression of the observational trend that started in the second half of the 18th century (see Chapter 3.1.).

3.2.1.3. Qualitative Analysis of Prognostications and Proverbs

After a detailed discussion of the retrospective information as well as the general understanding of natural phenomena, a short overview will be given of the prognostication and astrological content. As the prognostication and weather forecasts do not have any explanatory value in the sense of the actual weather, it can only be seen as the contemporary understanding of weather and climate.[377] Since a complete record of natural understanding is aimed for, the prognostication and proverbs will be discussed. As already stated before, the content of the category *forecast* includes the *Praktik* (prognostication on different topics such as harvest, pests and war), weather forecasts for the whole year, proverbs[378] and other astro(meteoro)logical (see footnote 221) content (such as the influence of stars on the birth of a child).

Prognostication

As already showed in Figure 5, there is first a drastic increase in the size of the prognostication when Johannes Tobler was editor of the *Appenzeller Kalender*. The longest prognostication covered 11

[376] AK 1774: [74]. The volume of 1774 was published in the autumn of 1773, covering a yearly review of the period from autumn 1772 until summer 1773.

[377] See also Glaser 2013: 32.

[378] Proverbs (*Bauernregeln*) are – often versified – sayings, partly based on astrology, but also on observational knowledge; cf. Glaser 2014 (Enzyklopädie der Neuzeit Online).

pages. After 1733 the number of pages used for the prognostication slowly decreased, ending up covering one-third of a page. Whereas in general, the *Praktik* (prognostication) slowly disappeared in the 18th century,[379] in the case of the *Appenzeller Kalender*, the prognostication persisted until the first half of the 19th century. Until 1841 the *Praktik* still contained a prognostication for the different seasons. This changed in 1842, when only the exact time of the beginning of each season was reported in the calendar. This change in content can possibly be explained by the change in editor when Johannes Sturzenegger took over after the death of his father Johannes Ulrich Sturzenegger. In 1849, the last detailed prognostication can be found – although this might have been a little joke by Johannes Sturzenegger, since the forecast included the obvious.[380] The calendrical part with the *muthmaßliche Witterung* (presumed weather forecast) remained untouched until the end of the investigated period.[381]

The prognostication mainly consists of five parts: first, a discussion of each season; second, the calculations on solar and lunar eclipses; third, the fertility of the harvest; fourth, health and diseases; and last, war and peace in the world. Not all the subheaders are provided in every year. Some remarks concerning special years in terms of the prognostication will be discussed. When Gabriel Walser took over the edition of the calendar, the prognostication was reduced to almost a third. In his first volume in 1737, seasonal pictures were added to the prognostication. This was an exception and only repeated in volumes 1764–1766.[382] In the volumes of the years 1771–1773, as well as in 1777, prognostications of other calendars were added. However, already in the year 1777 one can infer from the text that the credibility of the prognostications was rather low: "Ein Engelländer, der sich immer mit Prophezeyungen beschäftigte; und aber wie es allen andern auch ergangen, seine Prophezeyungen nicht erfolgten, gab letzten Jenner eine Prophezeyung heraus, welche nun einmahl Grund habe, und richtig erfolgen werde."[383] In 1787, the criticism of the prognostication is even more perceptible. An earthquake forecasted for 24th February 1786 did not happen. Mathias Sturzenegger called it "lauter grobe Unwahrheiten und Betrug" (untruth and fraud) to frighten "Abergläubische, und von Natur ängstliche, oder durch mangel an gesunder Vernunft und Beurtheilungskraft kurzsichtige Menschen".[384] Moreover, the

379 Cf. Wernicke 2011a: 28–30.
380 Cf. AK 1849: [2].
381 Whereas Stefan Giess argues (1998: 118) that although the *Kalendermacher* distanced themselves from astrology over time, the presumed weather forecast was still considered a necessity by their readership. In the case of the *Appenzeller Kalender* in the middle of the 19th century, it seems more plausible that it was a traditional element.
382 Cf. AK 1737: [29–32]; AK 1764: [28]; AK 1765: [28]; AK 1766: [28].
383 Cf. AK 1777: [72–73].
384 AK 1787: [59].

prognostication of the Deluge by the astrologer M. Stöfler in 1524 was criticised.[385] Despite these accusations of fraud, Mathias Sturzenegger still published his own prognostication forecasting weather for different seasons. It seems that the forecasting of long-term weather was still accepted, but not the prediction of natural catastrophes such as flooding or earthquakes.[386] Nevertheless, the weather prognostications were often criticised, as can be seen in 1790, where wrong weather forecasting was a subject in the calendar:

> "Bey der lezten Winterkälte kam ein Müller in dem Wirtenbergischen; auf den Gedanken; in seinem Schwaben Calender; nachzusehen; was für Witterung in demselben stande. Es war eben an dem Tage da es sehr kalt war, und in dem Calender stand: gelinde Witterung. 'Wart' - sagte er - das will ich dich büßen lassen, du Lügner! Sollst doch auch erfahren, wies so gelind Wetter ist. Drauf nagelt er den Calender an ein Brettlein zum Fenster hinaus."[387]

However, in the *Appenzeller Kalender* of 1837 there was a supplement that relativised the weather forecast, saying that it is only a conjecture. Here again, in the end, God Almighty was responsible for the occurring weather.[388] This supplement was added for four years, then it disappeared. Although the credibility of the prognostication lost importance over the years, it still seemed to be quite an important part of the calendar, as it required the skills of the "Kalendermacher". This is also supported by the comment in the volume of 1844, where Johannes Sturzenegger exposed R. Unteregger, who copied an error that had been placed on purpose within the calendar by Sturzenegger to find out about plagiarism.[389]

Proverbs

According to Norbert Wernicke, proverbs (*Bauernregeln*) can be distinguished into three different categories: firstly, weather proverbs (*Wetterregeln*); secondly, work-related proverbs (*Arbeitsregeln*); and thirdly, astronomic-astrological rules. In this part, only the weather proverbs are discussed. Weather proverbs prognosticate the expected weather regarding certain days, or through a correlation of two different times of the year (for instance: a green Christmas brings a snowy Easter). Often, they follow

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385 Cf. AK 1787: [59–61]. This prognostication of the Deluge of 1524 was widespread in the media. The absence of the predicted flood led to a huge parody of astrologers; cf. Rohr 2007: 542–543.

386 This is also argued by Patricia Sorel. The attempt to eradicate astrology and its assigned superstition from the calendars was only partly successful as the diverse examples of her study on different *Messager boiteux* show: Cf. Sorel 2006: 204–205.

387 AK 1790: [70].

388 "Die Voranzeige der Witterung wird keineswegs als untrügliche Wahrheit, sondern nur als Muthmaßung gegeben; gewiß aber ist, daß aber ist, da diejenige Witterung eintreffen wird, die der Schöpfer und Erhalter des Weltalls für uns am zuträglichsten hält." AK 1837: [2].

389 Cf. AK 1844: [66].

the structure of the correlation: "wie der Oktober, so der März".[390] In the case of the *Appenzeller Kalender*, the proverbs appear mainly in the calendrical part below the monthly picture. It is thought that most of them are copied by the editors.

Proverbs are included in the first two volumes (1722, 1723) and then disappeared (except for the years 1763 and 1764). They reappeared on a regular basis from the year 1769 onwards until 1858. In the volumes of 1780 and 1800 no proverbs can be found; in the years 1832 and 1833, a reduced number of proverbs is observed because of the decreased space due to tables. Whereas before, the placement of the proverbs did not follow a systematic rule, from 1769 onwards, they were placed below each monthly picture on the recto page in the calendrical part. Except for the proverbs of one or two months, they are weather-related. On each calendrical recto page, between one and four proverbs were printed, depending on the space. From 1787 onwards, a limit of two proverbs can be detected.

The following table shows the most frequent weather proverbs per month. The third column indicates the number of volumes in which the proverb was mentioned. On the whole, one can say that the proverbs were steady from around the 1780s. For January mainly a non-weather proverb was used, thereby accounting for the low number of appearances. The recto page of the calendrical page for December in most cases does not contain a proverb.

Table 1: Most frequent occurring weather proverbs in the Appenzeller Kalender *of 1722–1865. The proverbs might vary in appearance and grammar in the different years, but the message is the same. The third column indicates the number of volumes in which the proverbs appeared. The fourth column indicates a similar or related proverb in Malberg 2003 or Hauser 1975.*

Month	*Proverbs*	*Number*	*Literature*[391]
January	So es um diese Zeit, oder auch durch das ganze Winterquartal donnert, bedeutet es grosse Kälte.	18	Malberg: 80, 82–83
February	Wann der Hornung warm ist, soll man das Futter zu rathe halten, weil es einen kalten Frühling bedeutet.	83	Hauser: 289; (Malberg: 84, 86)
March	So viel Nebel im Merzen, so viel Wetter im Sommer, so viel Thau im Merzen, so viel Reiffen um Pfingsten und Nebel im Augstmonat.	75	Malberg: 87, 89; Hauser: 303
April	Dürrer April ist nicht der Bauren Will, sonder Aprillen Regen ist ihnen gelegen.	77	Hauser: 290
May	Wann es in diesem Monat kalt und viel Reifen giebt, so ist es der Frucht und den Reben schädlich.	75	Hauser: 290
June	Ein dürrer Brachmonat bringet ein schlechtes Jahr, so er allzu naß, leeret er Scheuren und Faß, hat er aber je zu weilen Regen, dann giebt er reichen Seegen.	72	Hauser: 288
July	Was Julius und Augustus an dem Weine nicht kochen, das kan der September auch nicht braten.	75	Hauser: 557

[390] Cf. Wernicke 2011a: 343.
[391] Cf. Malberg 2003; Hauser 1975.

August	Viel Sonnenschein im Augstmonat bringet guten Wein, worzu auch die hellen Nächte helfen.	78	Hauser: 555
September	So viel Reifen und Schnee vor Micheli, so viel sollen nach Waldburgi auch kommen.	75	Hauser: 260, 291
October	Wann das Laub nicht gern von den Bäumen fällt, so besorget man einen strengen Winter.	78	Hauser: 289, 291, 415; (Malberg: 109)
November	Donnerts in diesem Monat, so bedeutet es viel Regen und Wind, und wird der Saamen vom Brennen verderbt.	66[392]	
December	Grüne und warme Weynachten, bringet gern weisse und kalte Osteren.	24	Hauser: 274; (Malberg: 118–119)

The comparison to the collection of proverbs in Horst Malberg's "Bauernregeln – aus meteorologischer Sicht" and Albert Hauser's "Bauernregeln" shows that most of them are related. The related rules found in Hauser can be traced back to the *Churer Schreibkalender* in 1708.[393] It is not clear, however, whether they were copied from this source, but it shows that they were not self-created. Horst Malberg statistically analysed the rules with the historical meteorological observations of Berlin.[394] For the January rule, he argues that winter thunderstorms are rare. They occur when warm air is displaced by incoming polar air. As this polar air is decisive for the follow-up weather, the rule has its justifiability. No proof for the rule in March was found.[395] No comparison of the other rules is possible because of the loose connection (indicated with brackets).

While these proverbs were copied from other sources, there are also some proverbs that were only propagated by some editors.[396] Johannes Tobler published some rules regarding weather in the calendar of 1733. According to him, a pale sun in the morning, a pale moon and a lot of comets are indications of a lot of vapour in the air. He also argues that an untimely cock crow is an indication of bad weather.[397] Whereas at the beginning of the 18th century, at least the editor still believed in weather rules derived from the moon, this seemed to have changed at the beginning of the 19th century. In the calendar of 1806, weather rules derived from the appearance of the sun or the moon were mocked.[398]

[392] This proverb was also mentioned for the month of December. Out of the 66 times, four times is on account of December. In the *Churer Schreibkalender* it is found in the list for December; cf. Jecklin 1905.

[393] Cf. ibid.

[394] Several limitations are indicated in his analysis; therefore, the results have to be interpreted with caution. Cf. Malberg 2003: 78.

[395] Cf. ibid.: 82–83, 89.

[396] Nevertheless, it might be argued that these rules were copied from other publications as well. They just were not found in other volumes in the *Appenzeller Kalender*.

[397] AK 1733: [13, 15].

[398] AK 1806: [65]: "Sichere Vorbedeutung. Zween Sternseher zankten sich über die Zeichen des Regens am Himmel. Der eine sagte: wenn der Mond einen grossen Ring hat, so ist das ein Zeichen des Regens; der andere sprach: Nein, wenn die Sonne helle aufgeht, so regnet es. – Ein Zechbruder hörte das, sprach daher:

Nevertheless, in the volume of 1846 an advertisement is found for an *Immerwährender gemeinnütziger Witterungskalender*, which pleads for the detailed study of weather to derive fixed rules for the future:

> "Der wichtige Einfluß, den die Vorkenntniß der Witterung nicht nur für den Gärtner und Landwirth, sondern für alle Verhältnisse und Gewerbe des praktischen Lebens äußert, hat schon in den ältesten Zeiten die Menschen veranlaßt, über die Ursachen der meteorologischen Erscheinungen nachzuforschen und fortgesetzte Witterungsbeobachtungen anzustellen, um aus deren Zusammenstellung feste Regeln für die Zukunft abzuleiten."[399]

The mixing of traditional proverbs and increasing natural scientific study of weather phenomena can be found in the volume of 1863, where Johannes Sturzenegger and Johannes Schläpfer describe the different predictors of good and bad weather ("der Himmel as Wetterprophet"[400]), such as the colours of the sky and the shapes of the clouds.[401]

3.2.2. Synthesis

The numerous analyses before led to different peak years[402] and conclusions. The following chapter aims to bring the quantitative and qualitative approaches together and give an overview of the whole examined time span within the *Appenzeller Kalender*. The time span is split according to the editors.

In the first 15 volumes of the *Appenzeller Kalender*, climate and weather were mostly treated in the prognostication. The high percentage of climate- and weather-related pages is due to the extensive prognostication. The first two volumes also included weather proverbs.[403] The few entries that concerned natural events were reported from abroad. The focus of reports was mainly on a global level, with France, Germany and Italy being the most frequently mentioned countries. The exclusion of domestic topics was most likely due to the censorship and the political unrest in the region of Appenzell (*Landhandel,* see footnote 139). Through the concentration on the prognostication within these first volumes, Johannes Tobler also provided detailed insights into the current understanding of the world through his textual contributions. He discussed the origin of water, air and the different kinds of pre-

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Meine Herren! zerbrechen sie sich nicht die Köpfe, es ist kein sicheres Zeichen, als – wenn man kein Geld hat, denn da giebt es gewiß Wasser."

399 AK 1846: [74].

400 AK 1863: [17].

401 Cf. ibid.

402 Peak years denote years in which a peak in the number of pages, the percentage of pages, or the number of entries, LOC tags, keywords, clusters or similar can be observed.

403 Cf. AK 1722; AK 1723.

cipitation (see Chapter 3.2.1.2., *Natural Scientific Approaches*). Additionally, he delivered an explanation for climate, earthquakes, hail and volcanoes.[404] His view on the world was still dominated by the concept of Aristoteles: vapour escapes the Earth and is responsible for the formation of precipitation; the different gases within the Earth are responsible for volcanoes and earthquakes. His idea of the natural processes was mainly in line with the physicotheological view: the processes themselves follow the natural law, but the Almighty God is the creator of the world. Despite prognosticating weather, he admitted that ultimately God sends the weather. The motif of the divine punishment can often be found within his texts.[405] The year 1727 was a peak year regarding the number of entries. In that year, Johannes Tobler chronologically listed earthquakes from the past 18 centuries.[406]

As soon as Gabriel Walser took over the editing of the *Appenzeller Kalender* in 1737, a strong decrease in the prognostication could be observed. The number of pages used for prognostication amounted on average to 2.85. A slight increase in 'national' and regional retrospective content is registered. No peak years are reported in his editing period (1737–1749).

Ulrich Sturzenegger introduced several innovations during his 32 years of editing the *Appenzeller Kalender* (1750–1782). First of all, in 1764 the monthly pictures found their way into the calendar. Secondly, from 1767 the number of pages was drastically increased, allowing longer reports. While a larger amount of retrospective climate- and weather-related information can be observed, this is not reflected in the percentage of climate- and weather-related information in comparison to the total number of pages (see Figure 7). Thirdly, along with the increase in pages, there was also the introduction of the rubric "Allgemeine Zeit- und Weltbetrachtung" (1768) with its seasonal review, as well as the proverbs, which appeared in 1769 on a regular basis. The new seasonal review led to an increase in proxy data from the late 1760s and in the number of entries. In Figure 19, the pages concerning the prognostication are excluded, as they highly influence the results. This figure reflects a higher average number of climate- and weather-related pages in the time span of Ulrich Sturzenegger. Moreover, an increase in regional information can be observed during the period of Ulrich Sturzenegger. This might be explained by the strict censorship throughout the 18th century. An indication of this can be found in the promise by Mathias Sturzenegger to the local authorities not to print anything before censorship in 1781.[407] Consequently, the focus on less sensitive topics seems to be reasonable. Another reason could also be the personal interest of Ulrich Sturzenegger in weather data. As already seen in Chapter

[404] Cf. AK 1727: [4] (earthquakes); AK 1728: [5, 7] (volcanoes); AK 1733: [12] (climate); AK 1733: [22] (hail).

[405] One example can be found in his explanations on air: "Die grausammen[sic] Sturm-winde thun zwar offt grossen Schaden, und verderben sehr viele Menschen auf einmahl, die in vielen Jahren mit grosser Mühe sind erzogen worden; aber das macht alle unsere Sünden-schuld. Hätte Adam nicht gesündiget, so käme die Lufft nimmer in solche unordnung […] so gebrauchet Gott seine[sic] Element zur Raache wieder die Sünde […]." AK 1732: [6].

[406] Cf. AK 1727: [4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26–27].

[407] Cf. Brunold-Bigler 1983: 68.

2.2.2.1. Ulrich Sturzenegger had measuring devices. The passages where Ulrich Sturzenegger describes his view of the world are very informative. In the volume of 1759, he explained why the Bible does not contradict the scientific explanations of the Earth.[408] Another insight is given in the volume of 1775, where he described the world in a natural scientific approach, but still saw humans as the pride of creation.[409] The questionnaire, already discussed in *Natural Scientific Approaches* (see Chapter 3.2.1.2.), is an indicator of the ongoing process of imparting a 'new' view on the world.[410]

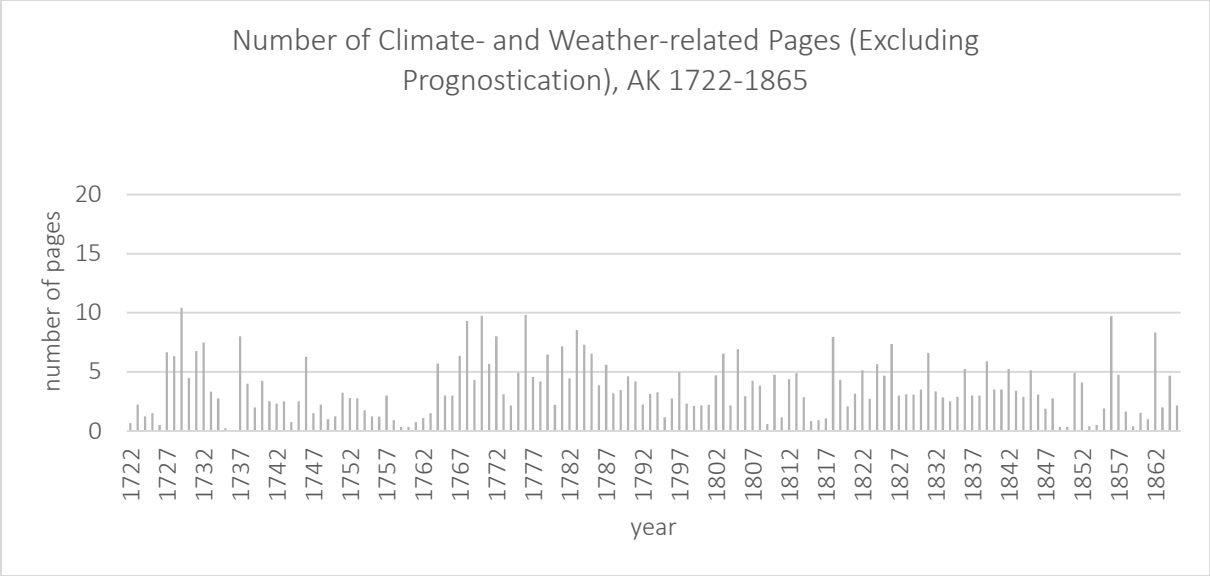

Fig. 19: Number of climate- and weather-related pages in the Appenzeller Kalender *of 1722–1865 excluding the number of pages concerning the prognostication. For the overall figure see Figure 5.*

In the 1770s a change in attitude towards astrology is visible. The credibility of astrological prognostication was decreasing, as shown in 1774 and 1777.[411] Nevertheless, the prognostication of weather was still feasible. The observed peak years during the time span of Ulrich Sturzenegger as editor are the following: 1764, 1767, 1768, 1770, 1772 and 1779. The volume of 1764 peaks in the number of LOC tags. This is a result of heavy rain and several flood events in different parts of the Old Swiss Confederacy in the summer of 1763. However, no weather anomaly is reported by Pfister.[412] The peak in the number of pages in 1767 is because of a detailed report of natural events from abroad, while the volume of the *Appenzeller Kalender* of 1768 broadly dealt with the cold anomaly of 1767. The high number of pages in 1770 is because of the discussion about a comet and weather-related notes of 1769, while also delivering some background information about comets. The year 1772 shows a high

[408] Cf. AK 1759: [19, 21, 23, 25].
[409] Cf. AK 1775: [7, 9, 11, 13, 15, 17].
[410] Cf. AK 1781: [5–27], only recto pages.
[411] Cf. AK 1774: [5]; AK 1777: [72, 73].
[412] Cf. Pfister 1999: 297.

number of climate- and weather-related entries due to the inflation and famine period. This will be discussed in more detail in the case study (see Chapter 3.3.). The extensive reporting in 1779 can be traced back to the flooding of summer 1778: "[…] die ausserordentlich grossen Wassergüsse im Heumonat in verschiedenen Ländern, sonderheitlich aber an theils Orten im Zürichgebiet, Toggenburg, Thurgäu und dem hindern Theil des Appenzellerlands, welche lange im Angedenken bleiben werden".[413]

The editing time span of Mathias Sturzenegger (1783–1808) also covers several peak years. The first three peak years are between 1783 and 1785. They all contain a large amount of retrospective information. The volume of 1783 mainly covers reports on the cold, as well as flooding events in the winter of 1781/1782.[414] February 1782 is reported to have been extremely cold (Pfister indices: -3) and above-averagely dry (Pfister indices: -2).[415] In 1784, reports about earthquakes, thunderstorms and the red sun dominated the retrospective information within the calendar. The red sun and a mysterious fog were observed in June 1783 throughout Europe. The editor added a comment below the report, where he condemned superstitious interpretation of this phenomenon. He argued that without that fog, heat would have covered the land. Moreover, according to Mathias Sturzenegger, a fertile year could be experienced. So no negative consequences caused by the fog could be observed. No explanation was found at the time, with only a similar event in the year 1601 being mentioned.[416] The occurrence of the fog can be attributed to the 'Laki' eruption in June 1783. Fine ash and volcanic dust were transported from Iceland towards Northern Europe; the dry fog could be observed for three months (until September 1783).[417] The extensive reporting in 1785 was mainly caused by flooding events in Europe (primarily reported from Germany). The flooding was caused by heavy snowfalls at the beginning of 1784. Warm periods led to the melting of snow causing severe flood events in February.[418] This is in line with the hypothesis of Stefan Brönnimann and Vinita Damodaran et al., who argue that explosive eruptions tend to lead to cold summers and warm winters in Europe.[419] The volume of 1790 shows a smaller peak in the temperature cluster, referring to the cold period in the winter of 1788/1789.[420] The peak in the number of pages covering climate- and weather-related information in the volume of 1803 cannot clearly be attributed to a single phenomenon but rather to a series of events: (thunder-)storms, flood events and heavy rains. Different places in Europe were affected.[421]

[413] AK 1779: [36].
[414] Cf. AK 1783: [36–72].
[415] Cf. Pfister 1999: 297.
[416] Cf. AK 1784: [39–40].
[417] Cf. Brönnimann 2015: 123–125; Damodaran et al. 2018: 520–521.
[418] Cf. AK 1785: [37–39].
[419] Cf. Brönnimann 2015: 129–130; Damodaran et al. 2018: 521.
[420] Cf. AK 1790: [36–39].
[421] Cf. AK 1803: [57–60].

The peaks in the number of entries and the precipitation cluster in the years 1806 and 1807 are because of the chronicle of wet summers. Mathias Sturzenegger used the wet summer and crop loss of 1806 as a peg for the chronological listing of similar years. As already shown in Chapter 3.2.1.1., this report is supported by a detected weather anomaly.

Johann Ulrich Sturzenegger covered three peak years over his editing time span. The first one, 1818, is dominated by reports on flooding, thunderstorms with heavy rain and avalanches.[422] This can clearly be linked to the "year without summer" caused by the Tambora eruption on 10th April 1815. The reports cover the heavy precipitation and the consequences of the large amount of snow. While the intensity of precipitations did not really change, the frequency increased. The accumulation of snow in 1816 led to major floods occurring in 1817.[423] As well as a peak in the number of pages, a high number of LOC tags can also be observed (61 LOC tags) in the volume of 1818. This is an indication that the events were reported in a broad spatial context. A long report on the frozen Lake Constance (winter 1829/1830, see Figure 20) and several smaller reports on flood events in July 1830, hail and heavy rain led to the high number of climate- and weather-related pages in the volume of 1831.[424]

Fig. 20: Frozen port of Rorschach, first week of February 1830. Reported in AK 1831: [58–59].

[422] Cf. AK 1818: [39–41].
[423] Cf. Brönnimann, Krämer 2016: 20; Brönnimann, White, Slonosky 2018: 313.
[424] Cf. AK 1830: [39–41, 58–61].

Whereas the winter of 1829/1830[425] was reported as a weather anomaly in Christian Pfister's "Wetternachhersage", the summer of 1830 is not specially noted.[426] However, within the calendar, a small peak in the precipitation cluster appears (28 precipitation-related keywords). In nine entries, reports on flooding and heavy rain in the Swiss Confederation between June and September can be found.[427] The difference in reporting natural events is remarkable. Personification was used in both 1831 and 1835 to report natural events.[428] The element became the actor while God Almighty began to lose significance in relation to explaining natural events. The element was described as a figure. This new reporting of events could be an indication of the transformation of the reception of natural events.

The last period covers the time span from 1841 to 1865, in which Johannes Sturzenegger edited the *Appenzeller Kalender* – as of 1861 in co-editorship with Johannes Schläpfer. First of all, the element of personification continued within this period.[429] This supports the idea that there was a change in the perception of the causes of natural phenomena. Another indication of the shift within the explanation and causes of natural events can be detected in 1842. The removal of the prognostication including the seasonal weather forecasts and prognostications on diseases, harvest and war in 1842 leads to the interpretation that a new generation with a new understanding of weather and climate might have taken over. Nevertheless, the weather prognostication within the calendrical pages stayed – up until today.[430] It is not entirely clear to what extent these prognostications in the middle of the 19th century were still seen as reliable forecasts, or from when they have to be interpreted as a traditional element. However, in 1846 an advertisement was still promoting the *immerwährender Kalender*, which provides a yearly weather forecast. So the credibility of yearly weather forecasts still seems to have been valid. However, this does not have to be contradictory to the natural scientific approach, as contemporaries believed that through the derivation of natural laws and principles, the forecasts should get more reliable (also see Chapter 3.2.1.3., *Proverbs*). The attempt to find periodic patterns is also visible in the years 1847, 1851 and 1863, where the periodicity of natural catastrophes is discussed. The editors observed that just 100 years ago, the same phenomenon had taken place: "Gleich dem Juni vor 100 Jahren (1762; s. Appenzeller Kalender auf 1764), so zeichnete sich auch der heurige (1862) durch fürchterliche Regengüsse aus".[431] One might conclude that these derived laws should help in predicting natural events. In the volume of 1847 the number of entries and the number of pages both peaked.

[425] "A complete freezing of Lake Constance requires a negative temperature sum of > 440° for people to safely walk on the ice […]." Cf. Pfister, White 2018: 60. The complete freezing of Lake Constance is reported in the years 1788/89, 1829/30, 1879/80 and 1962/63; cf. Pfister 1988: 65.

[426] Cf. Pfister 1999: 99, 104, 297. December, January and February were all reported as colder than average (indices -3, -3, -2) and rather dry (-1, -3, 0).

[427] Cf. AK 1831: [39–41].

[428] Cf. ibid.: [40–41]; AK 1735: [39–40].

[429] Cf. AK 1843: [37]; AK 1846: [36]; AK 1851: [52]; AK 1864: [44–45].

[430] Cf. AK 2017.

[431] AK 1863: [35]. The other examples: AK 1847: [54]; AK 1851: [52].

The hot and dry summer throughout Europe induced the editor to chronologically list the hot and dry summers since the seventh century. This weather anomaly of the summer of 1846 is confirmed by Christian Pfister. June 1846 was reported to be extremely warm; no cooling periods or longer periods of precipitation were reported. Characteristic of this situation was the south-westerly pattern with a high-pressure system over Spain and central Europe.[432] The *Appenzeller Kalender* of 1851 shows the highest number of LOC tags (84) and peaks in two clusters (54 precipitation-related and 24 harvest-related keyword tags) and includes 40 climate- and weather-related entries. The flood events were mainly reported from nearby foreign countries (to a lesser extent from Switzerland), as well as several severe thunderstorms and hailstorms (in Switzerland). This concurrence led one to suspect a weather anomaly; however, this cannot be confirmed by Pfister (1999). Nevertheless, an indication of a natural catastrophe can be found in Pfister's "Am Tag danach", where an extent of damage of one million Swiss Francs is noted.[433] The list does not reveal what kind of natural catastrophe led to this severe damage and what regions were concerned. The *Euro-Climhist* database only shows some proof of the hail events (located in Zurich) and a report of flooding in Valais.[434] Another peak year can be observed in 1856. The high number of pages in 1856 is a result of a flood event in summer 1855 in the St Gallen Rhine Valley. A broad report tells of suffering that befalls the people of the valley every other year. Here, for the first time, a discussion takes place about the correction that is financed through the newly founded Swiss Nation.[435] Although no weather anomaly is reported, in *Euro-Climhist* five entries can be found referring to flood and high water in Ticino, Valais and around Lake Zurich and Lake Constance in June and July 1855.[436] In 1862, a peak in the number of pages can be observed. This is the result of an extensive report on flooding in the Netherlands in January 1861.[437] The aforementioned heatwave in Appenzell cannot be verified by other sources, nor by *Euro-Climhist*.

A short summary of the synthesis chapter will be given in the following. The change in the perception of natural events can clearly be observed in the investigated period of almost 150 years. A change from a religious explanatory pattern towards more natural scientific approaches is visible.[438] Nevertheless, the development seems to be more delayed than expected. The recurring elements of natural

[432] Cf. Pfister 1999: 132.

[433] Cf. Pfister 2002: 244–245.

[434] Cf. Euro-Climhist, search for meteorological damage and weather observations in summer 1850 in Switzerland (excluding daily observations): pf-3467-143, pf-3467-24, pf-3467-144, gz-0029-480, pf-3467-145, https://www.echdb.unibe.ch/selection/search/en/, 08.11.2019.

[435] Cf. AK 1856: [45–50].

[436] Cf. Euro-Climhist, search for meteorological damage in summer 1855 in Switzerland: hp-693-18, pf-2296-7, pf-3421-2, pf-4044-20, gz-0029-503, https://www.echdb.unibe.ch/selection/search/en/, 08.11.2019.

[437] No related reports can be found in *Euro-Climhist*.

[438] What is observed by Stephan Giess is also valid for the examination of the *Appenzeller Kalender* of the 18th century: "Das in den Kalendern zum Ausdruck kommende Weltbild war geprägt von einer Synthese aus christlicher Heilslehre und dem Glauben an den Einfluss der Gestirne auf das Leben auf der Erde. Dieses Weltbild wurde zwar in den Kalendern des 17. Jahrhunderts immer seltener explizit vermittelt, implizit war

scientific explanations let one draw the conclusion that the readership of the *Appenzeller Kalender* was still following a more conservative view of the world.[439] However, a more observant and explanatory perception can be detected over time. As a result, the divine punishment and the Almighty God lose importance but never completely vanish. The explanatory character and the different sorts of texts can be seen as indications of the important role that can be ascribed to the *Appenzeller Kalender* in the public Enlightenment. The differences between the editors are not as striking as expected. In the time span of Ulrich and Mathias Sturzenegger a slight increase in climate- and weather-related entries can be observed. This might have been thanks to their personal interest regarding weather and climate, as well as a strict censorship. Otherwise, more general developments over longer time spans can be observed: over time, more retrospective information is reported in the calendars; moreover, the focus of information is more regional and 'national' instead of global. This might also be because of the growing importance of the *Appenzeller Kalender* throughout 'Switzerland'. The increase in the lengths of the reports is in line with the increase in the total number of pages. The different quantitative approaches showed several peak years. These years mostly indicate a link to natural events of greater importance. So, severe events such as the 'Laki' eruption and the 'year without summer' are reflected in the calendar. However, not every report can be connected to, or verified by, other sources. The extent to which the years of general crisis, 1770–1772, are reflected in the *Appenzeller Kalender* will be discussed in the chapter below.

3.3. Crisis 1770–1772

3.3.1. Reflection of the Crisis in the Volkskalender

With regard to the reconstruction of past natural events and the impact on society, the retrospective information within the calendar is noteworthy. As can be seen in the case of the 'year without summer' 1816, the impact of such a severe event found its way into the calendar. While the consequences of the Tambora eruption are widely discussed in the literature, the analysis of the years of crisis from 1770 to 1772 is still owing. Therefore, this case study aims to investigate the impact on society reflected in the medium of the *Volkskalender*. While the period was discussed in literature in a local or regional context,[440] a broader analysis within the Old Swiss Confederacy is not available. The most

es aber in der Form der bereits erwähnten astrologischen Angaben im Kalendarium bis ans Ende des Untersuchungsgebietes [end of 18th century, I.V.] in allen Kalendern präsent." Giess 1998: 119.

439 To put it positively: the *Appenzeller Kalender* allowed the readership to access new knowledge that would otherwise not have been available; cf. Herbst 2018: 101.

440 Markus Mattmüller did a regional study on the hunger crisis of 1770–1772 in Basel: cf. Mattmüller 1971. His handwritten "Hunger in der alten Eidgenossenschaft, mit spezieller Berücksichtigung der Hungersnöte von 1688/1694 und 1772" (1984) was not available for the discussion in this chapter. Christian Pfister discusses

recent publication on the topic is by the historian Dominik Collet, who treated the period in a European context.[441] Referring to his latest research results, a short overview of the hunger crisis is given, followed by an examination of the different *Volkskalender* in the Old Swiss Confederacy. The conclusion in Chapter 3.3.2. summarises the reflection on the crisis within the medium of the *Volkskalender*.

The hunger crisis was a result not only of extreme weather conditions but also of the structural vulnerability of the current society.[442] It covered the years from summer 1769 until spring 1772 and had an impact on two harvest cycles. The period lies within the Little Ice Age (1300–1800) and was classified as *Little Ice Age Type Impact* (LIATIMP).[443] A short overview of the general weather in Europe[444] is as follows: the heavy rain was characteristic for the summer in 1769; Bern reported 23 rainy days in June 1769; Lindau observed summer snowfall; the autumn brought cold weather. The year 1770 was characterised by extreme winter cold and unseasonable frosts; additionally, in the second half of March strong snowfall occurred and covered the landscape; heavy rainfall during the flowering season and harvest led to crop losses. In 1770, Ulrich Bräker (1735–1798[445]) reported that heavy snowfalls almost caused death in Grisons. A short dry period negatively influenced the germination period. The same applies to the heavy rainfall in the delayed flowering season. In July 1770, 22 rainy days were reported for Basel and 18 for Bern; the continuous rain led to high water[446] and flooding of cities and cultural land. The intensity of the anomaly was even higher in 1771, while the shift in seasonality was similar to the year before; the snowfall of March stayed in some places until May; in June, 20 rainy days were reported with a high amount of precipitation, which led to more severe flood events than in the previous year. The wet, cold weather lasted until spring 1772; extreme cold was reported for January 1772. Although the harvest of the winter grain was slightly improved, bread prices increased in the long term for several years, which can be valued as a strong societal impact. The geographical

the period in the context of his dissertation in the western Swiss Plateau: cf. Pfister 1975: 183–186. Daniel Krämer (2015) includes it as far as comparisons can be drawn to the 'year without summer': cf. Krämer 2015: 44, 54, 69, 74, 78–79, 88.

441 Cf. Collet 2019.

442 The concept of vulnerability as defined by Daniel Krämer is briefly explained in Chapter 3.1., *Natural Catastrophes*.

443 Cf. Collet 2019: 54–55. The LIATIMP is defined by Christian Pfister as denoting a specific type of climate impact. The phenomenon mainly describes chilly springs and rainy midsummers. The increase in summer precipitation can result in a negative impact on grain production. Cf. Camenisch, Rohr 2018: 101–102.

444 The phenomenon can be observed in different intensities in Central Europe, Scandinavia, the Baltic States, Poland, Bohemia, Switzerland, France, the Netherlands and extensive parts of Great Britain; cf. Collet 2019: 57.

445 Ulrich Bräker, from Toggenburg, started to write down observations in diaries in 1768 until 1798. His notes are an important source for the living conditions of the lower classes in the rural areas; cf. Thürer 2004 (e-HLS).

446 Lake Constance reported the highest water level since 1640, as did Lake Zurich; cf. Collet 2019: 61.

extent of the whole phenomenon is extraordinary, and according to Dominik Collet outdoes the 'year without summer'.[447]

Therefore, the weather can be perceived not only as a weather anomaly but also as a climate-driven phenomenon. Moreover, it is not mainly the degree of the anomaly that is striking but the postponement of the weather. The shift in weather caused a larger negative impact than the degree of the anomaly. Therefore, climatic overviews in annual temporal resolutions often do not reflect the anomaly.[448] The trigger of this hunger crisis is still under discussion. The most plausible explanation seems to be an anomaly in atmospheric circulation. An indication of this explanation is the negative *Atlantic Multidecadal Oscillation* (AMO),[449] which leads to a blocking of the jet stream. The volcanic eruptions of Vesuvius in Italy and Cotopaxi in Ecuador are not considered to be major drivers of the climatic anomaly. They might, however, have increased the impact in the short term. To conclude, these anomalies can be interpreted as extreme, but a typical cold/wet complex,[450] as they occurred several times during the period of the Little Ice Age. The catenation of different "normal" fluctuations led to the hunger crisis.[451] Although the hunger crisis of 1770–1772 caused more fatalities in Europe than the wars in the 18th century, the period has rarely been the focus of research so far. Dominik Collet argues that this is also due to less clear and "attractive" causes of catastrophe (compared to the year without a summer, 1816). The perception of catastrophes and their cultural impacts have not yet been analysed.[452]

While it was shown previously that the *Appenzeller Kalender* to a large extent reflects severe natural events, the following will examine whether other calendars reported climate- and weather-related information to the same extent. For this case study, the four most continuous calendars were chosen. Apart from the *Appenzeller Kalender*, the *Berner Hinkender Bote*, the *Jährlicher Haus-Rath (Zürcher Kalender)* and the *Schreibkalender Solothurn* were analysed. All these calendars persisted for more than 100 published volumes within the period 1650–1848 – with only a few volumes missing. The volumes of 1770–1774 were analysed.[453] The following subchapters discuss the results of the different calendars.

[447] Cf. ibid.: 57–70.
[448] Cf. ibid.: 41, 54–55.
[449] The Atlantic Multidecadal Oscillation describes the variability of the sea surface temperature of the Northern Atlantic, which varies in a steady pattern on a decadal scale. A negative AMO indicates a lower sea surface temperature; cf. Brönnimann 2018: 274.
[450] More detailed description in Collet 2015: 47–48.
[451] Cf. Collet 2019: 75–79.
[452] Cf. ibid.: 22–25.
[453] The volume of 1771 was produced in 1770, the volume of 1774 in 1773. Therefore, retrospective information about the whole period should be included.

3.3.1.1. Appenzeller Kalender

As stated in Chapter 3.2.1.1., the years 1770, 1772 and 1773 are reported as peak years, in terms of either the number of pages, categories, cluster tags or entries. In the following, an insight into how the crisis is reported in the *Appenzeller Kalender* will be given.

In the volume of 1770, the *Appenzeller Kalender* reports a large amount of snow in February 1769 in Grisons. Therefore, communication was limited to the snowbound communities. For May 1769, heavy rain and hail are reported for the Rhine Valley, Oberland, Sennwald and Montafon; additional reports on a large landslide in the Rhine Valley on 15th June and strong hail at the beginning of August leading to crop loss can be found. Additionally, a list of wine prices for the harvest of 1769 can be found – though no comparison to other years is available.[454]

The volume of 1771 includes the most reports on the crisis within the *Appenzeller Kalender*.[455] Six entries talk about the impacts of the wet/cold complex. The year 1770 is reported as having a harsh winter with a lot of snow; letters from Chur tell about frozen rivers and ice floods; Ulrich Bräker wrote that without help from outside people would have starved to death. The thunderstorms in December 1769 were seen as omens of great cold and big snow. Afterwards, a late spring caused a shortage of food and feed and eventually resulted in inflation. Rockslides and floods caused damage in Grisons, St Gallen and Germany.[456]

The foreword of the volume of 1772 discusses the consequences of the bad harvest of the past few years: "Theuren Zeiten […] welche durch Mißwachs, Wucher, Spehrung des Frucht-Passes von seiten Burgund und Schwabendlands entstanden, deswegen man ein grosse menge Korn aus dem Mayländischen in die Schweitz und so gar ins Schwabenland erkaufte […]".[457] This passage shows, on the one hand, the causes of the shortage in the Old Swiss Confederacy, and on the other hand, the economic interdependency between the different countries. Another indication of the extent of the grain shortage is the prohibitions of exporting grain or producing beer using barley that are published in the volume of 1772 for France, Bavaria and Swabia.[458] The recipe for a rice bread to allow the lower classes an affordable and filling meal is also remarkable. A list of the necessary goods, including their actual prices, can be found below the recipe.[459] Although the recipe has been translated from the French, it

[454] Cf. AK 1770: [51, 54, 78].
[455] The year 1772 has technically more entries, but they are not all related to the hunger crisis of 1770–1772, but include a chronological listing of other years.
[456] Cf. AK 1771: [38–39, 48, 50, 76].
[457] AK 1772: [5, 7].
[458] Cf. AK 1772: [47–49].
[459] Cf. AK 1772: [71].

shows that obviously in the Old Swiss Confederacy too the grain shortage reached a severe extent, where substitutes had to be used.[460]

In contrast to the report by Collet, the winter of 1771/1772 in Bellinzona is reported as mild with a lot of rain instead of snow. They even report a bear that, instead of hibernating for the winter, hunted in a small town. This could be another indication of a warm winter. Spring 1772 is reported as early, but wet; summer as warm and fertile with a good harvest of wine. Nevertheless, news from Germany regarding hunger, as well as the loss of forest due to the rainy and cold weather, still broached the issue of the hunger crisis in 1772.[461] The following poem by a priest from Hoyerswerda (Germany) summarised the consequences of the hunger crisis:

> "Uebel die den Krieg begleiten,
> Sind auch Mängel unsrer Zeiten.
> Jener fraß die lezten Aehren,
> Die uns jezt noch könten nähern[sic],
> Nahm uns viele Millionen,
> Ließ uns arm im Lande wohnen,
> Und bey ausgeschöpfter Quelle
> häufen sich die Unglüksfälle:
> Magre Aerndte, leere Garben;
> Nun die Folgen, Hunger, Darben."[462]

Autumn 1772 was described as good, and the following winter as warm. Although the harvest of 1773 produced a high yield, summer snow led to the death of cattle in June. In the volume of 1774 a relaxation can already be observed. It is reported that the year was fertile in all the European countries and another poem by a German was published that praised God for his kindness.[463]

Another indication of the impact on the local people can be derived from the birth and death rates that were published during the years of the crisis. Demographic indicators are a very traditional way of measuring the extent of a crisis. While not reflecting the whole complexity of a crisis, it gives an idea about the development during a critical period.[464] Therefore, these numbers will be evaluated in the following. The first list of birth and death rates only appeared in the *Appenzeller Kalender* in 1768 (concerning the year 1766). Figure 21 shows the birth and death rates, as well as the marriages during

[460] Samuel Engel (1702–1784) propagated after the crisis the production of flour out of potatoes to increase the resilience to further crises. He was interested in improving the trading and stocking of grains and published several articles on the topic; cf. Stuber 2009: 124–125.
[461] Cf. AK 1773: [38–41].
[462] Ibid.: [41].
[463] Cf. AK 1774: [36–37].
[464] Cf. Krämer 2015: 318–321. The problems with this method are elaborated in detail by Daniel Krämer.

the period of the crisis and the following decade. It can clearly be seen that the death rate exploded in 1771. For Appenzell Ausser Rhoden, 4,238 deaths are noted, compared to 891 births (a factor of 4.75). This shows how severely Appenzell was affected by the hunger crisis. Not only did the number of deaths peak that year, but also the marriages dropped to 169 compared to an average of 372 marriages a year. The birth rate decreased dramatically in the years 1771 (891 births) and 1772 (657 births) compared to an average number of 1,406.[465] While Appenzell Ausser Rhoden shows a strong demographic reaction to the crisis, this is less visible for other cities in the Old Swiss Confederacy. In Bern, Basel and Schaffhausen, the birth rate was still higher than the death rate in 1771. In 1772, all four published cities had higher death than birth rates. Nevertheless, in the case of Bern and Schaffhausen, only a slight death surplus is registered.[466]

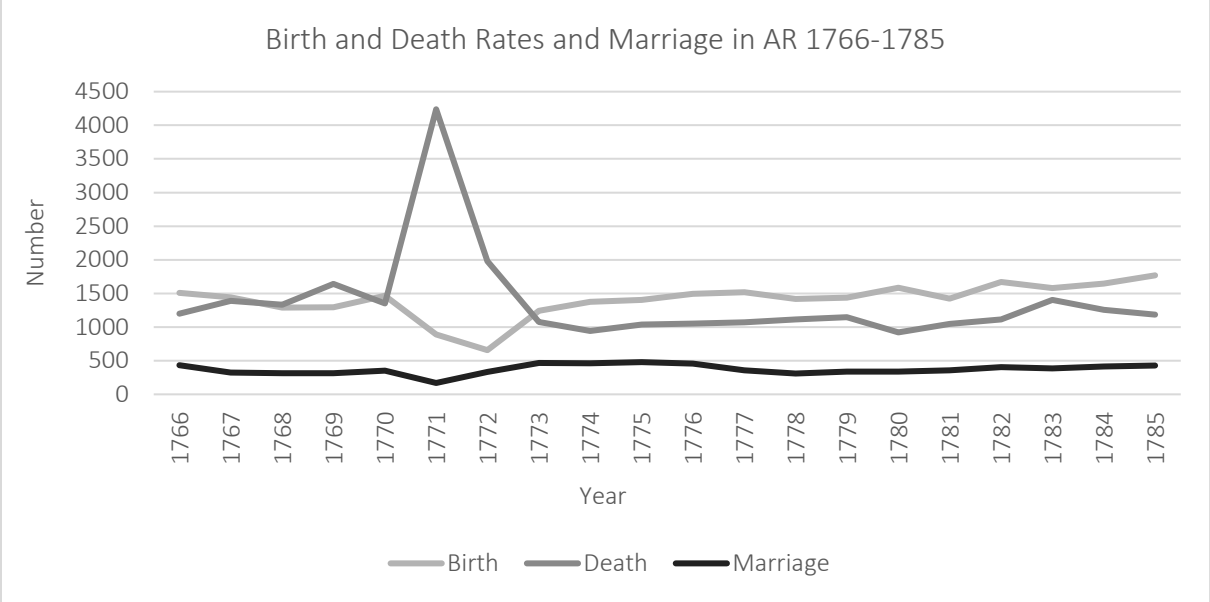

Fig. 21: Birth and death rates and number of marriages in Appenzell Ausser Rhoden in the time span 1766–1785 according to the numbers published in the Appenzeller Kalender.[467]

3.3.1.2. Solothurner Schreibkalender

As Norbert D. Wernicke states, the *Solothurner Schreibkalender* has almost no reports, literary texts or news in it and has a weak self-profile.[468] This follows my consultation of the calendars from 1662 to

[465] According to Fridolin Kurmann, the drop in the birth rates can either be due to physiological reasons (the absence of menstruation due to hunger) or the free choice of parents not to have children in this time span; cf. Kurmann 2011 (e-HLS).

[466] Cf. AK 1773: [72]; AK 1774: [74].

[467] Cf. AK 1768: [56]; AK 1769: [60]; AK 1770: [54]; AK 1771: [76]; AK 1772: [72]; AK 1773: [72]; AK 1774: [74]; AK 1775: [74]; AK 1776: [73]; AK 1777: [75]; AK 1778: [74]; AK 1779: [74]; AK 1780: [72]; AK 1781: [74]; AK 1782: [74]; AK 1783: [50]; AK 1784: [50]; AK 1785: [50]; AK 1786: [52]; AK 1787: [49].

[468] Cf. Wernicke 2011a: 102–103.

1780. Only on very few occasions was retrospective information given.[469] Although proverbs, prognostications and a discussion about the reliability of forecasts can be found in the period of the crisis, no direct indication of the perception of the crisis of 1770–1772 can be derived.[470]

3.3.1.3. Jährlicher Haus-Rath

Although to a lesser extent than the *Appenzeller Kalender*, the *Jährlicher Haus-Rath* also indicates the hunger crisis in the period of 1770–1772. The majority of the non-calendrical part comprises moral or droll stories. Retrospective information is contained to a lesser extent.[471] In the volume of 1770 no climate- or weather-related information is reported. However, in 1771, a *Brodtafel* is printed in the calendar, which is an indication of the poor quality of grain. The table shows how much bread can be expected for a certain amount of flour ("[sie, I.V.] zeiget, was man aus einer gewissen Pfundzahl Mehl für ein Gewicht an Teige und Brode verlangen und erwarten kann"[472]). The weight of grain is important, as it is heavier when it is damp due to harvesting in wet periods. The quality of damp grain is lower. During times of shortage, flour was also stretched with bean flour or bran. Such tables were common in times of inflation.[473] The table reappeared in 1773.

In 1772, on a third of a page, the flooding in Mannheim and the region is described. Heavy rain on 17th June 1771 caused high water, and two days later, flooding of the Neckar, as well as smaller rivers, is reported. The damage cannot yet be summarised, but fields, gardens and meadows were flooded.[474] Within the Old Swiss Confederacy only one fire in Frauenfeld is reported.

In the calendar of 1773, a clearer statement on the severity of the crisis can be found in the article "Armuth verursachet Kindermord", where a craftsman in Augsburg shot his son due to the lack of food. The author of the *Jährlicher Haus-Rath* states that he could have printed several more stories about the crisis: "Es ist jedermann nur zu bekannt, wie sehr Armuth und Hungers-Noth das vergangene Jahr bald ganz Europa geplagt haben. Ich konnte wol tausend traurige Begebenheiten, die daher entstanden sind, hersetzen, allein der Raum gestattet es nicht."[475] Additionally to the *Brod-Tafel*, a *Mehl-*

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469 For example, cf. Neuer und Alter Schreib-Kalender [Solothurner Schreibkalender] 1749; Zentralbibliothek Solothurn XR 42.

470 Cf. Neuer und Alter Schreib-Kalender [Solothurner Schreibkalender] 1770–1773; Zentralbibliothek Solothurn XR 42. The volume of 1774 was not available for this analysis. However, the likelihood of it containing relevant information is rather low.

471 An example of retrospective information can be found in the following calendar: Jährlicher Haus-Rath 1771: Das bey Anlaß der Hohen Vermählung des Delphins von Frankreich zu Paris angeordnete Feuerwerk, und darbey entstandene grosse Unglück; ZB Alte Drucke Kal 1910: c, 1771–1784.

472 Jährlicher Haus-Rath 1771: Brottafel; ZB Alte Drucke Kal 1910: c, 1771–1784.

473 Cf. Correspondence via email with Daniel Krämer, 06.12.2019.

474 Jährlicher Haus-Rath 1772: Auszug aus der Zeitung von Virginien. Mannheim; ZB Alte Drucke Kal 1910: c, 1771–1784.

475 Jährlicher Haus-Rath 1773: Armuth verursachet Kinder-Mord; ZB Alte Drucke Kal 1910: c, 1771–1784.

Tafel[476] is also printed in the volume of 1773. The description to the Mehl-Tafel (see footnote 476) supports the suggestion of stretched flour in years of little and expensive grain.

Also, in the following year, 1774, the two tables were published.[477] Apart from that, in a droll story, an indication of the cold weather is given. In a discussion between a natural scientist and another man it is stated that: "Daß es verwunderlich wäre, wie es die Zeit hero so ungewöhnlich kalt seye. Es müsse sich etwas in dem Natur-System geändert haben: denn weder die Historie, noch auch das Gedächtniß der ältesten Leuthen geben keine Beyspiele, daß es zu einer solchen Jahrs-Zeit so kalt gemacht etc. etc.".[478]

3.3.1.4. Berner Hinkender Bote

Within the *Berner Hinkender Bote*, indications of the cold/wet complex can be found as well. The volume of 1770 includes two reports. The first one covers several flood and hail events mainly in France, Italy and Germany. The second report covers storm and hail events in the Old Swiss Confederacy. On 3rd April 1769, a severe thunderstorm is reported in Regensburg and the surrounding region. On 26th July, a severe thunderstorm and lightning are reported from Italy. In France, on 12th September, heavy rain and hail led to crop loss and flooding of the fields. Due to the huge storm in Bordeaux, 19 ships sank. Hail damaged vineyards and uprooted trees.[479] The report of the "[…] heftiger Sturm, mit Schlagregen und Hagel vermischt […]",[480] which caused damage in the Old Swiss Confederacy, covers half a page. The reported incidents concern Basel and Bern, including the wine-producing regions around Lake Neuchâtel and Murten as well as the Lower Rhine Valley. Large crop losses due to hail and heavy rain are mentioned as well. In the Rhine Valley landslides occurred because of the heavy rain and caused damage in the vineyards.[481] In general, the author reports an unlucky summer: "Ueberhaupt sind sehr viele Oerter der Schweiz, und unsers Lands insbesonders diesen Sommer hindurch unglücklich gewesen".[482]

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[476] Jährlicher Haus-Rath 1773: Mehl-Tafel; ZB Alte Drucke Kal 1910: c, 1771–1784: "Welche zeiget, was man aus einer gewissen Pfundzahl des besten Korns, ohne Vermischung mit Bohnen, für ein Gewicht an Mehl und Krüsch, nach Abzug des Abgang und Mahl-Lohns, (welches vom Mütt ohngefehr einen Vierling, oder am Gewicht 7 Pfund beträgt) von dem Müller an weissem Mehl am Gewicht fordern könne."

[477] No similar tables were found in the volumes of 1772 or 1775–1780 [the volume of 1777 was not available]. In some cases, only a short version of the calendar was available. See footnote 206.

[478] Jährlicher Haus-Rath 1774: Der Naturkundiger[sic]; ZB Alte Drucke Kal 1910: c, 1771–1784.

[479] Cf. Berner Hinkender Bote 1770: Grausame Ueberschwemmung und Wassersnoth, https://www.e-periodica.ch/digbib/view?pid=hib-001:1770:0#75, 26.11.2019.

[480] Berner Hinkender Bote 1770: Ein heftiger Sturm, mit Schlagregen und Hagel vermischt […], https://www.e-periodica.ch/digbib/view?pid=hib-001:1770:0#78, 26.11.2019.

[481] Cf. ibid.

[482] Ibid.

Also, in the following year, two reports can be found that can be classified as consequences of the anomaly. The weather of April and May 1770 caused several avalanches in Uri. Another severe avalanche is reported from the region overlooking Sennwald (SG) on 21st April. The avalanche coincided with a landslide and swept a lot of solid material towards the settlements of Sennwald. The report is accompanied by a picture of the avalanche (see Figure 22).[483]

Fig. 22: Picture accompanying the report on the avalanche in Sennwald. Source: Berner Hinkender Bote *1771, https://www.e-periodica.ch/digbib/view?pid=hib-001:1771:0#74, 26.11.2019.*

On 17th June 1770, a rockfall in the community of Monbiel (GR) was reported. Thirteen houses were damaged, as well as stables. Seventeen deaths were registered. These reports cover two and a quarter

[483] Cf. Berner Hinkender Bote 1771: Verschiedene Unglüke[sic] in den schweizerischen Gebirgen, durch Schnee-Lauwenen, https://www.e-periodica.ch/digbib/view?pid=hib-001:1771:0#72, 26.11.2019.

pages in the calendar.[484] Heavy rain was reported from Schönholzerswilen (TG) on 24th May. The rain caused high water and flooding of the stream in town. Houses were flooded and weirs and streets were damaged. The report on Thurgau is followed up by a general remark made by the author that the end of summer 1770 was severe for several places in the Old Swiss Confederacy. On 4th September 1770, strong hail was observed in the regions of Bern, Basel, Geneva, Lucerne and Neuchâtel, damaging crops and fruits. The hail was reported as being the size of hen's eggs. Additionally, a shipwreck is reported from the Aare close to Olten due to the high water.[485]

As the author of the *Berner Hinkender Bote* wrote in the calendar of 1772: for some years, inflation has had to be interpreted as divine punishment. Nevertheless, it seemed to the author that God finally answered the prayers and "palliated" the impacts.[486] The motif of the divine test can be found within the argumentation of the author. Furthermore, an example of a hunger crisis is shown by the Margraviate of Moravia:

> "[…] 'um nicht Hungers zu sterben, essen wir schon jezt 3 Tage von diesem Heu, und haben auch noch allemal etwas mitgenommen, um es zu Hause zu kochen, und den Hunger zu stillen, verzeihen sie dieser unserer erschreklichen Noth und dem Hunger der uns plaget, um Gottes willen.'"[487]

This example of people eating hay shows the severity of the crisis in what is considered the Czech Republic nowadays. Again, a sentence at the end of the report points out the large geographical range of the phenomenon, which also includes the Old Swiss Confederacy: "Es wäre zu weitläufig alle die Nachrichten herzusezen, welche von so vielen Theilen Europae kläglich genug lauteten, und was wollen wir von der Theurung in unserm Vatterland sagen, wer ist unter uns, der solche nicht erfahren habe?"[488] From 16th to 17th November 1770 heavy rain resulted in severe flooding and caused the deaths of 79 people in England. Additionally, a letter from Paris reported flooding at the end of November 1770. The floods damaged dams and bridges and caused death. In the same month, in Thuringia and Saxony, heavy rain and flooding are reported, leading to the loss of the harvest. Also, the regions close to the Rhine and Main were affected. Furthermore, the coasts of Italy were affected by the

[484] Cf. ibid.
[485] Cf. Berner Hinkender Bote 1771: Ein ausserordentlicher Wolkenbruch in dem Dorf Schönholzerswyler im Thurgäu, https://www.e-periodica.ch/digbib/view?pid=hib-001:1771:0#84, 27.11.2019.
[486] Berner Hinkender Bote 1772: Die allgemeine Theurung, https://www.e-periodica.ch/digbib/view?pid=hib-001:1772:0#77, 27.11.2019.
[487] Berner Hinkender Bote 1772: Klägliches Exempel deß Hungers, https://www.e-periodica.ch/digbib/view?pid=hib-001:1772:0#77, 27.11.2019.
[488] Ibid.

storms and flooding, leading to the cancellation of the "plays and balls"[489] of Venice. In the Netherlands, severe cold accompanying the flooding in February 1771 is also mentioned. Furthermore, on 27th March, Seehausen (Altmark) observed a large snowfall. The mild temperature led to the melting of the snow, causing high waters and the flooding of 20 towns.[490] As well as in Europe, the calendar reports the drought in Bengal (nowadays East India and Bangladesh).[491] The combination of a wet Europe and dry India is a well-observed pattern, not only in the 1770s but also in the 1690s, 1740s and 1890s. Although a correlation is observed, teleconnections and interactions are still targets of research.[492]

In the calendar of 1773, two pages are dedicated to the inflation concerning most countries in Europe. The author suggests that the inflation was due to unfair trade rather than a lack of food. He pointed out that in the region of Bern, people were lucky compared to Bohemia, Moravia and Saxony.[493]

> "So verschieden auch immer dieselben in Angebung der Ursachen, und den Mitteln solche zu heben waren, so kamen doch fast alle darin übereins, daß es noch mehr eine ungerechte Schinderey und ein unbarmherziger gewinnsüchtiger Wucher gewesen seye, als ein würklicher Mangel. […] daß wir in unserm Bernergebieth noch ziemlich glüklich gewesen seyen, und vor andren Ländern aus Ursach haben die Güte des Herrn zu rühmen […]."[494]

The extreme prices of bread, meat and wine in Moravia follow this statement, and so the author rhetorically asked his readership who really was experiencing inflation. To emphasise the lack of food, a report by a contemporary scholar from Leipizig is printed afterwards.[495]

In the volume of 1774, no hunger crisis-related reports were found.

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489 Berner Hinkender Bote 1772: Ueberschwemmungen und Wasserfluten, https://www.e-periodica.ch/digbib/view?pid=hib-001:1772:0#87, 28.11.2019. It is assumed that it is referring to the famous carnival of Venice. This would then imply the time span of January to the beginning of February 1771.

490 Cf. Ibid.

491 Cf. Berner Hinkender Bote 1772: Hunger in Bengala in Ostindien, https://www.e-periodica.ch/digbib/view?pid=hib-001:1772:0#78, 28.11.2019.

492 Cf. Collet 2019: 76–77.

493 Cf. Berner Hinkender Bote 1773: Die grosse Theurung, https://www.e-periodica.ch/digbib/view?pid=hib-001:1773:0#64, 28.11.2019.

494 Ibid.

495 Cf. ibid.

3.3.2. Synthesis of the Crisis 1770–1772

This chapter presents a short argumentation on the potential of the *Volkskalender* to draw conclusions on societal impacts caused by a natural event. Having only analysed the four most prominent calendars in the German-speaking part of the Old Swiss Confederacy, the explanatory power is limited.

Out of the four examined calendars, only three are considered helpful for the case study. As the *Solothurner Schreibkalender* hardly contains any retrospective information, no answers can be derived for this research question. The information is most abundant in the *Berner Hinkender Bote* and the *Appenzeller Kalender*. While the *Berner Hinkender Bote* provides more entries related to the crisis in the years 1770-1772, the *Appenzeller Kalender* contains more information in 1773 and 1774. Two entries deal with the same events: firstly, the landslide/avalanche at Sennwald (SG) in May 1770, and secondly, the rockfall at Monbiel (GR) in June 1770 are reported in both calendars. Otherwise, different content is provided. Although the Bernese calendar also contains some regional information, the *Appenzeller Kalender* has a more regional focus on the crisis. The picture conveyed of the Rhine Valley throughout the time of the crisis is more detailed than that for Bern. Flood events, landslides and snowfall are reported in the region of Appenzell. The trading embargo on grain shows the dependency of the region on foreign countries. The clear increase in death and the decrease in marriages and birth rates indicate a severe impact of the crisis on the society in the north-eastern Old Swiss Confederacy. Although the reports from Germany seem to be more severe, the printed recipe for the substitution of bread also led to the assumption that the readership of the *Appenzeller Kalender* lacked bread. For the Bernese population no such detailed information is provided in the *Berner Hinkender Bote*. We are only given the note that the inflation and crisis were not as bad as in other regions. Nevertheless, Christian Pfister shows that different parameters, such as summer snowfall, glacial advance, grain price, demographics and tithes, confirm the anomaly for the regions around Bern.[496]

The most striking results in the *Jährlicher Haus-Rath* are the tables on bread and flour. As they were only produced in the crisis years (1771, 1773–1774), they are a clear indication of the shortage of grain. The adulteration of grain with other ingredients seems to have become a reality. Apart from these tables, the only reports from neighbouring areas give an indication of the crisis. For a regional approach, the *Jährlicher Haus-Rath* is not suitable.

A brief comparison with the *Euro-Climhist* database shows that from the region around Appenzell, three more sources (two of them chronicles) are available, providing information on the weather anomaly experienced throughout the period of the crisis:[497] firstly, the chronicle of Gabriel Walser,

[496] Cf. Pfister 1975: 184–185.

[497] The query on ECH included all the different topics, but no daily weather observations, within the time span of 01.04.1769–31.12.1773.

former editor of the *Appenzeller Kalender*;[498] secondly, the chronicle of Paulus Züblin;[499] and thirdly, information derived from travel reports, collected and analysed by Silvio Margadant.[500] In the case of Bern, the available data are mainly provided by Christian Pfister, based on the source of Johann Jakob Sprüngli's "Meteorologische Tabellen" 1759–1803.[501] Due to the scarcity of local information in the *Berner Hinkender Bote*, a comparison with the data of *Euro-Climhist* (ECH) does not make sense. However, a more detailed analysis of the *Appenzeller Kalender* with the available information on ECH could provide a higher temporal resolution and a more local approach to the impact of the crisis.

[498] Cf. Walser 1830.

[499] Cf. Züblin, Paulus: Chronik, 1735–1776; Stadtarchiv St Gallen without shelfmark.

[500] Cf. Margadant 1978.

[501] Cf. Sprüngli, Johann Jakob: Meteorologische Tabellen; Burgerbibliothek Bern, GA Oek.Ges.109; a short overview of the observations of Sprüngli is given in Burri, Rutishauser 2009: 107–110.

4. Conclusion

In the following, structured along the lines of the research questions stated in Chapter 1.2., the conclusion presents the results of the previous chapters. The outlook will contain a critical view of the thesis as well as open research questions and the potential for further studies.

What kind of weather- or climate-related information is available in the *Appenzeller Kalender*?

As one of the first mass media, the *Volkskalender* is an interesting research subject. The typical *Volkskalender*, as discussed in this study, contains three parts: calendar, prognostication and a non-calendrical part. The non-calendrical part only evolved during the 17th century and contains reports on past events, which are especially of interest for my research questions. In the German-speaking part of (what is nowadays considered as) Switzerland, 75 different calendars appeared within the time span of 1650–1848. These collections are based on the research of Norbert D. Wernicke, who was part of the SNF project "Zahl – Text – Bild. Schweizer Volkskalender von 1500–1900". The need to further restrict the research topic led to the analysis of the *Appenzeller Kalender*, one of the most successful and continuous calendars in this period. The analysis covers the first volume of 1722 until 1865, when the institutionalisation of weather data came into use in the newly formed Swiss federal state.[502] The case study provides additional insight into other *Volkskalender* at that time.

The climate- and weather-related information is included in different forms in the calendar. While the calendrical part and the long-term weather forecasts never really change form, the explanatory content appears in the form of a dialogue (farmer and scholar), questions and answers, a joke or simply as a report. The text sort 'report' is also used to inform about past natural events. The focus of this thesis was the analysis of the retrospective content (also denoted as the look-back section). The content was divided into entries to enable some quantitative analysis. An entry is a clearly defined unit that usually consists of a single event in a defined region or a report on one topic.[503] The content in the look-back section was either sensational (such as earthquakes and volcanoes) or very closely related to the topics that concern the readership most (for example, harvest-related content). The entries of the look-back section were categorised into five different categories: *descriptive data*, *measurements*, *proxy data*, *economic data* and *socio-political data*. Sixty per cent of the retrospective information was categorised as *descriptive data* (1,555 entries), while 593 entries were marked as *meteorological damage* and 451 as general *weather* observations (not mentioning any damage). The second

[502] The new measuring system came into use in December 1863. To cover the full information concerning 1863, the two volumes of 1864 and 1865 were also taken into account.

[503] Further details about how an entry is defined can be found in Chapter 3.2.1.1.

prominent subcategory is *economic data* (513 entries), which provides information on the quality and quantity of the harvest. Proxy data are included to a smaller extent. In total, 287 entries were classified as *proxy data*. The two categories *socio-political data* and *measurements* are the least mentioned, only containing 127 and 77 entries, respectively.

Furthermore, the information in each entry was tagged with one or more keywords. A hundred and six different keywords were assigned to the entries, resulting in 3,650 keyword tags. Thirteen keywords were mentioned more than 100 times, accounting for 58% of all the tags. The most frequently mentioned keywords in descending importance are the following: thunderstorm, crop loss, flood, coldness, hail, storm, harvest, earthquake, snow, livestock, fire, cereals and wine. This result is in line with the calendar being on the one hand sensational (reports about catastrophes: thunderstorms and earthquakes), but also closely linked to the topics of the readership, which is highly dependent on weather in regard to the harvest and cattle. Clusters were formed to provide a general idea of the topics that were of interest in the look-back section: harvest-related, precipitation-related, temperature-related and wind-related keywords. Not every keyword is part of a cluster and not every cluster contains the same number of keywords (varying from 10 to 19 terms a cluster). The precipitation cluster (only containing 13 terms) is predominant in almost every year. The harvest-related keywords (15 terms) follow next.

The entries in the look-back section were spatially denoted as *regional*, *'national'*, *global* or *unclear*. Within the category *regional*, the Lake Constance area is also covered. This allows account to be taken of the importance of this economic and cultural interdependency. Overall, 654 entries were classified as *global*, 329 as *regional*, 291 as *'national'* and 53 as *unclear*. In a next step, LOC tags were distributed, naming the communities (on a 'Swiss' level) or the nations (on a global level). An entry that is denoted as *regional* can include several LOC tags. A total of 2,194 LOC tags were assigned. Summing up, the cantons of St Gallen (248 LOC tags) and Appenzell Ausser Rhoden (222 LOC tags) received the most tags. This confirms the regional focus of the calendar. The LOC tags of 'Switzerland' (1,318) outnumber the global LOC tags (876). This is a logical consequence, as places from abroad were only defined on a country level and not on a community level as in 'Switzerland'. The most LOC tags outside of 'Switzerland' are assigned to Germany (239), followed by Italy (117), France (99) and Austria (55).

The different quantitative approaches led to numerous peak years. These years indicate peaks in the number of pages, entries, LOC tags, keywords, clusters or categories. A peak year can be an indication of an unusual year in regard to weather and climate. Whenever a peak was detected, I looked at the content in the *Appenzeller Kalender* and checked for a registered weather anomaly. The following table provides an overview of the different peak years.

Table 2: Overview of the different peak years, as a result of several quantitative approaches. The column explanation *gives a short description of the content of the peak years. Based on AK 1722–1865.*

AK Vol.	*Peak in number of…*					*Explanation*	*Anomaly*[504]
	pages[505]	*Entries*	*LOC tags*	*Keywords/ categories*	*Clusters*		
1727		X				Chronicle listing of earthquakes	
1764			X			Summer flooding events in 1763 in Old Swiss Confederacy	
1767	X					Reports on natural events from abroad	
1768	X					Cold anomaly of 1767	X
1770	X					Discussion about a comet	
1772		X		X	X	Chronicle listing of inflation years	X
1779	X					Flooding event in Rhine Valley	
1783	X					Cold, flooding event in winter 1781/1782	X
1784	X					Earthquakes, thunderstorms, red sun	
1785	X					Flooding events in Europe	
1790					X	Large-scale coldness in winter 1788/1789	X
1803	X					Flooding, warm temperature anomaly in August 1802	X
1806		X			X	Chronicle listing of wet summers and crop loss	X
1807		X			X	Continuation of the listing from 1806	
1818	X		X			Hunger crisis	X
1831	X					Winter anomaly of 1829/1830	X
1832					X	Summer flood, hail in the Swiss Confederation	
1847		X			X	Chronicle listing of hot and dry summers	X
1851		X	X		X	Summer flooding events in 1850 in Europe	
1856	X					Flooding event in Rhine Valley	
1862	X					Heatwave in AR, flooding in the Netherlands	

[504] Anomalies reported in Pfister 1999.

[505] Only consisting of pages from the look-back section.

How does the content of the calendar vary over time?

The seven different editors, as well as the large examined period, led to a change in content over the years. The most prominent changes are discussed in the following.

The most striking change in content is the strong decrease in the length of the prognostications and their eventual complete disappearance in 1842. Although already the subject of criticism in the 1770s, the prognostication was still part of the calendar for another seven decades. While the prognostication was criticised at an early stage, the long-term weather forecasts were only criticised in the 1840s by Johann Ulrich and Johannes Sturzenegger. Apart from the decrease in prognostication, a general decrease in the percentage of climate- and weather-related content compared to the total number of pages can be observed. This is also due to the increase in the total number of pages over time. Because of the increase in the total number of pages, the reports also tend to become lengthier. Focusing on the look-back section, a period of higher numbers of pages can be detected in the period 1764–1808 (only dropping below two pages in 1795).

Another major change within the examined period is the introduction of the rubric "Allgemeine Zeit und Welt-Betrachtungen" in 1768. This report on the past year also covered, besides news on peace and war, regional weather observations. The subjective views of the editor on harvest, the beginning of seasons and conditions deliver valuable insights into the perception of the weather at that time. The increase in text length of the subheader "Von der Witterung" goes together with the relative increase in proxy data in the same period. In general, the descriptive categories lost importance during the examined period, as more measuring and economic data are registered. Furthermore, this additional rubric on regional climate and weather observations is in line with a general shift in reporting from a global to a more 'national' and regional level.

Proverbs were used regularly only after 1769. From then on, most of the weather rules remained constant over several decades. The months of January and December did not regularly contain a weather-related rule or a proverb at all.

How does the perception of climate and weather change over time?

The perception of climate and weather was analysed exemplarily for three different cases: comets, thunderstorms, and general weather and climate. Another indication of the contemporary understanding of it is given by the extended explanatory reports on the understanding of the Earth, the universe and natural processes in the calendars of 1731–1733, 1759, 1775 and 1781.

The comets provide a good example to show the change in perception of natural phenomena. Whereas in the middle of the 18th century, Gabriel Walser denoted them as a divine sign rather than a bad omen, they were clearly described as a natural process in the 1770s. Nevertheless, until the middle

of the 19th century, the calendar continues to emphasise that only gullible, superstitious people or old women would still believe in comets as omens. These continuous repetitions suggest that the religious and supernatural perception of comets not only prevailed until the 18th century, as argued in literature, but even in the middle of the 19th century within the readership of the *Appenzeller Kalender*.

A second change in explanatory pattern can be observed for lightning. Whereas in 1729, Johannes Tobler still perceived it as a divine instrument, in the 1780s a natural scientific approach took over. Lightning and the deaths caused by lightning were observed in detail. Although the lightning conductor had already come into use in the middle of the 18th century, the first report on one in Zurich is found in the *Appenzeller Kalender* in 1787. Although it was unquestioned among scholars, the lightning conductor caused suspicion amongst the population. As in the case of the development of the interpretation of comets, it also seemed to be delayed in this case. Nevertheless, in the years 1805, 1818 and 1838, educational content about thunderstorms, lightning and the prevention of it found its way into the calendar. This suggests that the knowledge was still not fully perceived by the population, although the first lightning conductor was installed in Vordersitter in 1795 by Jacob Zellweger-Wetter. The development itself is in line with the trend of observing nature in the second half of the 18th century. While the editor had propagated the 'new' knowledge since the 1780s, the readership seemed to have adopted it only decades later.

The concepts of weather and climate changed over time. Johannes Tobler argues in the volume of 1723 that ultimately God is responsible for the weather, so the "Kalendermacher" cannot be blamed for bad prognostications. Although God is responsible for the weather, Johannes Tobler was already aware of microclimatic conditions. Furthermore, he linked the amount of precipitation (as part of the climate) to the availability of vapour. In 1786, Mathias Sturzenegger shared his idea of climate (although it was not yet called that) in the calendar. He suggested that the climate in general is constant. However, the vapour and sulphur content below the Earth's surface could change the atmospheric composition and therefore change the weather. In 1840, Johann Ulrich and Johannes Sturzenegger pleaded for the observation of winds, the colour of the sky, the appearance of the sun, moon and stars, the shape and colour of clouds, air moisture, current weather, and the behaviour of plants and animals to forecast the weather. However, the barometer was considered the most trustworthy instrument regarding weather forecasts.

The general image produced by the educational reports in the volumes of 1731–1733, 1759, 1775 and 1781 are in line with the general 'Zeitgeist'. Johannes Tobler's view of Earth can be seen in the contemporary trend of physicotheology. An observational examination of nature had started; subjects of interest were the atmosphere, the origin of water, precipitation and weather in general. Nevertheless, the Almighty God was still seen as being responsible for the creation of the Earth. The concept of

the upcoming vapours based on a theory of Aristoteles was still valid. Whereas in 1721 the Copernican system was still censored in the Old Swiss Confederacy, Ulrich Sturzenegger pleaded for it in 1759. Attempts to link and legitimate the new knowledge to and through the Bible occurred. However, in the case of heliocentrism, several problems arose, as some biblical passages are contradictory to it. The volume of 1759 tries to combine the new idea of the world with the biblical references. So, almost 40 years later, the Bible as a fundament of knowledge is still unquestioned in the *Appenzeller Kalender*. In 1775, Ulrich Sturzenegger explained in detail and with a natural scientific approach the appearance of the Earth. In his opinion, the vapours within the Earth are still responsible for the creation of winds, but no longer for precipitation or lightning. Six years later, a question and answer text repeated this knowledge. This may be an indication that the readership had not yet adopted this perception of nature. However, despite the natural scientific approach, a divine explanation for the saltiness of water can be found.

The last remark shall be made on the change in language when reporting about natural events (especially natural catastrophes). The slow change in explanatory patterns seems to result in a new way of reporting: it is no longer God, but nature, that is responsible for these events. Therefore, the linguistic personification came into use in the second quarter of the 19th century. Very often, the motif of the punishing nature is used, and the actions are ascribed to elements. However, it is not clear whether this can be ascribed to the change in perception or if this is a change only introduced by the editors Johann Ulrich and Johannes Sturzenegger.

How valuable is the information derived from the *Volkskalender* on the crisis of 1770–1772?

The analysis of the impact of the crisis in 1770–1772 in the Old Swiss Confederacy is owing. The case study within the thesis aimed to find out about the potential of the *Volkskalender* as a source for these years. Apart from the *Appenzeller Kalender*, the three most continuous calendars were chosen. Only two of them (*Jährlicher Haus-Rath* and *Berner Hinkender Bote*) were considered to be helpful. The *Solothurner Schreibkalender* does not contain any retrospective information during this period.

The *Appenzeller Kalender* contained reports on trading embargos and recipes for rice bread, as well as the remarkable birth and death rates. Numerous regional reports on thunderstorms, floods and hail confirm the harsh weather in these years. However, AK 1773 does report a warm winter, which seems to contradict Dominik Collet. The *Jährlicher Haus-Rath* does not contain many reports. The remarkable findings were the *Brot*- and *Mehltafel*, which are a clear indication of the inflation period. The *Berner Hinkender Bote* contains several reports on the weather events within the period of the crisis. The focus is more on the Old Swiss Confederacy and not on a regional level.

To sum up, the *Appenzeller Kalender* gives a more detailed picture on a regional level. Nevertheless, in combination with other calendars, the potential to analyse the impact on the population of the Old Swiss Confederacy is apparent. The *Volkskalender* can be considered a valuable source in this case.

What is the potential of the Volkskalender for climate reconstructions?

For a climate reconstruction, only the seasonal review that started in 1768 would be of interest. The information is mainly proxy data. However, three problems arise: firstly, it is not clear where exactly the observations were made; secondly, the observed species change; thirdly, the data are not precise enough, not allowing the data to be converted into DOY (day of year). So there is no continuity in phenological data. To conclude, the data cannot serve as a basis for a climatic reconstruction. The value and potential of the source lie within the perception of natural events and the contemporary understanding of weather and climate.

Outlook

The source *Volkskalender* in Switzerland has an enormous potential regarding climate- and weather-related information. The numerous calendars can provide a detailed insight into the perception of different events. The earlier calendars in particular might be able to fill a gap where the availability of sources is low. However, there are some limitations: the major problem is the source of information and its reliability. As the author of the calendars is usually not indicated, evaluating the information is difficult. Although the source *Volkskalender* can deliver valuable information on the perception of natural events, the information on weather (such as the yearly reviews) is rare and not precise enough for the application of indices. Here, the concentration on calendars with handwritten comments on the actual weather might be more promising.

Nevertheless, the inclusion of more different calendars in the analysis can deliver a more detailed picture on a regional scale. The results of the *Appenzeller Kalender* could be compared to other calendars of north-eastern Switzerland to cross-validate and extend the information. The peak years in particular, which are not (yet) confirmed by an anomaly in literature, would be interesting for a detailed analysis. Additionally, a comparison of the seasonal review with the early instrumental data of Herisau (1821–1841 Johann Ludwig Merz, 1822–1845 Johann Jakob Nef)[506] would increase the validity of the results derived in this thesis. Furthermore, comparison with other journals can increase the credibility of the information from the *Volkskalender*. In the case of the *Berner Hinkender Bote*, a comparison with the publications of the *Berner Ökonomische Gesellschaft* would seem to prove useful.

[506] Pfister et al. 2019.

5. Lists

5.1. List of Abbreviations

AG Aargau (canton)

AI Appenzell Inner Rhoden

AK Appenzeller Kalender

AR Appenzell Ausser Rhoden

BE Bern (canton)

BL Basel-Land (canton)

ECH Euro-Climhist

ETH Eidgenössische Technische Hochschule Zürich

GL Glarus (canton)

GR Grisons

LOC Location

SG St Gallen (canton)

SH Schaffhausen (canton)

SNF Swiss National Science Foundation

TG Thurgau (canton)

ZB Zentralbibliothek Zürich

ZH Zurich (canton)

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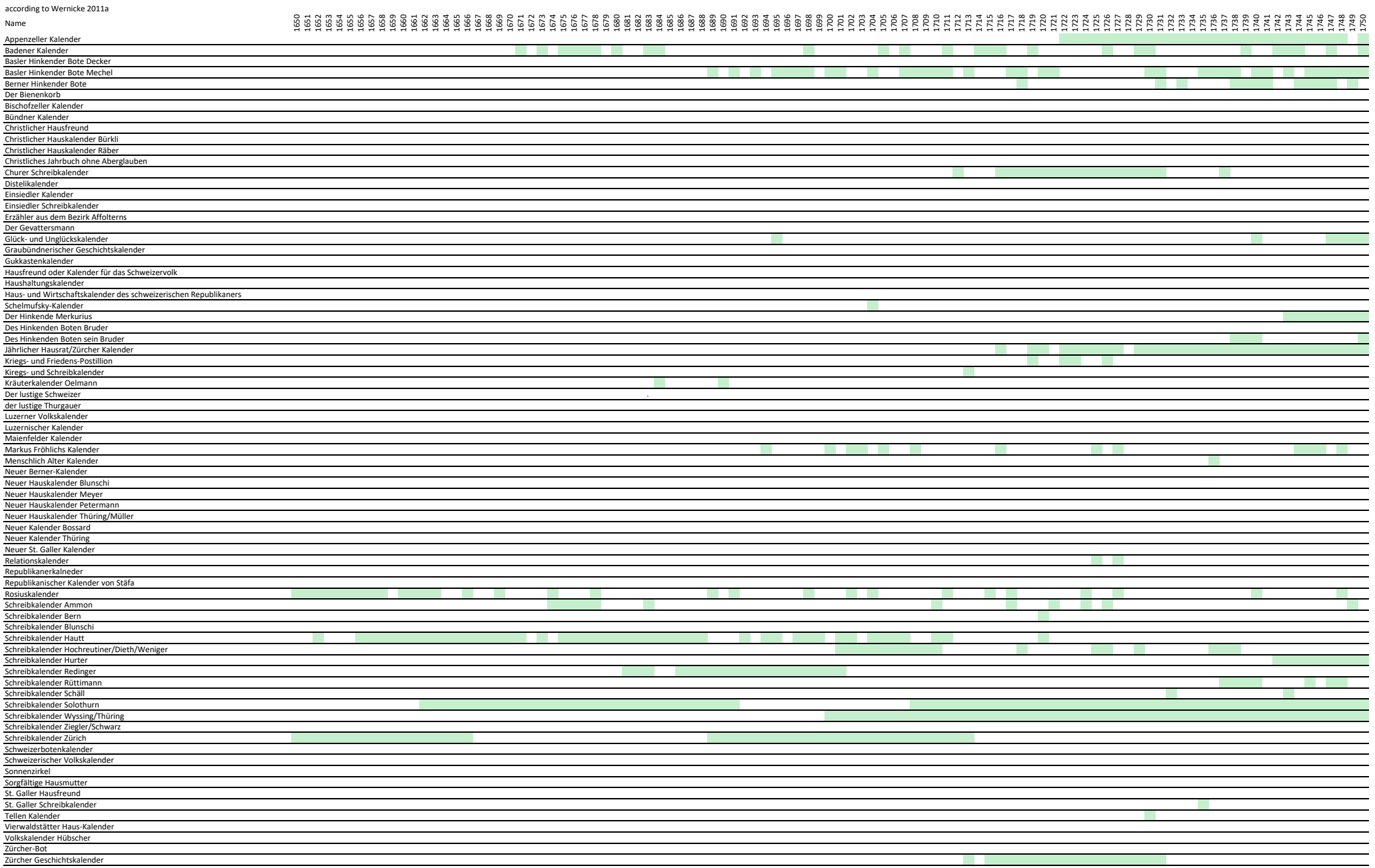
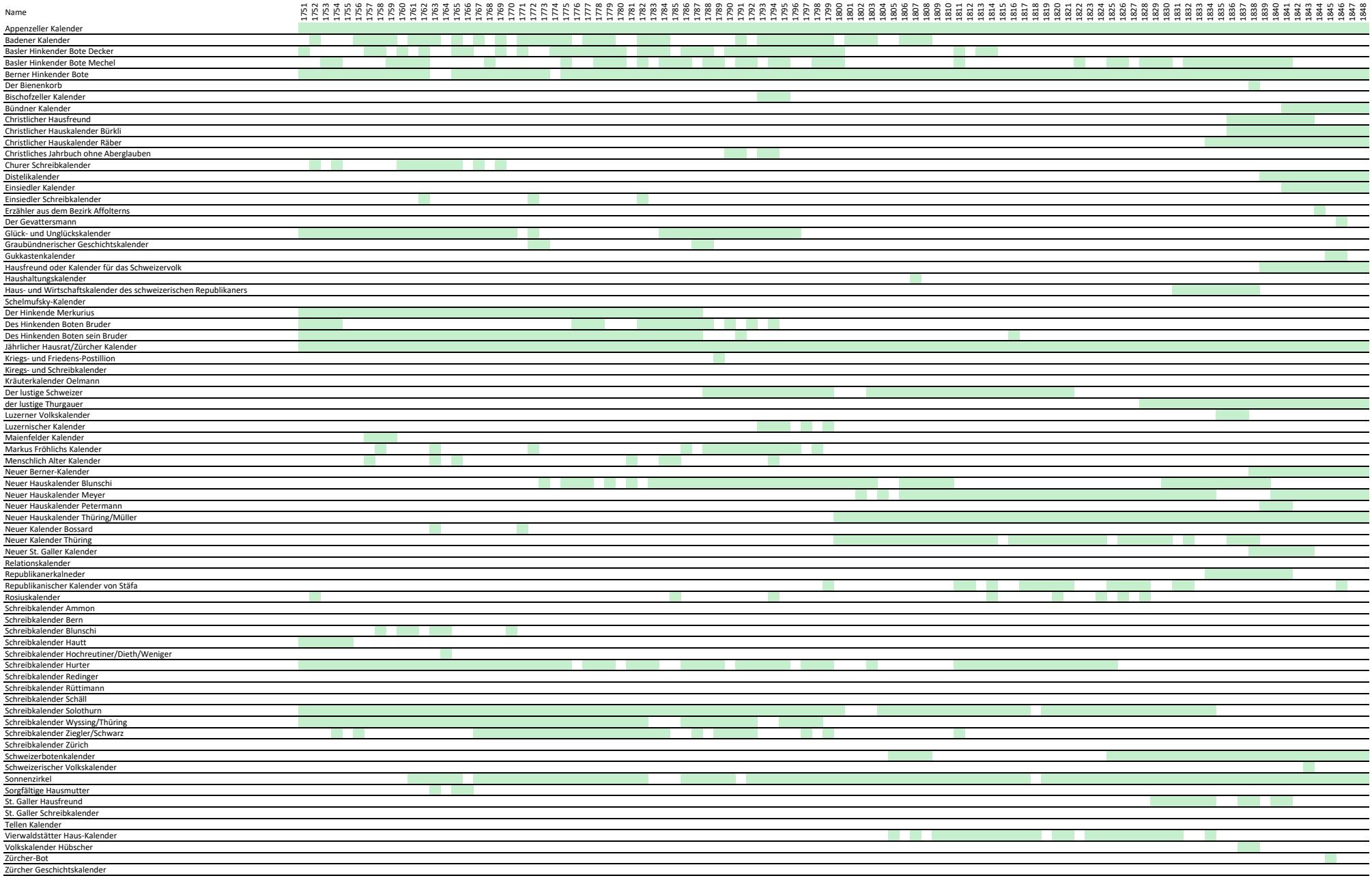
7. Appendices

7.1. Volkskalender – Overview of Sources 1650–1848



7.1. Volkskalender – Overview of Sources 1650–1848

according to Wernicke 2011a



7.2. Editors of the Appenzeller Kalender

Table 3: Overview of the different people involved in the publication process of the Appenzeller Kalender of 1722-1865.[507]

Year	*N°*	*Editor*	*Printer*	*Author*	*Publisher*	*Number of pages*
1722	1	JT	JCE	JT		40
1723	2	JT	JCE	JT		38
1724	3	JT	JCE	JT		36
1725	4	JT	JCE	JT		40
1726	5	JT	JCE	JT		38
1727	6	JT	JCE	JT		39
1728	7	JT	JCE	JT		40
1729	8	JT	CUW	JT		40
1730	9	JT	TH	JT		40
1731	10	JT	TH	JT		40
1732	11	JT	TH	JT		39
1733	12	JT	TH	JT		34
1734	13	JT	TH	JT		40
1735	14	JT	TH	JT		40
1736	15	JT	TH	JT		40
1737	16	GW	RW	GW / JT		40
1738	17	GW	RW	GW / JT		40
1739	18	GW	RW	GW / JT		40
1740	19	GW	RW	GW / JT		40
1741	20	GW	RW	GW / JT		40
1742	21	GW	RW	GW / JT		40
1743	22	GW	RW	GW / JT		40
1744	23	GW	RW	GW / JT		40
1745	24	GW	RW	GW / JT		40
1746	25	GW	RW	GW / JT		36
1747	26	GW	RW	GW / JT		40
1748	27	GW	RW	GW / JT		40
1749	28	GW	RW	GW / JT		39
1750	29	US	RW	US		38
1751	30	US	RW	US		40
1752	31	US	RW	US		40
1753	32	US[508]	RW	US		40
1754	33	US[509]	RW	US		40

[507] The table is based on: AK 1722-1865; Schläpfer 1978: 22; Fuchs 2012a (e-HLS); Tschui 2009: 238; Wernicke 2011a: 85.

[508] For the years 1753-1755 there exist issues from Ulrich Sturzenegger as well as Johannes Tobler. Here Ulrich Sturzenegger is mentioned as editor, as *e-periodica* provides that version. Cf. Tschui 2009: 239, 242.

[509] See footnote 508.

1755	34	US[510]	RW	US		40
1756	35	US	RW	US		40
1757	36	US	LD	US		40
1758	37	US	LD	US		40
1759	38	US	LD	US		40
1760	39	US	LD	US		40
1761	40	US	LD	US		40
1762	41	US	LD	US		40
1763	42	US	WLD	US		40
1764	43	US	WLD	US		40
1765	44	US	WLD	US		56
1766	45	US	WLD	US		60
1767	46	US[511]	US	US		56
1768	47	US	US	US		58
1769	48	US	US	US		60
1770	49	US	US	US		80
1771	50	US	US	US		80
1772	51	US	US	US		76
1773	52	US	US	US		76
1774	53	US	US	US		76
1775	54	US	US	US		76
1776	55	US	US	US		76
1777	56	US	US	US		76
1778	57	US	US	US		76
1779	58	US	US	US		76
1780	59	US	US	US		74
1781	60	US/MS[512]	US	US		76
1782	61	US/MS	US	US		76
1783	62	MS	MS			76
1784	63	MS	MS			76
1785	64	MS	MS			76
1786	65	MS	MS			76
1787	66	MS	MS			76
1788	67	MS	MS			76
1789	68	MS	MS			72
1790	69	MS	MS			72
1791	70	MS	MS			72
1792	71	MS	MS			72
1793	72	MS	MS			72

[510] See footnote 508.

[511] Norbert D. Wernicke states, that Ulrich Sturzenegger, was one of a few publisher, which did the mathematical calculations, text component and printing on its own. Cf. Wernicke 2011a: 59.

[512] According to Thomas Fuchs (2012), Mathias Sturzenegger was already co-editor in 1780. It is not entirely clear, to which extent he was already included in the publication process of the *Appenzeller Kalender*.

1794	73	MS	MS			72
1795	74	MS	MS			72
1796	75	MS	MS			72
1797	76	MS	MS			72
1798	77	MS	MS			72
1799	78	MS	MS			68
1800	79	MS	MS			68
1801	80	MS	MS			68
1802	81	MS	MS			68
1803	82	MS	MS			68
1804	83	MS	MS			68
1805	84	MS	MS			68
1806	85	MS	MS			68
1807	86	MS	MS			68
1808	87	MS	MS			68
1809	88	JUS	JUS	JUS[513]		68
1810	89	JUS	JUS	JUS		68
1811	90	JUS	JUS	JUS		68
1812	91	JUS	JUS	JUS		68
1813	92	JUS	JUS	JUS		68
1814	93	JUS	JUS	JUS		68
1815	94	JUS	JUS	JUS		68
1816	95	JUS	JUS	JUS		68
1817	96	JUS	JUS	JUS		68
1818	97	JUS	JUS	JUS		68
1819	98	JUS	JUS	JUS		68
1820	99	JUS	JUS	JUS		68
1821	100	JUS	JUS	JUS		68
1822	101	JUS	JUS	JUS		68
1823	102	JUS	JUS	JUS		68
1824	103	JUS	JUS	JUS		64
1825	104	JUS	JUS	JUS		64
1826	105	JUS	JUS	JUS		64
1827	106	JUS	JUS	JUS		64
1828	107	JUS	JUS	JUS		64
1829	108	JUS	JUS	JUS		64
1830	109	JUS	JUS	JUS		64
1831	110	JUS	JUS	JUS		68
1832	111	JUS	JUS	JUS		68
1833	112	JUS	JUS	JUS		68
1834	113	JUS	JUS	JUS		68

[513] "Wie seit 1745 sein Grossvater und Vater, so war auch er [Johann-Ulrich Sturzenegger, I.V.] Herausgeber des Appenzeller Kalenders, den er selbst verfasst und in seiner Buchdruckerei im Unterdorf druckte." Dekan Frei, Trogener Familienbuch cit. after Schläpfer 1978: 22; Fuchs 2012a (e-HLS).

1835	114	JUS	JUS	JUS		68
1836	115	JUS	JUS	JUS		68
1837	116	JUS	JUS	JUS		68
1838	117	JUS & JS	JUS & JS	JUS & JS		68
1839	118	JUS & JS	JUS & JS	JUS & JS		68
1840	119	JUS & JS	JUS & JS	JUS & JS		68
1841	120	JS	JS			68
1842	121	JS	JS			68
1843	122	JS	JS			68
1844	123	JS	JS			68
1845	124	JS	JS			68
1846	125	JS	JS			76
1847	126	JS	JSc		JSc	70
1848	127	JS	JSc		JSc	68 resp. 37
1849	128	JS	JSc		JSc	68
1850	129	JS	JSc		JSc	68
1851	130	JS	JSc		JSc	68
1852	131	JS	JSc		JSc	68
1853	132	JS	JSc		JSc	68
1854	133	JS	JSc		JSc	68
1855	134	JS	JSc		JSc	68
1856	135	JS	JSc		JSc	68
1857	136	JS	JSc		JSc	66
1858	137	JS	JSc		JSc	68
1859	138	JS	JSc		JSc	76
1860	139	JS	JSc		JSc	76
1861	140	JS & JSc	JSc			76
1862	141	JS & JSc	JSc			76
1863	142	JS & JSc	JSc			64
1864	143	JS & JSc	JSc			76
1865	144	JS & JSc	JSc			76

CUW = Christian Ulrich Wagner (Ulm)
GW = Gabriel Walser
JCE = Johannes Christoph Egg (Lindau)
JH = Johannes Tobler
JS = Johannes Sturzenegger
JSc = Johannes Schläpfer
JUS = Johann Ulrich Sturzenegger

LD = Leonhard Dieth (St Gallen)
MS = Mathias Sturzenegger
RW = Ruprecht Weniger (St Gallen)
TH = Tobias Hochreutiner (St Gallen)
US = Ulrich Sturzenegger
WLD = Widow of Leonhard Dieth (St Gallen)

7.3. Indexes

7.3.1. Keywords A-L (1722–1794)

	1722	1723	1724	1725	1726	1727	1728	1729	1730	1731	1732	1733	1734	1735	1736	1737	1738	1739	1740	1741	1742	1743	1744	1745	1746	1747
afforestation																										
animals												1										1				1
avalanche																	1	2								
barometer																										
bear																				2						
bees												1														
bread	1															1	1			2						
brine spring																										
canibalism																	1									
cereals	1	1				1							1			2	1		2	1		2		1		3
climate												1														
coldness						3			4		2							1		4	1	1		1		
comet				1												1						1		1	5	
crevasse																										
crop loss						1	3	1	4	3	2		4	2		3	2		3	2	1	5	1	1		3
death of livestock																									1	
dew																										
disease										1						1	1								2	
drought						1							1						1							1
dryness																										1
earthquake				1		21	2	4	2	5	4		4				1		1	1		1	1		13	
emigration																										
fire							2				1		2				2				1	1	1	1	1	1
flood		2		1		4	3	2	3		2		5	2		3	1		1	1	6	2		3	1	3
fog																										
forecast																										
forest fire																										
frost						1			1				1								1					
frozen waters						1			1											1				1		
glacier fall																										
grasshopper																										
hail		1				2	4		6	2	6	1	3	2					2	2		3			1	4
halo																										
hardship	1								1							3	3			1	2					1
harvest	1	1				1										2	1		1			1				1
hay																										
heat							1									2			2							3
heavy rain									1		1	1	2			1			1			1		1		3
high water																			1							
hoar frost																										
hurricane																										
ice									1											1						
ice flood							1				1									2				2		
inflation																	1								2	
insects												1														
insurance																										
inversion																										
lack of feed																				1						1
lack of snow																										
lack of water																				1					1	1
lack of wood																										
land slide																										
late bloom																										
lightning rod																										
livestock						1						1	3			1	1	1	1	1	3			2	1	2

	1748	1749	1750	1751	1752	1753	1754	1755	1756	1757	1758	1759	1760	1761	1762	1763	1764	1765	1766	1767	1768	1769	1770	1771	1772
afforestation																									
animals																					1	1			1
avalanche			1																						
barometer																									
bear																									
bees																									1
bread												1								2	1	1			6
brine spring																									
canibalism																									
cereals		1					2		1											2	1	2			18
climate																									
coldness				1	1				1							1	1			1	3	2		1	6
comet												1		1						1			4		
crevasse																									
crop loss	3	1		2	1	2	1	2	1	1		1			1	1	6	3		1	2	3	2	2	5
death of livestock																									
dew																									
disease																1									1
drought	1															1	1								1
dryness	1			1	1	1											1			2	1				1
earthquake	1				2	2			1	6	2	1					1			1	3		1	2	1
emigration																									1
fire		1		1	1	1	2				1				1	1	2	3	1	4	4	1		2	
flood		1		6	2	1		2	3	1		1				1	7	2	1	2	1	2	1	3	
fog																									
forecast																									
forest fire																									1
frost				1														1			1				3
frozen waters									1												1	3		1	
glacier fall																									
grasshopper																									
hail				2		1	1	2	2	1			1		2		3			1	3	6	2		1
halo																									
hardship																	1			2				1	4
harvest	1			1		1	3								1			2		3	2				8
hay																									
heat	1			1	1	1										1				1		1			1
heavy rain				1				1	1							1	1			1	2	1			
high water									1								1				1				
hoar frost																					1	1			
hurricane																		1							
ice																									
ice flood																									
inflation					1							1								1	1			1	10
insects																1				1					
insurance																									
inversion																1						2			
lack of feed																								1	1
lack of snow																									1
lack of water	1				1											1	1								1
lack of wood																				1					
land slide				1													1						2		
late bloom																									1
lightning rod																									
livestock	1	1	1		1	3	2		1							1	2					1		3	3

	1773	1774	1775	1776	1777	1778	1779	1780	1781	1782	1783	1784	1785	1786	1787	1788	1789	1790	1791	1792	1793	1794
afforestation																						
animals			1		1				1									1				
avalanche														1				2				
barometer					1																	1
bear	1																					
bees																						
bread	2			1							1	1						2				
brine spring																						
canibalism																						
cereals	1						2		1						1					1		
climate											2			1								
coldness	1	1		2	3				1		10	1	1	1	1	2		13		1		2
comet				1									1									
crevasse										1												
crop loss	1		2			1	3	2	1	1	4	1	5	1	1	3			3	2	1	1
death of livestock																						
dew																						
disease											2	1										
drought	1		1								1											
dryness			2				1	2		1	4		2									
earthquake	1	1	3	1			1		2	3		5	1			1					3	1
emigration																						
fire		1	2	2	1	1	1	5	2		3	1	3		1		3		3	1		
flood		1	2	3	1	1	9				2	3	8	5			1	2	2	2	1	
fog								1				3								1	1	1
forecast																						
forest fire								2														
frost		2				1		1														1
frozen waters					1						1		1	3				5				
glacier fall																						
grasshopper											1											
hail		2	2	2			1	1		1		2	2			1			1	1	1	
halo					1																	
hardship	4			1							1	1		1				3				
harvest	1	2	1	1	1	1	1	1	1	2	1		1				1	1	4	1	1	1
hay									1													
heat											3		1						1			
heavy rain		1	1	2			3			3	2			1			2	2	1	1	1	
high water		1									1											
hoar frost										1												
hurricane						1																
ice		1																				
ice flood				1	1													1				
inflation											2	1			1							
insects			1								1											
insurance																						
inversion																						
lack of feed		1				1					2			1	1							
lack of snow									1		1								1			
lack of water			2		1		1				1		1									
lack of wood																		1				
land slide																		2				
late bloom																						
lightning rod											1	3			2	1						
livestock		2	1	2		1	1	1		1	4	1	1	1	2	1		2	2	1		

7.3.1. Keywords A-L (1795–1865)

	1795	1796	1797	1798	1799	1800	1801	1802	1803	1804	1805	1806	1807	1808	1809	1810	1811	1812	1813	1814	1815	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826	1827	1828	1829	1830
afforestation																																				
animals								1			2	1				1										3					2					
avalanche																8			1			1		6	1						3			2		
barometer																													2	1						
bear									1											1				1												
bees									1																											
bread	1																	1						1												1
brine spring																																				
canibalism																																				
cereals	2							1		1		3	2	1	1	1		2	2	1				2	1	1	2	2	3	1			2			
climate																																				
coldness		2	1			2			1	6	2	14	14		1	3	1	1	1	2	1	1	1	1	1		1	2			1	1	1	2		1
comet									1		1							1																		
crevasse																																				
crop loss		2			1	1	1	2	2	3	4	14	15		1	3	3	3	3	1		1		2	2	5	3	6	3	1	2	2	3	3	3	3
death of livestock				1				1			1	1																								
dew																																				
disease				1			1				1	4				1								1												
drought											2																									1
dryness		1					3		1	1			1	1				1					1	1	1		1		1	1			1			
earthquake			8						1		2	1					1							1						1				1		
emigration													1																							
fire		2	4			1	4	1		1	2				1		1		1					1		1	2									
flood	1	1			1	1			6	2	2	1	2			4		1	1	1			1	2	1	3		5	1		1	3	4	5	3	3
fog												2					1													1						
forecast																																				
forest fire							2								1																					
frost											1	2														1	1	1				1	1			
frozen waters										1	1		1																							
glacier fall																									1											
grasshopper				1				1			1						1	2														1				
hail		1		1	1			2		1	1	4	3			2			1		1			1		4	2	2	3	4	4		1	2	1	2
halo																																				
hardship						2					1	4	5											2								1				1
harvest	2	1	1	1	1			2	1	1	8	3	4	1	1	1	1	3	2	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	2
hay																																				
heat				1			1				4			1				2					1		1	1			2						2	1
heavy rain			1		1				2		2		1			1			1	1				1		1		1	1		2	2	3	2	2	
high water																		1		2				2				1			1	1	1			
hoar frost											1	1	2				1									1	1	1					1			
hurricane								1										1											2						2	
ice													1																					1		
ice flood						1										2								1												
inflation		1									1	7	6											1												
insects													1																							
insurance																																				
inversion																																				
lack of feed													3							1												1				
lack of snow																																	1			1
lack of water		1					1				1		2																	1						
lack of wood													1																							1
land slide	1	1										1	1					1					1								1		1		1	
late bloom											3							1	3																	
lightning rod										1																										
livestock		2	1	1	1			1	2		1	1	2			7		1	1	1			2	2	1	1	2		1			1	1	3		1

	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840	1841	1842	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865
afforestation									1																										
animals		1									2				1		1							1		1									
avalanche						1		1							3																			5	
barometer										1																									
bear																																			
bees										1	1	1	1					1		1	1	1	1				1			1			1	1	
bread						1			1			1				1		1	1		1		1												
brine spring																		1																	
canibalism																																			
cereals							1	1	1	1	1	2			1	1	2	1	2	1	1	1	1	1	1			2	1	1	1		1		1
climate						1				1	1																								1
coldness	2	1	1			3	2	1	1		1	1	1	1		1	1	1	1		2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
comet							1							1						1															
crevasse																																			
crop loss	3	6	1		2	2	1		1		2	2	1	1		1	1	1	1	1	18	1	1	1	4	2	1		1	1	1			1	1
death of livestock																																			
dew											1																								
disease					1												1																		1
drought					1								1				9	1												1					
dryness				1	1		1		1		1	1	1		1			1			1				1	1		1	1						1
earthquake	1						1	1				1		1	1		2			1	1	5	1												
emigration																										1									
fire				1		4	1		1		1	1	1	1		2	2	2														1	1		
flood	3	9	1		2			1	1	2	1	2				2					20	1		1		2	1					1	1		
fog	2	1	1		1										1	1	1	2	1		1	1		1	1	1				1				1	
forecast										1																									
forest fire																	1	1																	
frost					2						1																	1							
frozen waters	2											1				1												1							1
glacier fall																																			
grasshopper																																			
hail	4	3	1			1					2	1					1				10	1	1		2						1	1			1
halo																																			
hardship									1			1				2		1																	
harvest		1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1
hay																																			
heat			1			1						1	1	1		1	19						1			1	1	1	1	1	1	1	1	1	
heavy rain	2	4	1		1			1		1	3					1					6	1	1			2			1	1	1		1		1
high water	2	4			1			1				1									1					1									
hoar frost	1	1	1				1		1																			1						1	
hurricane												2									2													1	
ice	1						1																												
ice flood									1	1						1					1											1			
inflation																																			
insects											1																								
insurance									1																										
inversion																																			
lack of feed								1				1	1			1	1							1											
lack of snow												1													1		1	1		1					
lack of water	3			1	1				1			1				1	5								1				1	1					1
lack of wood																																			
land slide		1																																	
late bloom					1						1						1							1							1			1	
lightning rod						1																													
livestock	1	2						2				1		1		2	2		1		1							1				1		3	

7.3.1. Keywords M-Z (1722–1794)

	1722	1723	1724	1725	1726	1727	1728	1729	1730	1731	1732	1733	1734	1735	1736	1737	1738	1739	1740	1741	1742	1743	1744	1745	1746
manna																									
melting water									1															1	
meteorite									1																
mist																									
national consciousness																									
naval accident																	1	2	1						
periodical waters																									
pest																						1			
plague																									
plant disease																									
prevention																		1							
protection forest																									
rain										1		1	1			2	2							1	
rainbow	1																								1
red sun																									
rescue																									
review (seasonal)																									
rock slide								1																	
rockfall																									
rogation																									
seaquake													1									1			
snow						2	1		2		3	1						1							
snow cover									1																
solar eclipse																									
solidarity																				1					
storm				2	1	5	1	2		1	1						5	3	1						2
storm tide																		1							
sulphur								1																	
summer snow																									
sustainable development																									
temperature																									
thunderstorm		4		1	1	6	8	12	8	4	10		4	1			1	1	1	1	3	1		1	1
tornado																									
trade																									
tsunami																									
unclear phenomenon	1								1				2			1		2					1		
vegetation																									
vegetation advanced																									
vegetation delayed																			1	1		1			
volcano						2	5	1		1			1				1								2
warmth																									
water level													1												
weather																									
wetness										1							1								
whirlwind								1											1						
will-o'-the-wisp									1																
wind							1										1				1	1	1		1
wind break																									
windthrow						1				1							1		1						1
wine																									
wolf						1			2									1		3					

	1747	1748	1749	1750	1751	1752	1753	1754	1755	1756	1757	1758	1759	1760	1761	1762	1763	1764	1765	1766	1767	1768	1769	1770	1771
manna																									
melting water										1															
meteorite																									
mist																									
national consciousness																									
naval accident																						1			
periodical waters																									
pest		2					1		1		1														
plague																					1				
plant disease																									
prevention																									
protection forest																									
rain	1				1	1	1			1						1			1	1					
rainbow																									
red sun																									
rescue																									
review (seasonal)																						1	1		1
rock slide																			1						8
rockfall																									
rogation																									
seaquake																					1				
snow	1	1			1	1															1	1	1	2	1
snow cover					1					1												1		1	2
solar eclipse																									
solidarity								1																	1
storm	1		4	1		2				1									3	1	1	3	1		1
storm tide			1																						
sulphur																									
summer snow																						2		1	
sustainable development																									
temperature																									
thunderstorm	3		2	1			2	3	2	2				2	2	2	1	4	2	1	2	8	4	2	2
tornado																									
trade																					2				
tsunami																									
unclear phenomenon													1				2							1	
vegetation																									
vegetation advanced																									
vegetation delayed					1	1																1			1
volcano							3	1																	
warmth																						1			
water level					1													1				1			
weather	1																				1		1		
wetness	1					2															2	1			
whirlwind														1											
will-o'-the-wisp																									
wind						1		2				1					1	1	1	1	2	1			
wind break			1																2						
windthrow			2			1													2			2	1		
wine							1	1													1		1	1	
wolf																						1			

	1772	1773	1774	1775	1776	1777	1778	1779	1780	1781	1782	1783	1784	1785	1786	1787	1788	1789	1790	1791	1792	1793	1794
manna																							
melting water														1	1								
meteorite					1		2							3									
mist																							
national consciousness																							
naval accident	1					1				1				2								1	
periodical waters																							
pest	1											1											
plague																							
plant disease				1																			
prevention												1				1					1		
protection forest									1														
rain	1	2		1	2			1			1	2			1			1	1	1			
rainbow																							
red sun													3										
rescue																							
review (seasonal)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
rock slide				1																			
rockfall															1								
rogation																							
seaquake													1										
snow	3	2		1	2			1		1	1	2	1	2	6		2		2				1
snow cover	1	1										1		1	4		1		5				
solar eclipse																							
solidarity												1											
storm	1			5	1	1	2			1	3	2		1			1	2				2	1
storm tide					1						1												
sulphur														1									
summer snow			1					1						2		1			1		1		
sustainable development																							
temperature						1						1			1				2				
thunderstorm	1		2		8		2	4	3	2	2	3	10	5		3	2	4		6		3	
tornado																							
trade	8																			1			
tsunami																							
unclear phenomenon														1							1		
vegetation										1													
vegetation advanced	4							1	1												1		
vegetation delayed	5				1	1				1		2	1		1								1
volcano					1					1							2						
warmth	4		1	1																1			
water level	1							1												1			
weather		2	1	1	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1
wetness	5	1	1		1		1					1	1			1	1						1
whirlwind	1			1			2									1							
will-o'-the-wisp					3																		
wind				1	5	2	1			1	1	5		2	1			1	2	2	2	1	
wind break				1																			
windthrow				1			1															1	
wine	10	1						1			1	1											
wolf																							

7.3.1. Keywords M-Z (1795–1865)

	1795	1796	1797	1798	1799	1800	1801	1802	1803	1804	1805	1806	1807	1808	1809	1810	1811	1812	1813	1814	1815	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826	1827	1828	1829	1830
manna																																				
melting water									1							1								1			1	1						2		
meteorite																		1																		
mist											1																									
national consciousness																																				
naval accident								1	2									1											2							
periodical waters																																				
pest				2				1			1		1				1	2						1								1		1	1	1
plague																																				
plant disease																																				
prevention										2									1					1												
protection forest																1																				
rain		1		1	1				1			12	4		1	1											2	1		2			1		1	2
rainbow																																				
red sun																																				
rescue										1						1						1														
review (seasonal)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
rock slide								1				1	3	1																						
rockfall																																				1
rogation																																				
seaquake																																				
snow		1							2	5	3	5	4	1	1	3			1			1	1	2	2	2		1		1	2		1	2	1	
snow cover					1			1	3	2	1		3			4				1			1	2	1						1			2	1	2
solar eclipse																																				
solidarity							1	1						1											1								1			
storm					2			4	4		2						1	2					1	2	1	1	2		3	1	4	2		1	2	2
storm tide									1																							1				
sulphur																																				
summer snow								1				2	3			1				1			1					1		1	1					1
sustainable development																																				
temperature																1											1							1	1	
thunderstorm		1	6	2	4	1		2	2	4	5	1	2				2	1	3				1	1		5	4	4	5		4		2	1	2	2
tornado																																	1			1
trade													5																							
tsunami								1					1																							
unclear phenomenon									1												1							2				1				
vegetation													1																							
vegetation advanced	2	1					1	1		1	3	1						3	1	1		1			1	1			1							
vegetation delayed			1			1						8	10		1	1	1						1	1						1	1		1			1
volcano													1																							
warmth		1							1		5	6	3	1		1			1					1								2	1	1	1	1
water level										1	1					1								1		1	1	1	1			2		1	1	
weather	1	1	1	1	1	1	2	1	1	1	3	1	1	1	1	1	1	1	2	1	1	1	1	1	2	1	1	1	1	1	1	1	1	2	1	1
wetness		1				1			1		1	15	13			1			1	1	1	1	1	1			1	1		1		1	1	1		
whirlwind									1																											
will-o'-the-wisp																																				
wind		1	3			1	2	1		1	1	1			1		1		1					1			2		4		1					
wind break																		1											1		1					1
windthrow								2	3								1						1			1	1		1		1		1		1	1
wine										1	9	17	12			1		2	1					1	1	1	1	1		1	1	1	1	1	1	1
wolf										1										1																

	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840	1841	1842	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865
manna						1																													
melting water	1				1							1									1					1									
meteorite					1							1			1			2																	
mist																		2																	
national consciousness																																1			
naval accident				1								2									1									1	1				
periodical waters							1																												
pest											1															1									
plague																																			
plant disease																	1	1	1	1	1	1		1	1		1		1	1				1	
prevention															1											1								1	
protection forest																																			
rain	2	2		1		2								1	1		1				2	1	1	1	1	1		1		1	1		1	1	1
rainbow																																			
red sun				1																															
rescue						1									1																				
review (seasonal)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		2	1	1
rock slide																																			
rockfall											1																								
rogation	1																																		
seaquake																																			
snow	2	1	1	1	1	5	1			1		1		1	4	1	1	1	1	1	2	1		1	1			1	1	2	1		1	6	1
snow cover	1	1	2	1	2	4	1	1			1	1	1	1	2	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1		1	2	1
solar eclipse												1										1									1				
solidarity		1							1						1	1						1					1					2	1	1	
storm	2	1	1		1	4	1		1	2	1	4			1		1	2			9				1	1				1	4			6	
storm tide				1						1																									
sulphur																																			
summer snow	1								1			1																1							1
sustainable development									1																										1
temperature	1				2	1						1	1	2		1	1	1			1				1	1	1		1	1		1	1	1	1
thunderstorm	4	3	2			4		3	1		2						2				7	1	1		2				1	1	2		1	1	1
tornado						1															1														
trade	1						1					1			1	1																			
tsunami															1																				
unclear phenomenon						1	1																												
vegetation					1	2																		1											
vegetation advanced	1		1		1	1						1		1		1	1		1				1				1	1	1				1	1	
vegetation delayed			1	1		1		1		1	1							1		1		1									1				
volcano				1	1				1									1																	
warmth		1	2		2	2	1	1	1	1	1	1			1		1			1	2	1	1	1		1	1		1	1	1		1	1	1
water level		1			1											2					4				1				1						
weather	1	1	1	1	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1									1		
wetness	1	1	1	1			1	1	1		1			1	1		1		1	1	1	1				1					1		1		1
whirlwind							1														1														
will-o'-the-wisp																																			
wind	2			1	3	1	1			1	2	2	2	2	1	4		2	1	1			1	1	1		1					1	1	1	1
wind break			1							1	1	2									4										1			1	
windthrow	1			1		1				2	1	2									4				1										
wine	1	1	1	1	1	1	1			1		2			1	1	2	1		1	1	1	1	1	1	1	1	1	1	1	2		1	1	2
wolf																																			

7.3.2. Locations - Cantons AG, AI, AR (1722–1794)

	1722	1723	1724	1725	1726	1727	1728	1729	1730	1731	1732	1733	1734	1735	1736	1737	1738	1739	1740	1741	1742	1743	1744	1745	1746	1747	1748	1749	1750	1751	1752	1753	1754	1755	1756	1757
AG																																				
Aarau																																				
Auw																																				
Baden																																				
Biberstein																																				
Bremgarten																																				
Brugg																						1														
Bözberg																																				
Dürrenäsch																																				
Fahrwangen																																				
Freiamt (area)																						1														
Gansingen																																				
Kaiserstuhl																																				
Lenzburg																																				
Leutwil																																				
Mellingen																						1														
Merenschwand																																				
Mönthal																																				
Muri																																				
Oberentfelden																																				
Oberkulm																																				
Remigen																																				
Rheinfelden																																				
Riniken																																				
Schinznach																																				
Sins																																				
Suhr																																				
Unterkulm																																				
Veltheim																																				
AI																														1	1					
Appenzell																																1		2		
Oberegg																																				
AR						2					1											2		1	1	1				1	2		1			1
Bühler																															1			1		
Gais																																				
Grub																																				
Heiden																																				
Herisau																																				
Hundwil																															1		2			
Lutzenberg																																				
Rehetobel																																				
Schönengrund																																				
Schwellbrunn																															1					
Speicher																																				
Stein																															1					
Teufen																															1	1				
Trogen																																1				
Urnäsch																															1	1			1	
Wald																																				
Walzenhausen																																				
Wolfhalden																																			1	

	1758	1759	1760	1761	1762	1763	1764	1765	1766	1767	1768	1769	1770	1771	1772	1773	1774	1775	1776	1777	1778	1779	1780	1781	1782	1783	1784	1785	1786	1787	1788	1789	1790	1791	1792	1793	1794
AG																																					
Aarau												1																									
Auw																					1																
Baden												1																									
Biberstein																																					
Bremgarten																																					
Brugg																																					
Bözberg																																					
Dürrenäsch																										1											
Fahrwangen																										1											
Freiamt (area)																																					
Gansingen																																					
Kaiserstuhl																																					
Lenzburg																																					
Leutwil																										1											
Mellingen																																					
Merenschwand																																					
Mönthal																																					
Muri																										1											
Oberentfelden																																					
Oberkulm																																					
Remigen																																					
Rheinfelden																																					
Riniken																																					
Schinznach																																					
Sins																																					
Suhr																																					
Unterkulm																																					
Veltheim																																					
AI						2						1	1		1			1				2											1				
Appenzell																								1													
Oberegg																												1									
AR						3		1		1	1	1	1	1	1	1	2	2	1	1	1	3	1	1	1	2	2	1	1	1	1	1	2	1	1	2	1
Bühler												1												1													
Gais										1		1												1												1	
Grub																																					
Heiden													1																								
Herisau												1																									
Hundwil															1																	1		1			
Lutzenberg																																					
Rehetobel											2																										
Schönengrund													1																								
Schwellbrunn																																					
Speicher														1					1					1													
Stein														1																							
Teufen																								1													
Trogen							5							1					1					1												1	
Urnäsch																						3															
Wald																																					
Walzenhausen																																					
Wolfhalden																																					

7.3.2. Locations - Cantons AG, AI, AR (1795–1865)

	1795	1796	1797	1798	1799	1800	1801	1802	1803	1804	1805	1806	1807	1808	1809	1810	1811	1812	1813	1814	1815	1816	1817	1818
AG										2	1													
Aarau											1									1				
Auw																								
Baden																								
Biberstein											1													
Bremgarten																								
Brugg											1													
Bözberg																								
Dürrenäsch																								
Fahrwangen																								
Freiamt (area)																								
Gansingen																								
Kaiserstuhl																								1
Lenzburg																								
Leutwil																								
Mellingen																								
Merenschwand																		1						
Mönthal																								
Muri																								
Oberentfelden																								
Oberkulm																								
Remigen																								
Rheinfelden																								
Riniken																								
Schinznach																								
Sins																		1						
Suhr																								
Unterkulm																								
Veltheim																								
AI			2													1								
Appenzell											1													
Oberegg																1								1
AR	1	1	3	1	1	1	2	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1
Bühler																1								
Gais			1													1								
Grub																			1					
Heiden																			1					
Herisau																								
Hundwil																1								
Lutzenberg																			1					
Rehetobel			1								1													
Schönengrund																								
Schwellbrunn																								
Speicher											1													
Stein																								
Teufen																								
Trogen																1								
Urnäsch													1			1								
Wald																								1
Walzenhausen																								
Wolfhalden																			1					

	1819	1820	1821	1822	1823	1824	1825	1826	1827	1828	1829	1830	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840	1841	1842
AG							1																	
Aarau							1							1										
Auw																								
Baden		1					1																	
Biberstein																								
Bremgarten							1																	
Brugg		1					1																	
Bözberg		1					1																	
Dürrenäsch																								
Fahrwangen																								
Freiamt (area)																								
Gansingen		1																						
Kaiserstuhl																								
Lenzburg							1																	
Leutwil																								
Mellingen		1					1																	
Merenschwand																								
Mönthal		1																						
Muri																								
Oberentfelden													1											
Oberkulm							1																	
Remigen		1																						
Rheinfelden														1										
Riniken		1																						
Schinznach							1							1				1						
Sins																								
Suhr																								
Unterkulm							1																	
Veltheim														1										
AI																								
Appenzell					1																			
Oberegg																								
AR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Bühler																								
Gais					1																			
Grub																								
Heiden														1							1			
Herisau																								
Hundwil														1			1							
Lutzenberg																								
Rehetobel																								
Schönengrund														1										
Schwellbrunn																								
Speicher																								
Stein														1										
Teufen																								
Trogen					1																			
Urnäsch														1							1			
Wald																								
Walzenhausen																	1							
Wolfhalden																								

	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865
AG									3														
Aarau																							
Auw																							
Baden									1														
Biberstein																							
Bremgarten									1														
Brugg																							
Bözberg																							
Dürrenäsch																							
Fahrwangen																							
Freiamt (area)																							
Gansingen																							
Kaiserstuhl																							
Lenzburg																							
Leutwil																							
Mellingen																							
Merenschwand																							
Mönthal																							
Muri																							
Oberentfelden																			1				
Oberkulm																							
Remigen																							
Rheinfelden																							
Riniken																							
Schinznach																							
Sins																							
Suhr																			1				
Unterkulm																							
Veltheim																							
AI		1									1	1								1	1	3	
Appenzell																			1		1	1	
Oberegg																							
AR	1	1	1	1	2	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1
Bühler																					1		
Gais																					1		
Grub																							
Heiden																							
Herisau																						1	
Hundwil																						2	
Lutzenberg																							
Rehetobel																						1	
Schönengrund																							
Schwellbrunn																						3	
Speicher																						1	
Stein																						2	
Teufen																						2	
Trogen										1											1		
Urnäsch																						3	
Wald																							
Walzenhausen																							
Wolfhalden																							

7.3.2. Locations - Cantons BE, BL, BS, FR (1722–1794)

	1722	1723	1724	1725	1726	1727	1728	1729	1730	1731	1732	1733	1734	1735	1736	1737	1738	1739	1740	1741	1742	1743	1744	1745	1746	1747	1748	1749	1750	1751	1752	1753	1754	1755	1756	1757	1758	1759	1760	1761	1762	1763	1764	1765	1766	1767	1768	1769	1770	1771	1772	1773	1774	1775	1776	1777	1778	1779	1780	1781	1782	1783	1784	1785	1786	1787	1788	1789	1790	1791	1792	1793	1794
BE																	1					1																				1																										1					
Adelboden																																																																									
Aeschi bei Spiez																																																																									
Arch																																																																									
Bätterkinden																																																											1														
Bern									1																												1									1																											
Biel																																					1																																				
Büren an der Aare													1																																																												
Diessbach bei Büren																																																																									
Eggiwil																																																																									
Eriswil																																																									1																
Frutigen																																																																									
Grindelwald																																																																									
Grosshöchstetten																																																																									
Gündlischwand																																																																									
Guttannen																																																																									
Haslital (valley)																																																																									
Innertkirchen																																																																									
Interlaken																																																																									
Ins																																																																									
Kaufdorf																																								1																																			
Lauterbrunnen																																																																									
Lenk																																																													1												
Münsingen																																																																									
La Neuveville																																																																									
Nidau																																					1																																				
Orpund																																																																									
Orvin																																																																									
Reichenbach i. Kandertal																																																																									
Rötehnbach i. Emmental																																																																									
Schangnau																																																																									
Schwarzenburg																																																																						1			
Seedorf																																																																									
Sigriswil																																																																									
Siselen																																																																									
St. Stephan																																																													1												
Sumiswald																																																								1		1																
Täuffelen																																																																									
Thun																																																																									
Trub																																																																									
Unterseen																																																																									
Walperswil																																																																									
Wohlen bei Bern																																																																									
Worb																																																																									
BL																																																																									
Bubendorf																																																																									
Eptingen																																																																									
Läufelfingen																																																																				1					
Liestal																																																																									
Muttenz																																																																									
Waldenburg																																																																									
BS																																																																									
Basel																																			1	1						1																														1	
FR																																																																									
Corbières																																																		1																							
Fribourg																	1																																																								
Murten																																																																									
Romont																												1																																													

7.3.2. Locations - Cantons BE, BL, BS, FR (1795–1865)

	1795	1796	1797	1798	1799	1800	1801	1802	1803	1804	1805	1806	1807	1808	1809	1810	1811	1812	1813	1814	1815	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826	1827	1828	1829	1830	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840	1841	1842	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865
BE											1					1								1				2									1	1																			1														
Adelboden																																					1																																		
Aeschi bei Spiez																																					1																																		
Arch																													1																																										
Bätterkinden																																																																							
Bern																								1				3																														1												1	1
Biel																											1	1																																											
Büren an der Aare																												1	1																																										
Diessbach bei Büren																													1																																										
Eggiwil																														1																																									
Eriswil																																																																							
Frutigen																																					1																																		
Grindelwald																1																																																							
Grosshöchstetten									1																																																														
Gündlischwand																																							1																																
Guttannen																															4																																								
Haslital (valley)																1																																																							
Innertkirchen																								1																											1																				
Interlaken																																																																		1				
Ins																													1																																										
Kaufdorf																																																																							
Lauterbrunnen																																							1																																
Lenk																																																																							
Münsingen																												1																																											
La Neuveville																											1																																												
Nidau																																																																							
Orpund																												1	1									1																																	
Orvin								1																			1																																												
Reichenbach i. Kandertal																																					2																																		
Rötehnbach i. Emmental									1																																																														
Schangnau																														1																																									
Schwarzenburg																																																																								
Seedorf																												1																																											
Sigriswil																												1		1																																									
Siselen																													1																																										
St. Stephan															1																																																								
Sumiswald										1																					1																																								
Täuffelen																													1																																										
Thun																								3																																															
Trub																											1			2					2																																				
Unterseen																																						1																																	
Walperswil																													1																																										
Wohlen bei Bern																													1																																										
Worb																															1																																								
BL																																																									1				3										
Bubendorf																																					1																																		
Eptingen																																					1																																		
Läufelfingen																																					1																																		
Liestal																																					1	1																																	
Muttenz			1	1																																																																			
Waldenburg																																						1																																	
BS																																																									1														
Basel			1																					1													1																				1													1	
FR																													1																			1									2														
Corbières																																																																								
Fribourg																																																			1							1													
Murten											1																																																													
Romont																																																																							

7.3.2. Locations - Cantons GE, GL, GR, JU (1722–1794)

	1722	1723	1724	1725	1726	1727	1728	1729	1730	1731	1732	1733	1734	1735	1736	1737	1738	1739	1740	1741	1742	1743	1744	1745	1746	1747	1748	1749	1750	1751	1752	1753	1754	1755	1756	1757	1758	1759	1760	1761	1762	1763	1764	1765	1766	1767	1768	1769	1770	1771	1772	1773	1774	1775	1776	1777	1778	1779	1780	1781	1782	1783	1784	1785	1786	1787	1788	1789	1790	1791	1792	1793	1794
GE																																																																									
Geneva									1																																	1																															
GL																																										1	1	1							1																						
Betschwanden																																											1																														
Bilten																																																																									
Engi																		1																									1																														
Ennenda																																																																									
Glarus																																																																									
Klöntal																																											1																														
Linthal																																											2																														
Luchsingen																																											1																														
Mitlödi																																											1																														
Mollis																																																																									
Näfels																																											1																														
Netstal																																											1																														
Schwanden																																											1																														
Sulzwald																																																																									
GR																	1													1	2	2						1				2	1	1					2	1																							
Albula																																											1																														
Arosa																																																		2																							
Avers																																																																									
Bregaglia																																																		1																							
Cazis																																																																									
Chur																																											1							1																							
Davos																																																																									
Disentis																																											1																														
Domat/Ems																																																																									
Domleschg																																																																									
Felsberg																																																																									
Fläsch																																														1																											
Fürstenau																																											1																														
Grono																																																																									
Grüsch																																											1																														
Haldenstein																																																																									
Ilanz																																																																									
Klosters-Serneus																																																		1																							
Luzein																																																																									
Maienfeld																																														1																											
Malans																														1																1																											
Pontresina																																																																									
Rheinwald																																											1																														
Schanfigg (valley)																																											1							1																							
Schiers																																															1																										
Scuol																																																																									
Sils im Domleschg																																																																									
Thusis																																																																									
Trun																																																																									
Tujetsch																																																																									
Valsot																																																																									
Zillis-Reischen																																																																									
JU																																																																									
Delémont																																																																									
Porrentruy																																																																									

7.3.2. Locations - Cantons GE, GL, GR, JU (1795–1865)

	1795	1796	1797	1798	1799	1800	1801	1802	1803	1804	1805	1806	1807	1808	1809	1810	1811	1812	1813	1814	1815	1816	1817	1818
GE																								
Geneva																								1
GL			2			1																		
Betschwanden																								
Bilten																								
Engi																								
Ennenda																								
Glarus																								
Klöntal																								
Linthal																								
Luchsingen																								
Mitlödi																								
Mollis																								
Näfels																								
Netstal																								1
Schwanden																								
Sulzwald							1																	
GR			1																					1
Albula																								
Arosa																								
Avers																								
Bregaglia																								
Cazis																								
Chur																								1
Davos																								1
Disentis																								
Domat/Ems																								2
Domleschg																								
Felsberg																								
Fläsch																								
Fürstenau																								
Grono																								
Grüsch																								
Haldenstein																								
Ilanz																								1
Klosters-Serneus																								
Luzein																			1					
Maienfeld																								1
Malans																								
Pontresina																								
Rheinwald																								
Schanfigg (valley)																								
Schiers												1												
Scuol																								1
Sils im Domleschg																								
Thusis																								1
Trun																								
Tujetsch																1								1
Valsot																			1					
Zillis-Reischen																								
JU																								
Delémont																								
Porrentruy																								

	1819	1820	1821	1822	1823	1824	1825	1826	1827	1828	1829	1830	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840	1841	1842
GE																								
Geneva																								
GL					1									1										
Betschwanden																								
Bilten																								
Engi																								
Ennenda																								
Glarus																								
Klöntal																								
Linthal																								
Luchsingen																								
Mitlödi																								
Mollis														1										
Näfels																								
Netstal					1																			
Schwanden																								
Sulzwald																								
GR													1				2							
Albula																								
Arosa																								
Avers																								
Bregaglia																								
Cazis												1												
Chur												1					1							
Davos																								
Disentis																				1				
Domat/Ems																								
Domleschg												1												
Felsberg																	1							
Fläsch																								
Fürstenau																								
Grono												1												
Grüsch																								
Haldenstein																	1							
Ilanz																	2							
Klosters-Serneus																								
Luzein										1														
Maienfeld												1												
Malans																								
Pontresina										1														
Rheinwald																	2							
Schanfigg (valley)																								
Schiers																								
Scuol																								
Sils im Domleschg																	1							
Thusis												1	1											
Trun																	1							
Tujetsch																				1				
Valsot																								
Zillis-Reischen																	1							
JU																								
Delémont																								
Porrentruy																								

	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865
GE																							
Geneva																						1	
GL									2														
Betschwanden									1														
Bilten																							
Engi																							
Ennenda																						1	
Glarus																				1	1		
Klöntal																							
Linthal																			1				
Luchsingen																							
Mitlödi																							
Mollis																							
Näfels																							
Netstal																							
Schwanden																							
Sulzwald																							
GR									2														1
Albula																							
Arosa																							
Avers			1																				
Bregaglia																							
Cazis																							
Chur											1												
Davos																							
Disentis																							
Domat/Ems																							
Domleschg																							
Felsberg																							
Fläsch																							
Fürstenau																							
Grono																							
Grüsch																							
Haldenstein																							
Ilanz																							
Klosters-Serneus																							
Luzein			1																				
Maienfeld																							
Malans																							
Pontresina																							
Rheinwald																							
Schanfigg (valley)																							
Schiers																							
Scuol																							
Sils im Domleschg																							
Thusis				1																			
Trun																							
Tujetsch																							
Valsot																							
Zillis-Reischen																							
JU																							
Delémont			1																				
Porrentruy									1														

7.3.2. Locations - Cantons LU, NE, NW, OW (1722–1794)

	1722	1723	1724	1725	1726	1727	1728	1729	1730	1731	1732	1733	1734	1735	1736	1737	1738	1739	1740	1741	1742	1743	1744	1745	1746	1747	1748	1749	1750	1751	1752	1753	1754	1755	1756	1757	1758	1759	1760	1761	1762	1763	1764	1765	1766	1767	1768	1769	1770	1771	1772	1773	1774	1775	1776	1777	1778	1779	1780	1781	1782	1783	1784	1785	1786	1787	1788	1789	1790	1791	1792	1793	1794
LU																																																																									
Adligenswil																																																																									
Altishofen																																																																									
Büron																																																1																									
Entlebuch																																																																									
Eschenbach																																																																									
Escholzmatt-Marbach																																																													1												
Ettiswil																																																																									
Hergiswil b. Willisau																																																															1										
Lucerne																																											1			1																					1					1				
Malters																																																																									
Meggen																																																																									
Menznau																																																																									
Römerswil																																																																									
Schenkon																																																																									
Sursee																																																																									
Triengen																																																1																									
Willisau																																																											1														
Zell																																																																									
NE																																																																									
Neuchatel																														1																																													
Val-de-Travers																																																																									
NW																																																																									
Dallenwil																																																																									
Stans																																											1																															
Stansstad																																											1																															
Wolfenschiessen																																																											1														
OW																																																																									
Engelberg																																											1																															
Giswil																																																1																									

7.3.2. Locations - Cantons LU, NE, NW, OW (1795–1865)

	1795	1796	1797	1798	1799	1800	1801	1802	1803	1804	1805	1806	1807	1808	1809	1810	1811	1812	1813	1814	1815	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826	1827	1828	1829	1830	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840	1841	1842	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865
LU																	1									1				1				1																						5														
Adligenswil																																																									1														
Altishofen																															1																																								
Büron																																																																							
Entlebuch																		1																																																					
Eschenbach																		1																																																					
Escholzmatt-Marbach																																			1																																				
Ettiswil																											1																																												
Hergiswil b. Willisau																																																																							
Lucerne																																																									2													1	
Malters																											1																																												
Meggen																																																									1														
Menznau																															1																																								
Römerswil		1																																																																					
Schenkon																															1																																								
Sursee																															2																																								
Triengen																																																																							
Willisau																											1				1																																								
Zell																																																									1														
NE																																																									1														1
Neuchatel																											1																																												
Val-de-Travers																													1																																										
NW													1																						1			1																																	
Dallenwil													1																																																										
Stans													1																																													1													
Stansstad													1																																																										
Wolfenschiessen													2																																																										
OW																																			1			1																																	
Engelberg																																																																							
Giswil																																																																							

7.3.2. Locations - Cantons SG, SH (1722–1794)

	1722	1723	1724	1725	1726	1727	1728	1729	1730	1731	1732	1733	1734	1735	1736	1737	1738	1739	1740	1741	1742	1743	1744	1745	1746	1747	1748	1749
SG																												
Altstätten																												
Amden																												
Au																												
Bad Ragaz																												
Balgach																												
Berneck																												
Buchs																												
Degersheim																												
Diepoldsau																												
Eggersriet																												
Eichberg																												
Eschenbach																												
Bütschwil-Ganterschwil																												
Gams																												
Goldach																												
Gossau																												
Grabs																												
Helfenschwil																												
Hemberg																												
Kirchberg																												
Lichtensteig																												
Lütisburg																												
Marbach																												
Mels																												
Neckertal																												
Nesslau																												
Oberriet																												
Pfäfers																												
Quarten																												
Rebstein																												
Rheineck																												
Rorschach																												
Rüthi																												
Sargans																												
Schänis																												
Schmerikon																												
Sennwald																												
Sevelen																												
St. Gallen																												
St. Margrethen																												
Thal																												
Toggenburg (area)																												
Uzwil																												
Vilters-Wang																												
Walenstadt																												
Wartau																												
Wattwil																												
Weesen																												
Widnau																												
Wil																												
Wildhaus-Alt St. Johann																												
Zuzwil																												
SH																												
Beggingen																												
Gächlingen																												
Schaffhouse																			1									
Schleitheim																												
Stein am Rhein																												

	1750	1751	1752	1753	1754	1755	1756	1757	1758	1759	1760	1761	1762	1763	1764	1765	1766	1767	1768	1769	1770	1771
SG								1														
Altstätten															2					2		
Amden																						
Au														1	1					1	1	
Bad Ragaz		1													1			1				
Balgach															1					1		
Berneck														1	1							
Buchs																						
Degersheim																						
Diepoldsau														1	2					1		
Eggersriet																						
Eichberg						1									1							
Eschenbach																						
Bütschwil-Ganterschwil																						
Gams																						
Goldach																						
Gossau																						
Grabs																						
Helfenschwil																					1	
Hemberg																						
Kirchberg																						
Lichtensteig																1						
Lütisburg																						
Marbach															1					1		
Mels																						
Neckertal																					1	
Nesslau																1						
Oberriet														3	3					1		
Pfäfers															1							
Quarten																						
Rebstein															1					1		
Rheineck														1								
Rorschach							1															
Rüthi															2							
Sargans																		1				
Schänis																						
Schmerikon													1									
Sennwald																					1	1
Sevelen																						
St. Gallen								1	1													
St. Margrethen														1	1					1		
Thal														1	3							
Toggenburg (area)																1			1	1	1	
Uzwil																						
Vilters-Wang																						
Walenstadt																1						
Wartau																						
Wattwil																					1	
Weesen																						
Widnau														1	1					1		
Wil																						
Wildhaus-Alt St. Johann																						
Zuzwil																						
SH																						
Beggingen																						
Gächlingen																						
Schaffhouse																						
Schleitheim																						
Stein am Rhein								1														

	1772	1773	1774	1775	1776	1777	1778	1779	1780	1781	1782	1783	1784	1785	1786	1787	1788	1789	1790	1791	1792	1793	1794
SG	1																		1				
Altstätten			1							1												2	
Amden																							
Au																							
Bad Ragaz																							
Balgach																						1	
Berneck												1										1	
Buchs												1											
Degersheim								1															
Diepoldsau					1																		
Eggersriet																							
Eichberg																						1	
Eschenbach																							
Bütschwil-Ganterschwil								1															
Gams																							
Goldach																						1	
Gossau																							
Grabs												2											
Helfenschwil																							
Hemberg								1															
Kirchberg														1									
Lichtensteig					1																		
Lütisburg								1															
Marbach																							
Mels																							
Neckertal								3															
Nesslau																							
Oberriet																							
Pfäfers																							
Quarten																							
Rebstein																						1	
Rheineck																							
Rorschach	2														2							1	
Rüthi			1																				
Sargans	1																						
Schänis																							
Schmerikon																							
Sennwald																							
Sevelen																							
St. Gallen	2														1								
St. Margrethen												1											
Thal																							
Toggenburg (area)	1				1			3											1				
Uzwil								1															
Vilters-Wang																							
Walenstadt	1																						
Wartau																							
Wattwil																							
Weesen																							
Widnau																							
Wil								1															
Wildhaus-Alt St. Johann																							
Zuzwil																							
SH	1																						
Beggingen																							
Gächlingen														1									
Schaffhouse												1											
Schleitheim																							
Stein am Rhein																							

7.3.2. Locations - Cantons SG, SH (1795–1865)

	1795	1796	1797	1798	1799	1800	1801	1802	1803	1804	1805	1806	1807	1808	1809	1810	1811	1812	1813	1814	1815	1816	1817	1818
SG																1			1				1	
Altstätten								1								1								
Amden																								
Au																								1
Bad Ragaz																								1
Balgach																1								
Berneck																1								1
Buchs																								1
Degersheim																								
Diepoldsau																								2
Eggersriet																			1					
Eichberg																								
Eschenbach																							1	
Bütschwil-Ganterschwil																								
Gams			2																					
Goldach																								
Gossau																								
Grabs			3																					
Helfenschwil	1																							
Hemberg																								
Kirchberg	1																							
Lichtensteig	1																							
Lütisburg																								
Marbach																1		1						
Mels																								
Neckertal	1																							
Nesslau																								
Oberriet																								1
Pfäfers																								1
Quarten							1																	
Rebstein																1								
Rheineck																								1
Rorschach																								2
Rüthi																1								
Sargans																			1					1
Schänis																								
Schmerikon																								
Sennwald																								2
Sevelen										1														
St. Gallen												2	1											
St. Margrethen																								
Thal																								1
Toggenburg (area)	1		1													1								
Uzwil																								
Vilters-Wang							1																	
Walenstadt						1																		
Wartau																2								
Wattwil	1																							
Weesen																								
Widnau																								1
Wil																1								
Wildhaus-Alt St. Johann			2																					
Zuzwil																								
SH																								
Beggingen																								
Gächlingen																								
Schaffhouse			1																					1
Schleitheim																								
Stein am Rhein																								

	1819	1820	1821	1822	1823	1824	1825	1826	1827	1828	1829	1830	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840	1841	1842
SG											1	2		1			1						1	1
Altstätten					1								1											
Amden																								
Au												2												
Bad Ragaz				1													1							
Balgach																								
Berneck																								
Buchs				2																				
Degersheim																								
Diepoldsau				1																				
Eggersriet																								
Eichberg																								
Eschenbach																								
Bütschwil-Ganterschwil																								
Gams				1									1											
Goldach																								
Gossau														1										
Grabs				1																				
Helfenschwil																								
Hemberg																								
Kirchberg																								
Lichtensteig																								
Lütisburg																								
Marbach																								
Mels																							1	
Neckertal						1																		
Nesslau													1											
Oberriet																								
Pfäfers																								
Quarten																								
Rebstein																								
Rheineck				1								1												
Rorschach					1							1	2											
Rüthi				1									1											
Sargans													1											
Schänis																								
Schmerikon																								
Sennwald				4								3	2											
Sevelen																								
St. Gallen																								
St. Margrethen				2								1	1											
Thal												1		1							1			
Toggenburg (area)														1										
Uzwil																								
Vilters-Wang																								
Walenstadt																								
Wartau				1																				
Wattwil																								
Weesen																								
Widnau				1																				
Wil														1									1	
Wildhaus-Alt St. Johann															1									
Zuzwil																								
SH							1																	
Beggingen														1										
Gächlingen																								
Schaffhouse				1																				
Schleitheim														1										
Stein am Rhein																								

	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865
SG		1							1					1									
Altstätten																1			1				
Amden			1																				
Au														1									
Bad Ragaz									1					1									
Balgach																							
Berneck														1		1						1	
Buchs																							
Degersheim																							
Diepoldsau																							
Eggersriet																							
Eichberg																							
Eschenbach																							
Bütschwil-Ganterschwil																							
Gams																							
Goldach																							
Gossau																							
Grabs																							
Helfenschwil																							
Hemberg																							
Kirchberg																							
Lichtensteig																							
Lütisburg																							
Marbach																							
Mels																							
Neckertal																							
Nesslau																						3	
Oberriet														1									
Pfäfers																							
Quarten																							
Rebstein																							
Rheineck													1										
Rorschach			1													1							
Rüthi																							
Sargans																							
Schänis									1														
Schmerikon																							
Sennwald																							
Sevelen																							
St. Gallen																			1			1	
St. Margrethen																						1	
Thal																						1	
Toggenburg (area)																							
Uzwil																							
Vilters-Wang																							
Walenstadt																							
Wartau																							
Wattwil																							
Weesen									1														
Widnau														1									
Wil									2														
Wildhaus-Alt St. Johann																						1	
Zuzwil									1														
SH																							
Beggingen																							
Gächlingen																							
Schaffhouse																						1	
Schleitheim																							
Stein am Rhein																							

7.3.2. Locations - Cantons SO, SZ, TG (1722–1794)

	1722	1723	1724	1725	1726	1727	1728	1729	1730	1731	1732	1733	1734	1735	1736	1737	1738	1739	1740	1741	1742	1743	1744	1745	1746	1747	1748	1749	1750	1751	1752	1753	1754	1755	1756
SO																																			
Balsthal																																			
Bärschwil																																			
Dornach																																			
Dulliken																																			
Hauenstein-Ifenthal																																			
Leberberg (area)																																			
Solothurn																																			
Trimmbach																																			
Zofingen																																			
SZ																																			
Altendorf																																			
Arth																																			
Einsiedeln																																			
Feusisberg																																			
Freienbach																																			
Galgenen																																			
Gersau																																			
Ingenbohl																																			
Küssnacht																																			
Lachen																																			
Lauerz																																			
Muotathal																																			
Pfäffikon																																			
Schübelbach																																			
Schwyz																																			
Wollerau																																			
TG																																			
Berlingen																																			
Bettwiesen																																			
Bischoffszell																																			
Bürglen																																			
Egnach																																			
Erlen																																			
Ermatingen																																			
Eschenz																																			
Felben-Wellhausen																																			
Frauenfeld																																			
Gottlieben																																			
Hauptwil-Gottshaus																																			
Horn																																			
Kesswil																																			
Kreuzlingen																																			
Lommis																																			
Mammern																																			
Pfyn																																			
Romanshorn																																			
Salenstein																																			
Sommeri																																			
Steckborn																																			
Tägerwilen																																			
Uttwil																																			
Warth-Weiningen																																			

	1757	1758	1759	1760	1761	1762	1763	1764	1765	1766	1767	1768	1769	1770	1771	1772	1773	1774	1775	1776	1777	1778	1779	1780	1781	1782	1783	1784	1785	1786	1787	1788	1789	1790	1791	1792	1793	1794
SO																																			1			
Balsthal																																						
Bärschwil																																						
Dornach																																						
Dulliken																																						
Hauenstein-Ifenthal																																						
Leberberg (area)																																						
Solothurn																																						
Trimmbach																																						
Zofingen																																						
SZ																																						
Altendorf																																						
Arth																																						
Einsiedeln							1																															
Feusisberg																																						
Freienbach																																						
Galgenen																																						
Gersau																													1									
Ingenbohl								1																														
Küssnacht																							1															
Lachen																																						
Lauerz																																						
Muotathal								1																														
Pfäffikon																																						
Schübelbach																																						
Schwyz																																		2				
Wollerau																																						
TG	1						1		1				1										3						1					1				
Berlingen																																						
Bettwiesen																																						
Bischoffszell																							1															
Bürglen																							1															
Egnach																																						
Erlen									1																													
Ermatingen																																					1	
Eschenz																																						
Felben-Wellhausen																													1									
Frauenfeld																							1						1									
Gottlieben																																						
Hauptwil-Gottshaus									1																													
Horn																																					1	
Kesswil																																						
Kreuzlingen																																						
Lommis																																						
Mammern																																						
Pfyn																							1						1									
Romanshorn																																						
Salenstein																																						
Sommeri																																						
Steckborn																																						
Tägerwilen																																						
Uttwil																																						
Warth-Weiningen																							1															

7.3.2. Locations - Cantons SO, SZ, TG (1795–1865)

	1795	1796	1797	1798	1799	1800	1801	1802	1803	1804	1805	1806	1807	1808	1809	1810	1811	1812	1813	1814	1815	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826	1827	1828	1829	1830	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840	1841	1842	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865
SO																													1																												2														
Balsthal																																					1	1																																	
Bärschwil																																																									1														
Dornach																				1																																																			
Dulliken											1																																																												
Hauenstein-Ifenthal																																					1																																		
Leberberg (area)																																																										1													
Solothurn																												1									1	1																																	
Trimmbach																																					1																																		
Zofingen																																					1																																		
SZ										1			2																						1																						1														
Altendorf																															1																																										
Arth							1						3	1															1																																										
Einsiedeln							1																														1																				1	1													
Feusisberg		1																																																																					
Freienbach																															1																																										
Galgenen																															1																																										
Gersau																																																																									
Ingenbohl																																																																									
Küssnacht																																																									1														
Lachen																															1																																										
Lauerz													1																																																										
Muotathal																																																																									
Pfäffikon										1																					1																																										
Schübelbach																															1																																										
Schwyz							1																												1																																				
Wollerau		1																																																																					
TG										1									1										1				1	1	1		1										1			1																					
Berlingen										1									1																																																				
Bettwiesen																																						1																																	
Bischoffszell																																																																									
Bürglen																																																																									
Egnach																														1																																											
Erlen																																																																									
Ermatingen										1																																																													
Eschenz																													1																																												
Felben-Wellhausen																																																																										
Frauenfeld																																																																							1	
Gottlieben																			1										1																																												
Hauptwil-Gottshaus																																						1																																	
Horn																																																																									
Kesswil																														1																																											
Kreuzlingen																																					1																																		
Lommis																																						1																																	
Mammern										1																																																													
Pfyn																																																																									
Romanshorn																																					1																																		
Salenstein										1									1																																																					
Sommeri											1																																																												
Steckborn										1																																																													
Tägerwilen																			1																																																					
Uttwil																																					1																																		
Warth-Weiningen																																																																									

7.3.2. Locations - Cantons TI, UR, VD, VS, ZG (1722–1794)

	1722	1723	1724	1725	1726	1727	1728	1729	1730	1731	1732	1733	1734	1735	1736	1737	1738	1739	1740	1741	1742	1743	1744	1745	1746	1747	1748	1749	1750	1751	1752	1753	1754	1755	1756	1757	1758	1759	1760	1761	1762	1763	1764	1765	1766	1767	1768	1769	1770	1771	1772	1773	1774	1775	1776	1777	1778	1779	1780	1781	1782	1783	1784	1785	1786	1787	1788	1789	1790	1791	1792	1793	1794
TI																																																																									
Airolo																																																																									
Bellinzona																																																		1		1																					
Chiasso																																																																									
Locarno																																																																									
Lugano																																																											1														
Magadinoebene (area)																																																																									
Mendrisio																																																											1														
Riviera																																																							1																		
Serravalle																																																		1																							
UR																																																																									
Altdorf																																											1																						1					1				
Bürglen																																											1																															
Erstfeld																																											1																															
Flüelen																																																																									
Göschenen																																											1																															
Realp																																																																									
Silenen																																																																									
Sisikon																																																																									
Unterschächen																																																																									
Wassen																																											1																															
VD																																																																									
Bière																																																																									
Bourg-en-Lavaux																																																																									
Chardonne																																																																									
Chessel																																																																									
Cudrefin																																																																									
Grandcour																																																																									
La Côte (area)																																																																									
Lausanne																																																																									
Noville																																																																									
St. Saphorin (Lavaux)																																																																									
Villeneuve																																																																									
VS																																																		1								1															
Brig-Glis																																				1																																					
Embd																																																																									
Simplon																																																		1																							
Sion																																																													1							1					
ZG																																										1																																
Zug																																																																									

7.3.2. Locations - Cantons TI, UR, VD, VS, ZG (1795–1865)

	1795	1796	1797	1798	1799	1800	1801	1802	1803	1804	1805	1806	1807	1808	1809	1810	1811	1812	1813	1814	1815	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826	1827	1828	1829	1830
TI																																				1
Airolo																																				
Bellinzona																																				2
Chiasso																																				1
Locarno																																				
Lugano																																				1
Magadinoebene (area)																																				1
Mendrisio																																				2
Riviera																																				
Serravalle																																				
UR						1		1								1																				
Altdorf						1																														
Bürglen																																				
Erstfeld																																				
Flüelen								1																												
Göschenen																																				
Realp																								1												
Silenen																								1												
Sisikon								1																												
Unterschächen																1																				
Wassen																																				
VD											1													1					1							
Bière																																				
Bourg-en-Lavaux																																				
Chardonne																																				
Chessel																								1												
Cudrefin																													1							
Grandcour																													1							
La Côte (area)											1																									
Lausanne																																				
Noville																								1												
St. Saphorin (Lavaux)																																				
Villeneuve																								1					1							
VS																								1												
Brig-Glis																																				
Embd																																		1		
Simplon										1																										
Sion																																				
ZG																																				
Zug		1					1																													

	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840	1841	1842	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865
TI	1				1																													1	
Airolo																																		1	
Bellinzona																																			
Chiasso																																			
Locarno																																		1	
Lugano																																			
Magadinoebene (area)																																			
Mendrisio																																			
Riviera																																			
Serravalle																																			
UR		1			1																														
Altdorf					1																														
Bürglen																																			
Erstfeld																																			
Flüelen																																			
Göschenen																																			
Realp																																			
Silenen					1																														
Sisikon																																			
Unterschächen																																			
Wassen																																			
VD																					5														1
Bière								1																											
Bourg-en-Lavaux		1																																	
Chardonne																																			
Chessel																																			
Cudrefin																																			
Grandcour																																			
La Côte (area)																																			
Lausanne		1																																	
Noville																																			
St. Saphorin (Lavaux)		1																																	
Villeneuve																																			
VS					1																1														
Brig-Glis																																			
Embd																																			
Simplon					1					1																									
Sion																																			
ZG																					1														
Zug		1																																	

7.3.2. Locations - Canton ZH, Areas, Lakes (1722–1794)

	1722	1723	1724	1725	1726	1727	1728	1729	1730	1731	1732	1733	1734	1735	1736	1737	1738	1739	1740	1741	1742	1743	1744	1745	1746	1747	1748	1749	1750	1751	1752	1753	1754	1755	1756	1757	1758
ZH																						1															
Affoltern am Albis																																					
Altikon																																					
Bassersdorf																																					
Birmensdorf																																					
Bubikon																																					
Dättlikon																																					
Dürnten																																					
Egg																																					
Eglisau																																					
Elgg																																					
Elsau																																					
Embrach																																					
Fischenthal																																					
Glattfelden																																					
Greifensee																																					
Hinwil																																					
Hombrechtikon																																					
Horgen																																				1	
Knonau																																					
Küsnacht																																					
Männedorf																																				1	
Maschwanden																																					
Meilen																																				1	
Oberrieden																																					
Obfelden																																					
Ottenbach																																	1				
Rafz																																					
Richterswil																																					
Rorbas																																					
Rüschlikon																																				1	
Russikon																																					
Rüti																																					
Stäfa																																					
Thalwil																																					
Uetikon am See																																					
Wädenswil																																					
Wald																																					
Weisslingen																																					
Wiesendangen																																					
Winterthur																																					
Zurich																																					
Area																																					
Jura																																					
Central Switzerland																																					
Eastern Switzerland																																					
Northern Switzerland																																					
Western Switzerland																																					
Lakes																																					
Lake Brienz																																					
Lake Constance									1										1																		
Lake Geneva											1																										
Lake Lucerne																																					
Lake Maggiore																																					
Lake Thun																																					
Lake Zurich																																					

	1759	1760	1761	1762	1763	1764	1765	1766	1767	1768	1769	1770	1771	1772	1773	1774	1775	1776	1777	1778	1779	1780	1781	1782	1783	1784	1785	1786	1787	1788	1789	1790	1791	1792	1793	1794	1795
ZH											1			1							3				1	1											
Affoltern am Albis			1																																		
Altikon		1																																			
Bassersdorf																									1												
Birmensdorf																																					
Bubikon																																					
Dättlikon																									1												
Dürnten																																					
Egg																																					
Eglisau																		1																		1	
Elgg																										1											
Elsau																											2										
Embrach																									1												
Fischenthal																																					
Glattfelden																		1							1												
Greifensee																																					
Hinwil																																					
Hombrechtikon																																					
Horgen																																					
Knonau																																					
Küsnacht																					1																
Männedorf																																					
Maschwanden																																					
Meilen																																					
Oberrieden																																					
Obfelden																																					
Ottenbach																																					
Rafz																		1																			
Richterswil																					1																
Rorbas																									1												
Rüschlikon																																					
Russikon				2																																	
Rüti																																					
Stäfa																																					
Thalwil																																					
Uetikon am See																																					
Wädenswil																																					
Wald																																					
Weisslingen																								1													
Wiesendangen																																					
Winterthur													1					1								1				1							
Zurich							2																						1	1							
Area																																					
Jura																																					
Central Switzerland																																					
Eastern Switzerland																																					
Northern Switzerland																																					
Western Switzerland														1					1			1															
Lakes																																					
Lake Brienz																																					
Lake Constance											1																								1		
Lake Geneva																																					
Lake Lucerne																																					
Lake Maggiore													1																								
Lake Thun																																					
Lake Zurich							1																														

7.3.2. Locations - Canton ZH, Areas, Lakes (1795–1865)

	1795	1796	1797	1798	1799	1800	1801	1802	1803	1804	1805	1806	1807	1808	1809	1810	1811	1812	1813	1814	1815	1816	1817	1818	1819
ZH		1			1		1			1															
Affoltern am Albis																									
Altikon																									
Bassersdorf																									
Birmensdorf																									
Bubikon																									
Dättlikon																									
Dürnten																									
Egg					1																				
Eglisau																								1	
Elgg																									
Elsau																									
Embrach																									
Fischenthal																									
Glattfelden																									
Greifensee																									
Hinwil																									
Hombrechtikon																									
Horgen																									
Knonau																									
Küsnacht																									
Männedorf					1																				
Maschwanden																		1							
Meilen																									
Oberrieden																									
Obfelden																		1							
Ottenbach																		1							
Rafz																									
Richterswil					2																				
Rorbas																									
Rüschlikon																									
Russikon																									
Rüti																									
Stäfa																									
Thalwil																									
Uetikon am See																									
Wädenswil					1																				
Wald																									
Weisslingen																									
Wiesendangen			1																						
Winterthur																									
Zurich		1																							
Area																									
Jura																									
Central Switzerland																								1	
Eastern Switzerland																						1			
Northern Switzerland																						1			
Western Switzerland																									
Lakes																									
Lake Brienz																									
Lake Constance																									
Lake Geneva																									
Lake Lucerne																									
Lake Maggiore																									
Lake Thun																									
Lake Zurich																									

	1820	1821	1822	1823	1824	1825	1826	1827	1828	1829	1830	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840	1841	1842	1843	1844
ZH	1			1		2							1												
Affoltern am Albis																									
Altikon																									
Bassersdorf																									
Birmensdorf	1																								
Bubikon																							1		
Dättlikon																									
Dürnten																							1		
Egg																									
Eglisau																									
Elgg																									
Elsau																									
Embrach	1																								
Fischenthal												1													
Glattfelden																									
Greifensee	1																								
Hinwil													1												
Hombrechtikon				1																			1		
Horgen				1																					
Knonau	1																								
Küsnacht				1																					
Männedorf				1																			1		
Maschwanden																									
Meilen																									
Oberrieden																									
Obfelden																									
Ottenbach																									
Rafz																									
Richterswil																									
Rorbas																									
Rüschlikon																									
Russikon																									
Rüti																							1		
Stäfa				2																			1		
Thalwil																									
Uetikon am See				1																					
Wädenswil	1																								
Wald																							1		
Weisslingen																									
Wiesendangen																									
Winterthur																									
Zurich	1			1																			1		
Area																									
Jura		1																							
Central Switzerland																									
Eastern Switzerland																		1							
Northern Switzerland																							1		
Western Switzerland																									
Lakes																									
Lake Brienz													1												
Lake Constance																							1		
Lake Geneva																	1								
Lake Lucerne													1												
Lake Maggiore																									
Lake Thun													1												
Lake Zurich																									

	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865
ZH							1														
Affoltern am Albis																	1				
Altikon																					
Bassersdorf																					
Birmensdorf																					
Bubikon																					
Dättlikon																					
Dürnten																					
Egg																					
Eglisau																					
Elgg																					
Elsau																					
Embrach																					
Fischenthal																					
Glattfelden																					
Greifensee																					
Hinwil																					
Hombrechtikon																					
Horgen																					
Knonau																					
Küsnacht																					
Männedorf																					
Maschwanden																					
Meilen																					
Oberrieden																	1				
Obfelden																					
Ottenbach																					
Rafz																					
Richterswil																					
Rorbas																					
Rüschlikon																					
Russikon																					
Rüti																					
Stäfa																					
Thalwil																	1				
Uetikon am See																					
Wädenswil																					
Wald																					
Weisslingen																					
Wiesendangen																					
Winterthur																				1	
Zurich																				1	
Area																					
Jura																					
Central Switzerland								1													
Eastern Switzerland								1													
Northern Switzerland																					
Western Switzerland								1													
Lakes																					
Lake Brienz																					
Lake Constance												1		1	1						
Lake Geneva																					
Lake Lucerne																					
Lake Maggiore																					
Lake Thun																					
Lake Zurich																					

7.3.2. Locations - Mountains, Mountain Passes, Rivers, Valleys (1722–1794)

	1722	1723	1724	1725	1726	1727	1728	1729	1730	1731	1732	1733	1734	1735	1736	1737	1738	1739	1740	1741	1742	1743	1744	1745	1746	1747	1748	1749	1750	1751	1752	1753	1754	1755	1756	1757	1758
Mountain																																					
Alpsteinmassiv (AI/AR/SG)																																					
Gäbris (AR)																																					
Ebenalp (AI)																																					
Hoher Kasten (SG)																																					
Les Diablerets (BE/VD/VS)																																					
Mythen (SZ)																																					
Pilatus (NW/OW/LU)																																					
Rigi (LU/SZ)																																					
Säntis (AI)																																					
Selun (SG)																																					
Mountain pass																																					
Bernina Pass (GR/IT)																																					
Gotthard Pass (UR/TI)																																					
Great St. Bernard Pass (VS/IT)																																					
River																																					
Plessur (GR)																																					
Rhine (GR/SG)																			1																1		
Tamina (SG)																																					
Valley																																					
Anterior Rhine valley (GR)																																					
Blenio valley (TI)																																					
Broyetal (FR/VD)																																					
Emmental (BE)																																					
Engadine (GR)																																					
Entlebuch (LU)																																					
Fricktal (AG)											1																										
Gadmertal (BE)																																					
Glatttal (ZH)																																					
Limmattal (AG/ZH)																																					
Lower Engadine (GR)																																					
Obersimmental (BE)																																					
Posterior Rhine valley (GR)																																					
Prättigau (GR)																																					
Reppischtal (AG/ZH)																																					
Reusstal (LU/AG/ZG/ZH)																																					
Rhine valley (GR/SG)																																				1	
Rhonetal (VS)																																					
Riedtal (LU)																																					
Ruedertal (LU/AG)																																					
Schächental (UR)																																					
Sihltal (SZ/ZH/ZG)																																					
Tösstal (SG/TG/ZH)																																					
Upper Engadine (GR)																																					
Urserental (UR)																																			1		
Val Bedretto (TI)																																					
Val de Bagnes (VS)																																					
Valle Leventina (TI)																																					
Val Medel (GR)																																					

	1759	1760	1761	1762	1763	1764	1765	1766	1767	1768	1769	1770	1771	1772	1773	1774	1775	1776	1777	1778	1779	1780	1781	1782	1783	1784	1785	1786	1787	1788	1789	1790	1791	1792	1793	1794
Mountain																																				
Alpsteinmassiv (AI/AR/SG)																																				
Gäbris (AR)																																				
Ebenalp (AI)																																				
Hoher Kasten (SG)																																				
Les Diablerets (BE/VD/VS)													1																							
Mythen (SZ)																																				
Pilatus (NW/OW/LU)											1																									
Rigi (LU/SZ)											1																									
Säntis (AI)																																				
Selun (SG)							1																													
Mountain pass																																				
Bernina Pass (GR/IT)																																				
Gotthard Pass (UR/TI)						1											1															2				
Great St. Bernard Pass (VS/IT)																																				
River																																				
Plessur (GR)						1																														
Rhine (GR/SG)											1																									
Tamina (SG)						1			3																											
Valley																																				
Anterior Rhine valley (GR)						1																														
Blenio valley (TI)													1																							
Broyetal (FR/VD)																																				
Emmental (BE)																		1																		
Engadine (GR)																																				
Entlebuch (LU)																																				
Fricktal (AG)																																				
Gadmertal (BE)																																				
Glatttal (ZH)																																				
Limmattal (AG/ZH)																																				
Lower Engadine (GR)																																				
Obersimmental (BE)																																				
Posterior Rhine valley (GR)						1																														
Prättigau (GR)						1							1																							
Reppischtal (AG/ZH)																																				
Reusstal (LU/AG/ZG/ZH)																																				
Rhine valley (GR/SG)				1	1	1	2				1	3		1											3							1			1	
Rhonetal (VS)																																				
Riedtal (LU)																																				
Ruedertal (LU/AG)																																				
Schächental (UR)																																				
Sihltal (SZ/ZH/ZG)																																				
Tösstal (SG/TG/ZH)																																				
Upper Engadine (GR)																																				
Urserental (UR)						1			1								1																			
Val Bedretto (TI)																																				
Val de Bagnes (VS)																																				
Valle Leventina (TI)																																				
Val Medel (GR)						1																														

7.3.2. Locations - Mountains, Mountain Passes, Rivers, Valleys (1795–1865)

	1795	1796	1797	1798	1799	1800	1801	1802	1803	1804	1805	1806	1807	1808	1809	1810	1811	1812	1813	1814	1815	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826	1827	1828	1829	1830	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840	1841	1842	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865
Mountain																																																																								
Alpsteinmassiv (AI/AR/SG)																																																									1														
Gäbris (AR)																																																																1							
Ebenalp (AI)																																																																	1						
Hoher Kasten (SG)																																					1																																			
Les Diablerets (BE/VD/VS)																																																																							
Mythen (SZ)							1																																																																
Pilatus (NW/OW/LU)																		1																				1																																	
Rigi (LU/SZ)																																																									1														
Säntis (AI)																																					1		1																																
Selun (SG)																																																																							
Mountain pass																																																																							
Bernina Pass (GR/IT)																																		1																																							
Gotthard Pass (UR/TI)																																									1																																
Great St. Bernard Pass (VS/IT)										1												1																																																	
River																																																																							
Plessur (GR)																																																																							
Rhine (GR/SG)																																																													1	2									
Tamina (SG)																																																									1														
Valley																																																																							
Anterior Rhine valley (GR)																																																																							
Blenio valley (TI)																																									1																																
Broyetal (FR/VD)																																																									1														
Emmental (BE)																														1																											1	1													
Engadine (GR)																																									1																																
Entlebuch (LU)																																																									1														
Fricktal (AG)																															1																																										
Gadmertal (BE)																								1																																																	
Glatttal (ZH)																													1																																												
Limmattal (AG/ZH)																													1																																												
Lower Engadine (GR)																			1																																																				
Obersimmental (BE)																								1																																																	
Posterior Rhine valley (GR)																																												1																											
Prättigau (GR)																			1																																																				
Reppischtal (AG/ZH)																																						1																																	
Reusstal (LU/AG/ZG/ZH)																													1																																												
Rhine valley (GR/SG)											6		2						1					3				1			1	1	1	1		2	1													1							2												1		
Rhonetal (VS)																																									2																																
Riedtal (LU)																											1																																														
Ruedertal (LU/AG)																															1																																										
Schächental (UR)																																									1																																
Sihltal (SZ/ZH/ZG)																																						1																																	
Tösstal (SG/TG/ZH)																													1																																												
Upper Engadine (GR)																																		1																																							
Urserental (UR)																																																																							
Val Bedretto (TI)																																																																						4	
Val de Bagnes (VS)																									1																																															
Valle Leventina (TI)																																									1																																
Val Medel (GR)																																																																							

7.3.2. Locations - Countries, Continent, Rivers (1722–1794)

		1722	1723	1724	1725	1726	1727	1728	1729	1730	1731	1732	1733	1734	1735	1736	1737	1738	1739	1740	1741	1742	1743	1744	1745	1746	1747	1748	1749	1750	1751	1752	1753	1754	1755	1756	1757	1758	1759	1760	1761	1762	1763	1764	1765	1766	1767	1768	1769	1770	1771	1772	1773	1774	1775	1776	1777	1778	1779	1780	1781	1782	1783	1784	1785	1786	1787	1788	1789	1790	1791	1792	1793	1794
AT	Austria						1			2		1					1	1	2		1				1						1	1										1	1	1				1		1	1					1		1	1		1				3	4				3	1	1	1	
BE	Belgium						1		1													1																																										1	1									
BR	Brazil																															1																																										
CA	Canada													1													1																																															
CL	Chile											1																																																														
CN	China											1																																																				1										
CU	Cuba				1																																											1																										
CY	Cyprus						1																																																																		
CZ	Czech Republic								1	1										1					1		2																	1																		1		1	2	1	1							
DE	Germany		2		1		5	3	4	7		3		6	1			5	1	2	5	4	1	1	3	3	3	1	3		1	2	1	1	1		2		1		1		2	3	1	1	1	7	3	1	1	6	5	2	2	2	1	2	1		1		3	5	9	5	4	1	2	9	6			2
DO	Dominican																		1														1																																									
DK	Denmark						1				1							1																																													1		1									1
EG	Egypt																																																			1																						
ES	Spain						2		1																							1															1										1					1												
FR	France				1		1	3	3	2	1	5		2	1				1	1	4	4	1			1	1	1			2	1		1						1			1	1			1	2				2	1	1			1	1					1	3	1				1	1			1	
GB	Great Britain				1		2	3		1	1								2		1														1												3	1	1								1						3	2	2						1			
GI	Gibraltar							1																																							1																											
GP	Guadeloupe																																																																									
GR	Greece																									1																																															1	
GT	Guatemala																																																							1																		
HR	Croatia						1																			1						1																																										
HU	Hungary		1							1									1		2						1																	1				1							1	2	1					1	1	1	1							1		
HT	Haiti																		1																																																							
ID	Indonesia																																																																									
IE	Ireland																								1																																																	
IL	Israel						2																																											1																								
IN	India																																																																					1					
IQ	Iraq						1																			1																																																
IR	Iran																																																												1													
IT	Italy				1		10	6	3	2	5	3		3				1		1		1	1	1		4	2	1				1	3	1		1		1									2			1	1	3			2	1	1	1		2	2	3	1	2	3	1		3						
JM	Jamaica																																1																																									
KG	Kyrgyzstan																																																																									
LI	Liechtenstein																																																																									
LT	Lithuania									1																																																1																
LU	Luxembourg																																																																						1			
LV	Latvia							1																	1																																																	
LY	Libya											1																																																														
MD	Moldavia																																																														1											
MQ	Martinique																																															1																										
MT	Malta						1																			1																																										1						
NL	Netherlands						1			1	1							1			2	2	2						2		1	1														1	1	1									2							1	4					1		2		
NO	Norway																																																								1																	
PE	Peru											1																1																																														
PL	Poland					1		1			1						3	4	1		3	2								1						1									1						1				1			1						1		1		1			1			
PT	Portugal				1		3																														1																1										1										1	
PS	Palestine						1																																																																			
RO	Romania	1	1									1							1																																										1													
RS	Serbia																			1																																																						
RU	Russia							1									1	1			2						1	1																		1	1										1						2											
SI	Slovenia																																																																									
SE	Sweden						1				1										3				1							1																									1																	
SY	Syria																									1																																																
TR	Turkey						2		1											1						2										1											3			1				1						1			1											
TW	Taiwan																																																															1										
UA	Ukraine																																																														1							1				
US	United States of																					1																																																				
Africa																																																																											
America																																	1															1									1																	
Asia							1																			1																																																
Europe																									2											1												1					1	1			1						2	1	1					1				
Nordsee																																																																										
West Indies																			1																																											1												
Rivers																																																																											
	Elbe																																																																1										
	Donau																				1																																												1										
	Inn																																																																										
	Main																																																																1										
	Rhine																																			1																													1										

7.3.2. Locations - Countries, Continent, Rivers (1795–1865)

	1795	1796	1797	1798	1799	1800	1801	1802	1803	1804	1805	1806	1807	1808	1809	1810	1811	1812	1813	1814	1815	1816	1817	1818
AT Austria										1			1			2								1
BE Belgium											1													
BR Brazil																								
CA Canada																								
CL Chile																								
CN China																								
CU Cuba																								
CY Cyprus																								
CZ Czech Republic	1							1	1															
DE Germany	1	1		1	1	2		2	3		4	1	3			1	2	2	1					
DO Dominican																								
DK Denmark																								
EG Egypt								1																
ES Spain																								
FR France		1					1		5	1	5		1					3	1					1
GB Great Britain									1															
GI Gibraltar																								
GP Guadeloupe																								
GR Greece																								
GT Guatemala																								
HR Croatia																								
HU Hungary								1												1				1
HT Haiti																								
ID Indonesia																								
IE Ireland																								
IL Israel																								
IN India																								
IQ Iraq																								
IR Iran																								
IT Italy					1				4	1		1	2			1	1	2						
JM Jamaica																								
KG Kyrgyzstan																								
LI Liechtenstein			1																					
LT Lithuania																								
LU Luxembourg																								
LV Latvia																								
LY Libya																								
MD Moldavia																								
MQ Martinique																								
MT Malta																	1							
NL Netherlands						1			1	1	1					1								
NO Norway																								
PE Peru																								
PL Poland										1			1											
PT Portugal			1																					
PS Palestine																								
RO Romania																								1
RS Serbia																								
RU Russia			1						1	1														1
SI Slovenia																								
SE Sweden																								
SY Syria																								
TR Turkey								1																
TW Taiwan																								
UA Ukraine			1	2						2											1			
US United States of																								
Africa																								
America																								
Asia																								
Europe			1			1			1														1	
Nordsee																								
West Indies																								
Rivers																								
Elbe																								
Donau																1								
Inn																1								
Main																								
Rhine																1								

	1819	1820	1821	1822	1823	1824	1825	1826	1827	1828	1829	1830	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840	1841	1842
AT Austria				1						3		1	3							1			1	1
BE Belgium																2								
BR Brazil																								
CA Canada																								
CL Chile																								
CN China																								
CU Cuba																								
CY Cyprus																								
CZ Czech Republic																								
DE Germany	1	1						2	3	1	2	1	3			1	1	6	2		1	3		2
DO Dominican																								
DK Denmark					1																			
EG Egypt																								
ES Spain																								
FR France			1	1	2							2				2	1	1					1	2
GB Great Britain								1																2
GI Gibraltar																								
GP Guadeloupe																								
GR Greece																				1				
GT Guatemala																								
HR Croatia												1												
HU Hungary																					1			
HT Haiti																								
ID Indonesia																								
IE Ireland				1																				
IL Israel																								
IN India																								
IQ Iraq																								
IR Iran																								
IT Italy					2				1							1	4	1		1	1			1
JM Jamaica																								
KG Kyrgyzstan																								1
LI Liechtenstein												1												
LT Lithuania																								
LU Luxembourg																								
LV Latvia																								
LY Libya																								
MD Moldavia																								
MQ Martinique																								
MT Malta																								
NL Netherlands								1		1						2								
NO Norway																								
PE Peru																								
PL Poland										2		1						1						
PT Portugal																								
PS Palestine																								
RO Romania											1													
RS Serbia																								
RU Russia								2										1						
SI Slovenia													1						1					
SE Sweden																								
SY Syria						2																		
TR Turkey						1																		1
TW Taiwan																								
UA Ukraine																								
US United States of																			1					
Africa																								
America																								
Asia																								
Europe					1												1							
Nordsee																								
West Indies																								
Rivers																								
Elbe																								
Donau																								
Inn																								
Main																		1						
Rhine																		1						

	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865
AT Austria									3							1							
BE Belgium									1														
BR Brazil																							
CA Canada				1																			
CL Chile										1													
CN China																							
CU Cuba																							
CY Cyprus																							
CZ Czech Republic				1																			
DE Germany	2			2	4	5			5			1	1			1			1				
DO Dominican																							
DK Denmark																							
EG Egypt																							
ES Spain									2														1
FR France					3	1			3	1					1								1
GB Great Britain					2																		1
GI Gibraltar																							
GP Guadeloupe		1																					
GR Greece										1													1
GT Guatemala																							
HR Croatia									2														
HU Hungary			1		2				1														
HT Haiti																							
ID Indonesia			1																				
IE Ireland																							
IL Israel																							
IN India																							
IQ Iraq																							
IR Iran																							
IT Italy					3				4	2								1					1
JM Jamaica																							
KG Kyrgyzstan																							
LI Liechtenstein																							1
LT Lithuania																							
LU Luxembourg																							
LV Latvia																							
LY Libya																							
MD Moldavia																							
MQ Martinique																							
MT Malta																							
NL Netherlands						1			1											1			
NO Norway						1																	
PE Peru																							
PL Poland				1																			
PT Portugal																							
PS Palestine																							
RO Romania																							
RS Serbia																							
RU Russia				1																			
SI Slovenia																							
SE Sweden						1																	
SY Syria																							
TR Turkey				2					1														
TW Taiwan																							
UA Ukraine																							
US United States of																							
Africa						1																	
America																							
Asia						1																	
Europe					3	1												1	1				
Nordsee																			1				
West Indies																							
Rivers																							
Elbe									1														
Donau									1														
Inn																							
Main																							
Rhine									1														

7.4. Digitised Content of the *Appenzeller Kalender*

7.4_Appenzeller Kalender_Digitised Content

Declaration of consent

on the basis of Article 30 of the RSL Phil.-nat. 18

Name/First Name: Vieli Isabelle

Registration Number: 14-113-799

Study program: MSc in Climate Sciences

Bachelor ☐ Master ☑ Dissertation ☐

Title of the thesis: Swiss Volkskalender of the 18th and 19th Centuries – A New Source of Climate History

Supervisor: Supervisor: Prof. Dr. Christian Rohr, Institute of History
Co-Supervisor: Prof. Dr. Stefan Brönnimann, Institute of Geography

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Bern, 26. Januar 2020

Place/Date

Signature