

Research at Specola Solare Ticinese and Istituto Ricerche Solari Locarno, IRSOL

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and the
IRSOL - Specola staff



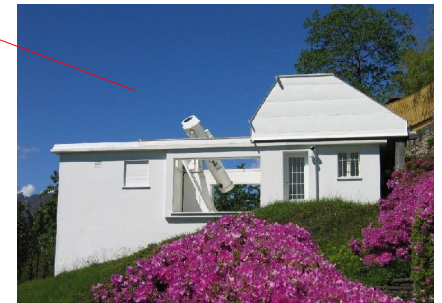
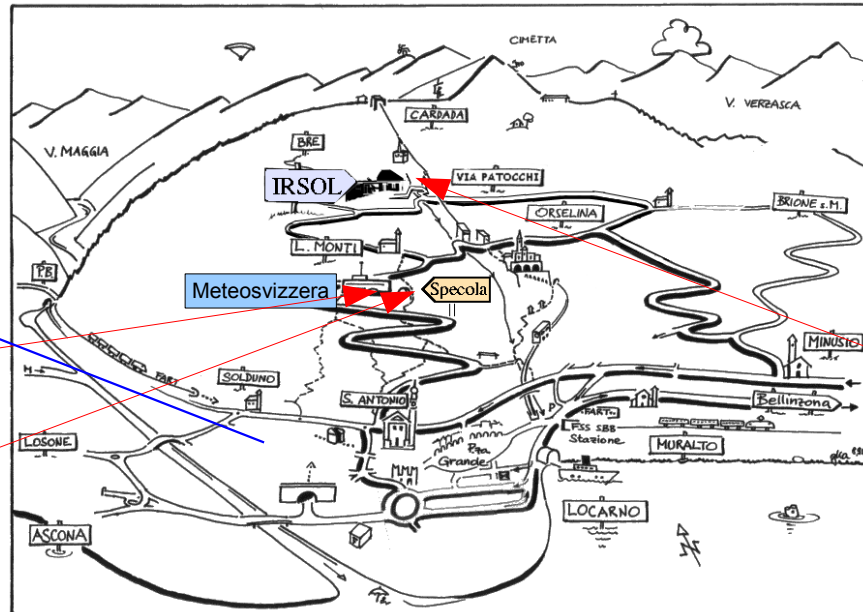
1st Swiss SCOSTEP workshop, Bern, 4-5 October 2016

Outline

- Astronomical institutes in Locarno, short history
- Scientific activity of the institutes
- Organization of the research at IRSOL
- Instrumentation at IRSOL
- Future of solar physics in Switzerland

Institutes in Locarno

- In Locarno Monti are located:
 - Meteosvizzera: inaugurated 1935 by the Swiss Confederation
 - Specola Solare Ticinese: inaugurated 1957 (IGY) as external station of ETHZ
 - IRSOL: inaugurated 1960 as external station of the Universitätssternwarte Göttingen



Specola Solare Ticinese and IRSOL

- Scientific and cultural opportunity to continue and improve the activity started by the academic institutes
- Specola Solare Ticinese
 - 1980 taken over by the association ASST
 - Since 1981 reference station of SIDC in Brussels (new World Data Center for the Sunspot Number R)
- IRSOL, Istituto Ricerche Solari Locarno
 - 1988 taken over by the foundation FIRSOL
 - 1993-2007 collaboration with the Institute of Astronomy (Prof. J.O. Stenflo) at ETHZ
 - 2013 a federal financing permits to unlock other financing and hire researchers, PhD students and postdoc

Scientific tasks of Specola and IRSOL

- Specola Solare Ticinese
 - The know how on sunspot counting permitted, as reference station of SIDC in Brussels, to guarantee the continuity of the Sunspot Number counting during the transition as World Data Center from ETHZ to SIDC at Brussels Royal Observatory. See poster of Ramelli
- IRSOL
 - Solar polarimetry is the tool we have to measure the solar magnetic field, the motor for many solar-terrestrial events
 - The facility at IRSOL is suitable for high precision polarimetric observation (constant instrumental polarization over the day)
 - ZIMPOL (polarimeter permitting high precision spectropolarimetry) was installed there by ETH Institute of Astronomy, and an innovative research program was started
 - Developing an independent research program with a larger staff since 2014

Staff at IRSOL and Specola

IRSOL

Belluzzi Luca (Dr.), Scientific Staff
Bianda Michele (Dr.), Scientific Staff
Calvo Flavio, PhD Student
Carlin Edgar (Dr.), Postdoc
Gisler Daniel (Dr.), Scientific Staff
Gobbi Katya, Secretary
Janett Gioele, PhD Student
Liver Boris, Electr. Engineer
Mari Gianpaolo, Technician
Nagendra Kanakatte N. (Prof. Dr.), Affiliated
Ramelli Renzo (Dr.), Scientific Staff
Steiner Oskar (Dr.), Scientific Staff
Stenflo Jan O. (Prof. Dr.), Affiliated
Postoc open position
PhD open position

Specola Solare

Cagnotti Marco
Cortesi Sergio

FIRSOL

The foundation is directed by Prof Dr. Philippe Jetzer



Organization of the research at IRSOL

- Bringing together "under the same dome" diverse solar research projects, all focused on the unique topic of polarimetry of the solar atmosphere
- Building on three pillars:

Observation

- Next slides

Theory

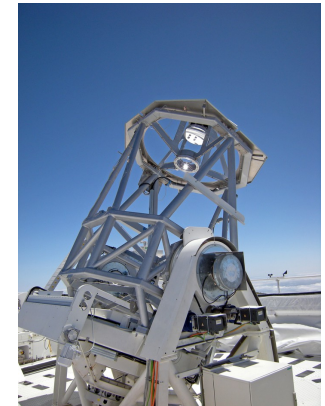
- Talk of Luca Belluzzi

Numerical simulation

- Talk of Oskar Steiner

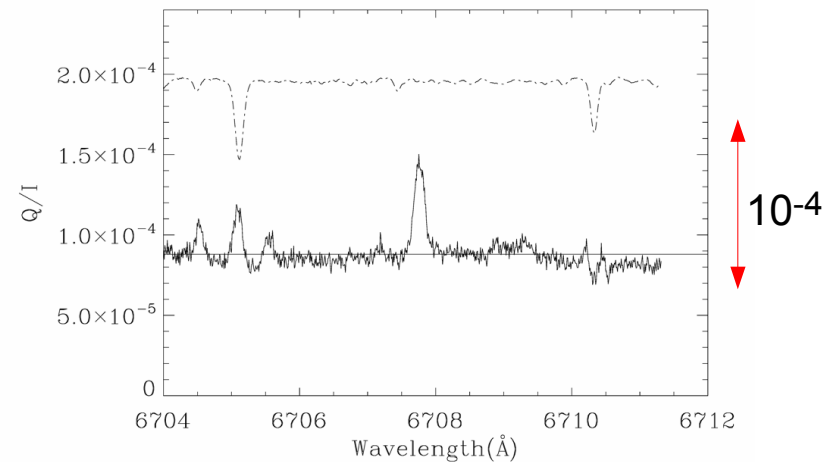
Academic connections

- Collaborations
 - KIS Freiburg, MPS Göttingen, IAC Tenerife, NSO Boulder, IIA Bangalore,
- Access to CSCS (supercomputer in Lugano)
- Observations with large telescopes
 - ZIMPOL at GREGOR
 - Project for an instrument to be installed at DKIST
- Since 2015, association with USI, University in Southern Switzerland
 - Bottom-up construction of the collaboration
 - Sinergia project submitted to SNF



Instrumentation at IRSOL

- Gregory Coudé telescope, 45 cm aperture
- Czerny-Turner spectrograph
- ZIMPOL polarimeter
 - Invented and developed at Institute for Astronomy ETHZ (H. Povel, J.O. Stenflo)
 - 2007-2014 improved at SUPSI, University of Applied Science in Lugano
 - 2014 improved at IRSOL (B. Liver, D. Gisler)
 - Permits high precision polarimetry (few 10^{-6})



Example, scattering polarization of Lithium near the solar limb

Future of solar physics in Switzerland

- Existing institutes working on topics closely related to Solar physics
 - PMOD/WRC Davos, FHNW, ISSI Bern, IRSOL/Specola
 - Complementary activities
 - IRSOL is since December 2015 associated with USI
- Main problem: no more academic Solar Physics chair in Switzerland. To be solved!
- Question: how is our activity seen from outside?
- We should be seen as a cooperating entity: keeping our independence but letting understand that we are working in “Solar physics”, an important scientific topic. SCOSTEP is a significant opportunity to show the interdisciplinarity of our field.

Thank you for your attention