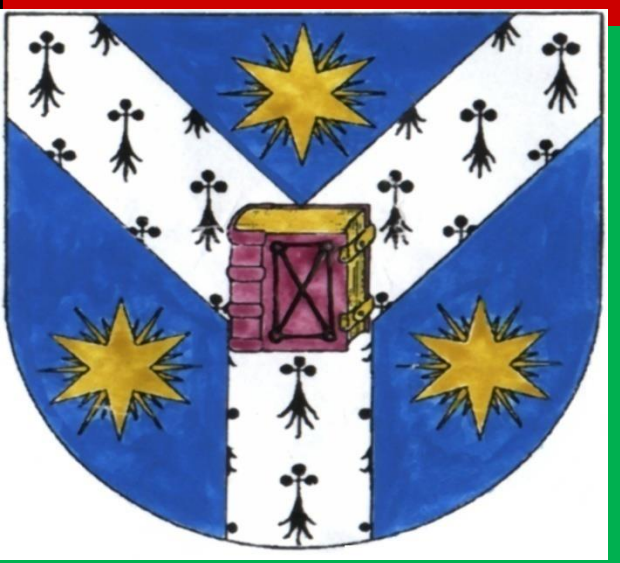


Supercell systems that have crossed the northern region of Moldova in date 18.06.2016



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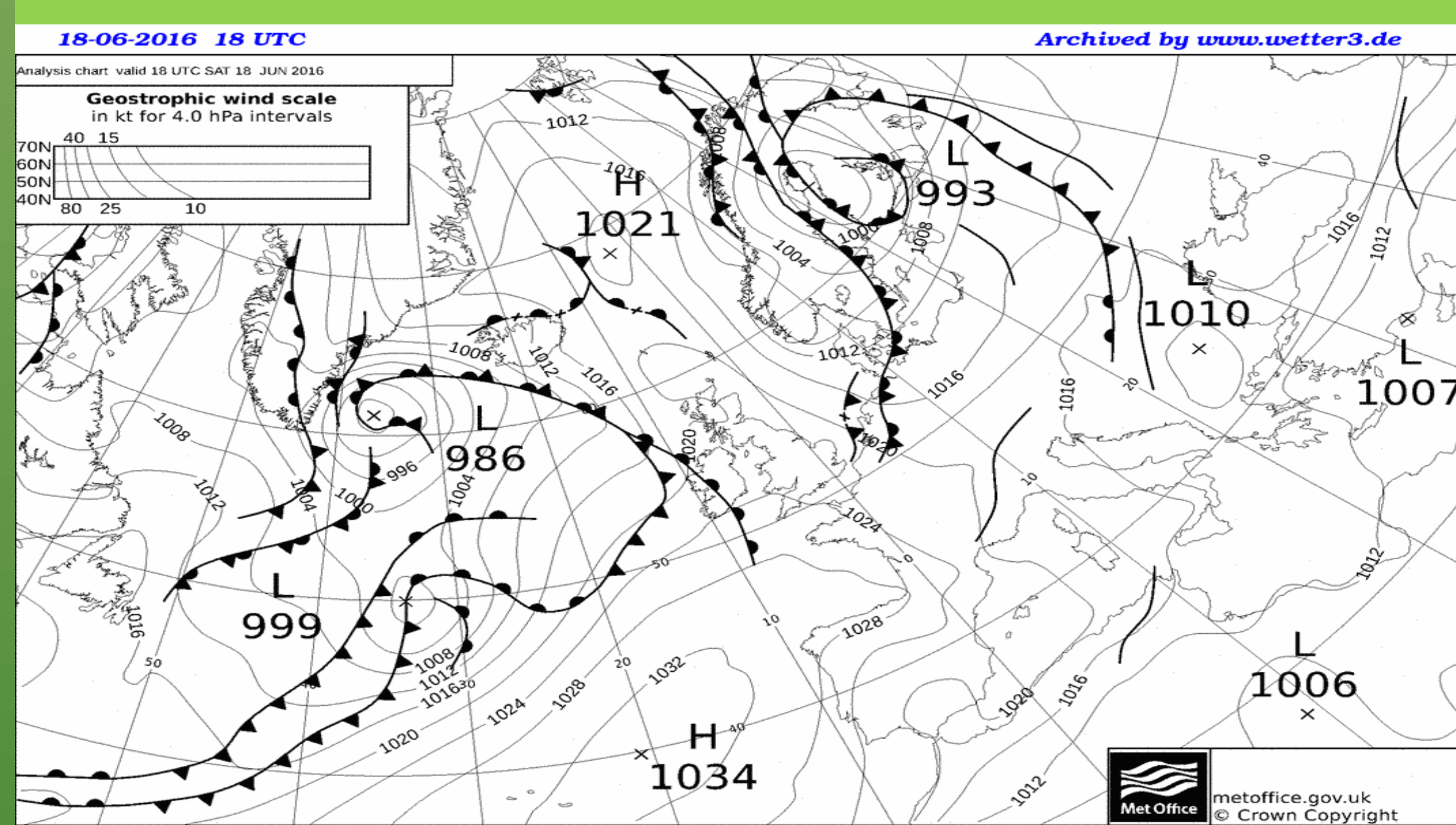
Introduction

- The paper proposes a comprehensive study of extreme weather events that took place on 18 June 2016 in north eastern Romania, in Moldavia.
- On this day, the area was crossed by several convective systems, bearing hail, two of them reaching supercell parameters.
- An important feature of this data was that in a relatively short period of time (2-3 hours) this area was crossed by two supercells, bearing large hail, considering that the frequency of supercells in this region it is 1-2 supercells / year

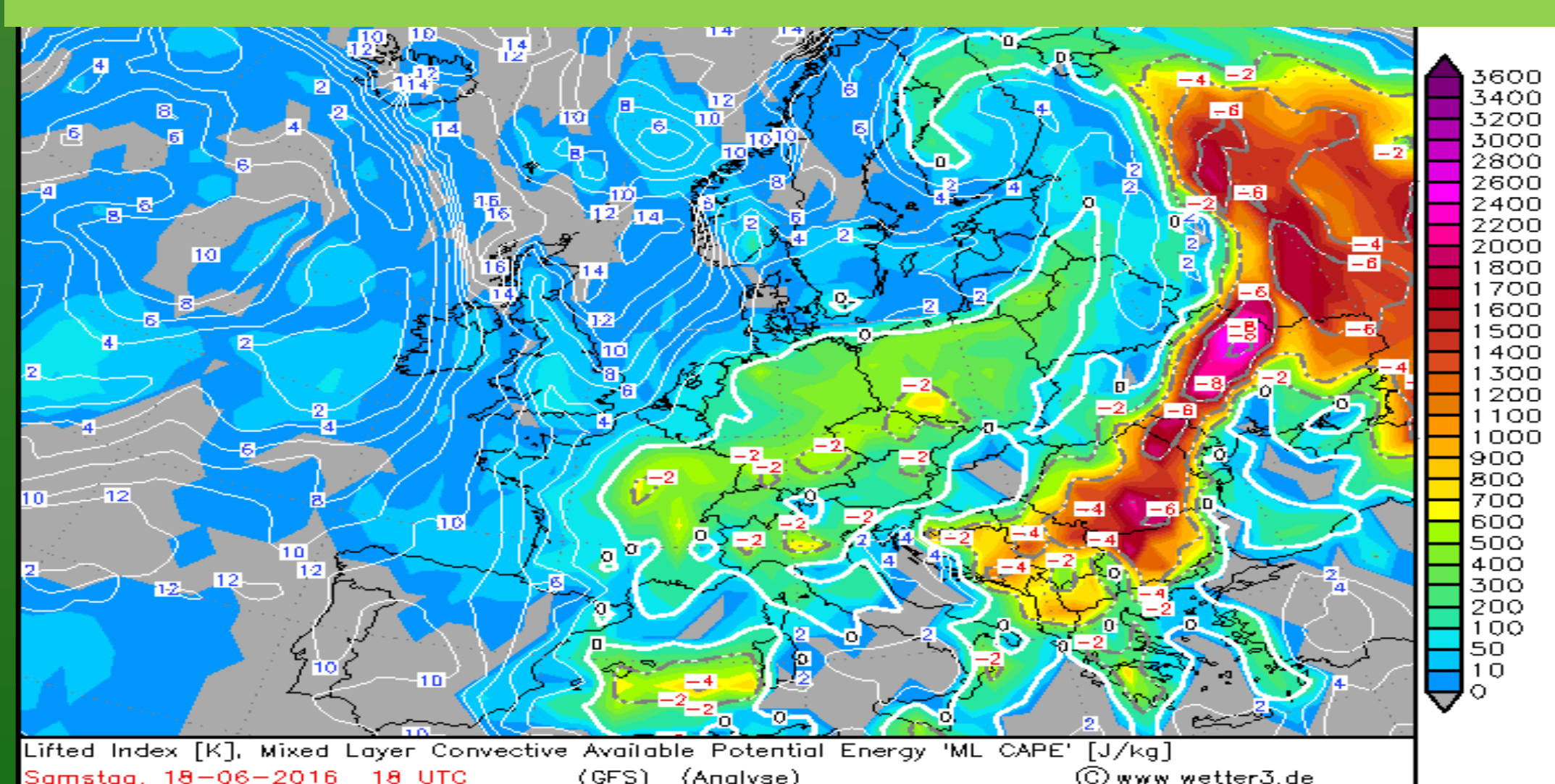
Data and methods

SYNOPTIC AND THERMODYNAMIC CONDITIONS

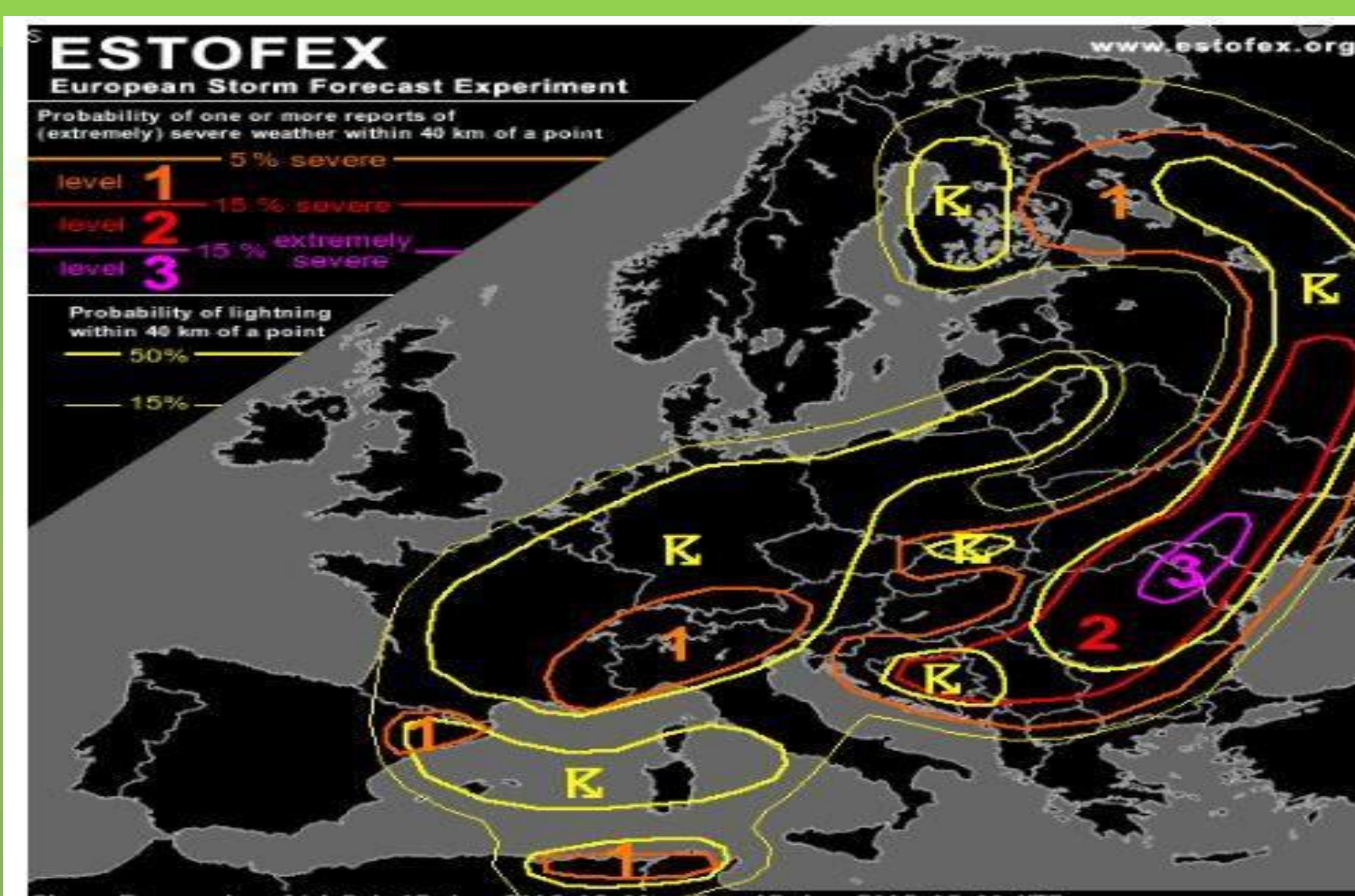
- There was a close relation between the anticyclone area crosses over the south-eastern Europe and the formation of a saddle baric
- As a result it was a fusion of the Scandinavian depression core areas of low pressure with the Mediterranean one.
- We had a advection moist air, tropical from the southwest, which entered the territory already affected by storms and precipitation and the air much colder from the northwest with dynamic features suggesting excellent condition for development of storms .
- Due to this Synoptic consideration, over the geographic area of Moldova and the neighborhood some severe weather events occurred.



- Forecasted values for the most important indicators of instability were record highs for eastern and south-eastern Romania.
- Lifted Index values recorded between -4 and -8 and, CAPE exceeding 2,500 J / kg, and even 3,000 J / kg

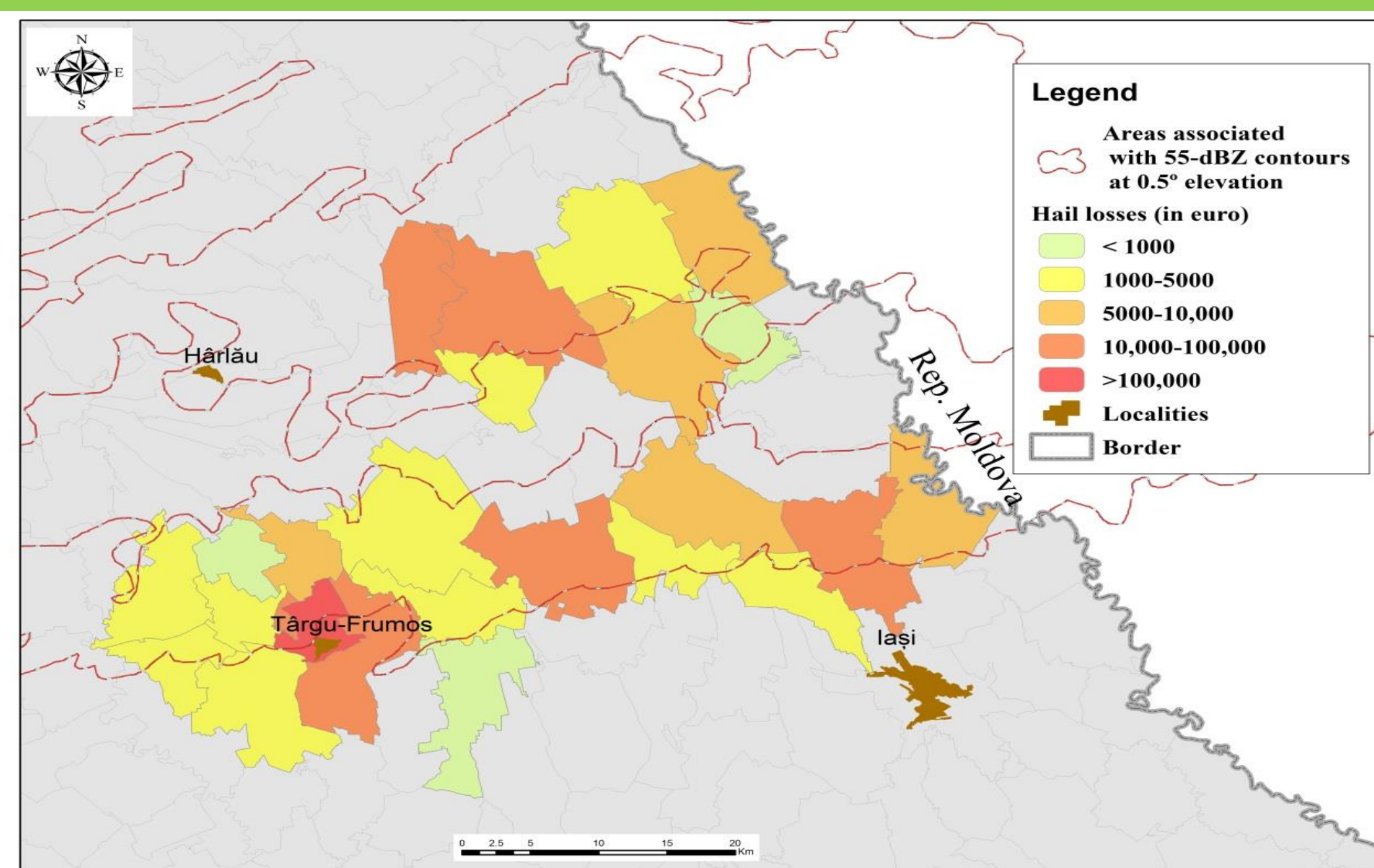


- Weather Forecast from ESTOFEX (European Storm Forecast Experiment) indicates high probability of initiation of supercell storms in eastern Romania and central area of Moldova.
- In addition to the high values of CAPE, the flow of the troposphere average was up values of DLS (Deep Layer Shear) between 25-30 m / s.
- Also the ground wind speed was eastern and north-eastern and sudden change the direction in vertical profile lead SRH (Storm Relative Helicity) to values of 300 m² / s² emphasizing suitability supercell formation.



GROUND-BASED REPORTS

- In the night of 18 to June 19 there were large hail, especially in the northern half of Moldova; the soil and were recorded hail at ground with a diameter greater than 5 cm.
- Agricultural areas affected by hail and the damage caused were obtained from Inspectorate for Emergency Situations Iasi.
- These data were analyzed in order to detect areas where the damage recorded the highest values.

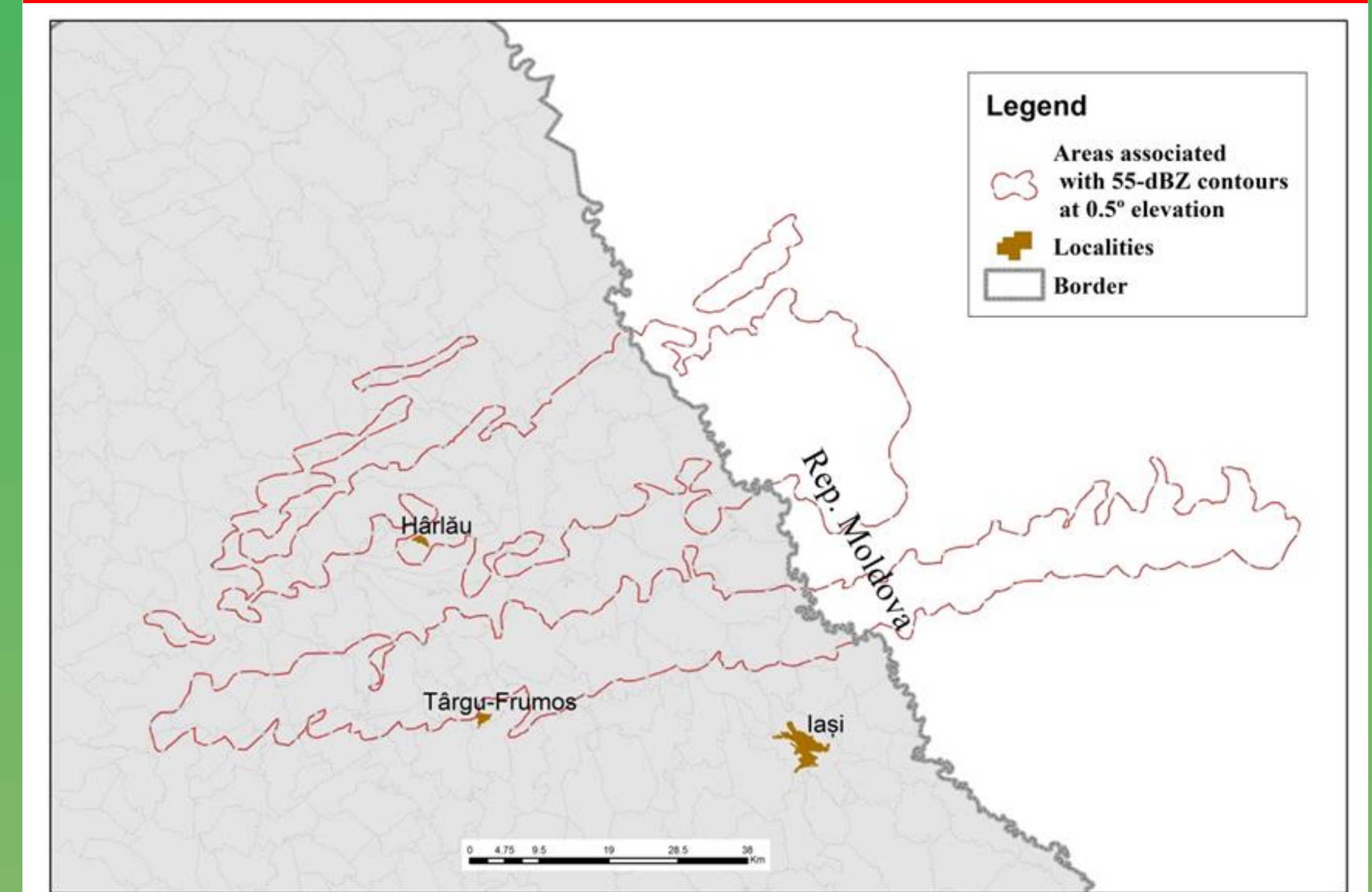


Reported hail losses in Iasi county villages

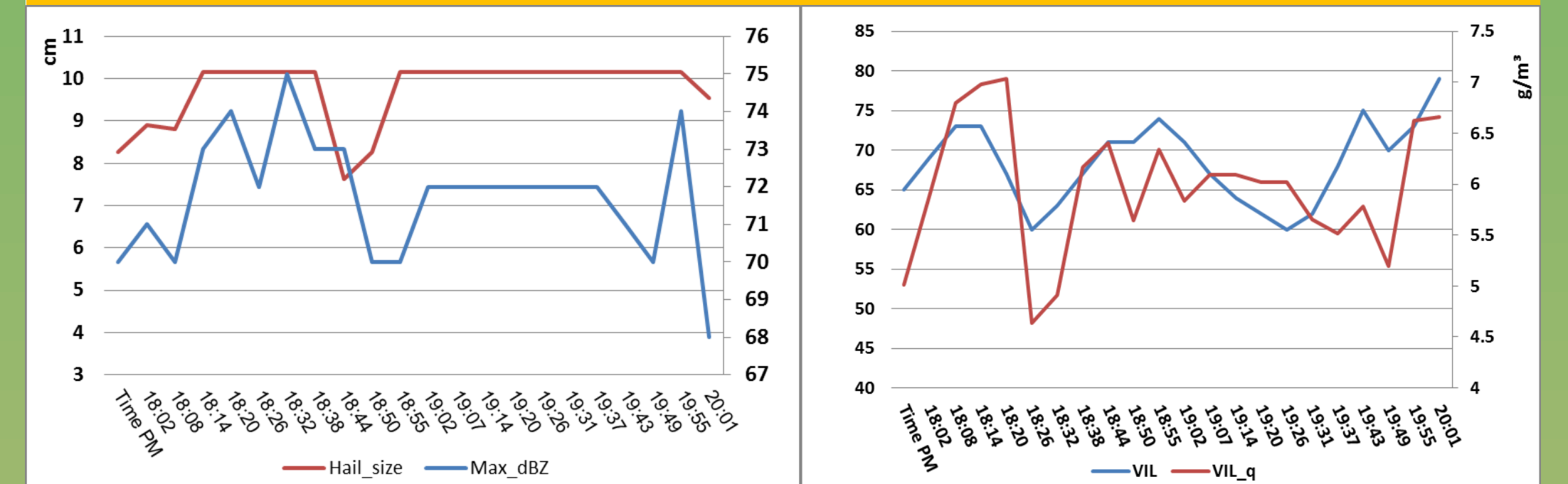


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Results and discussion

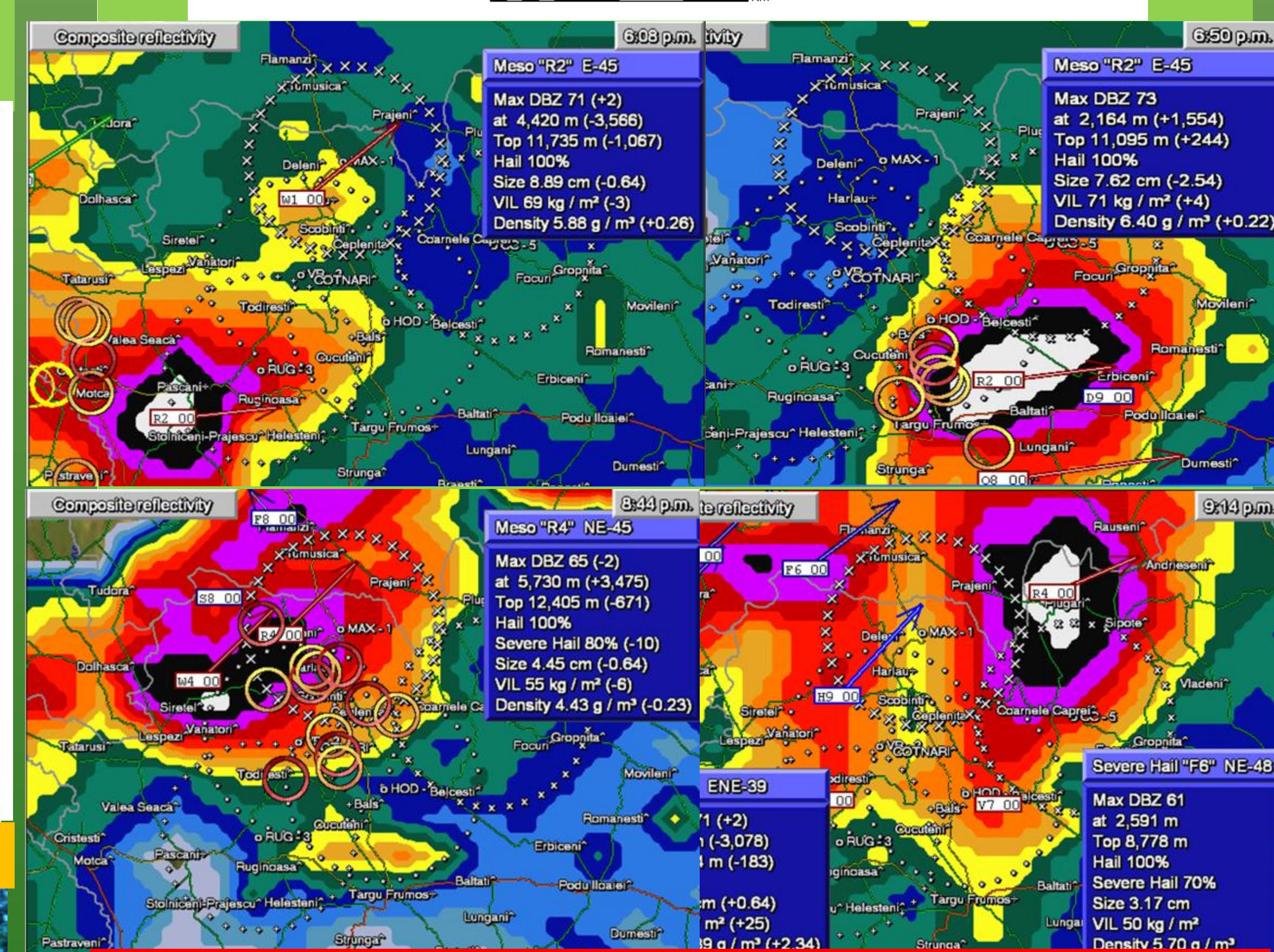
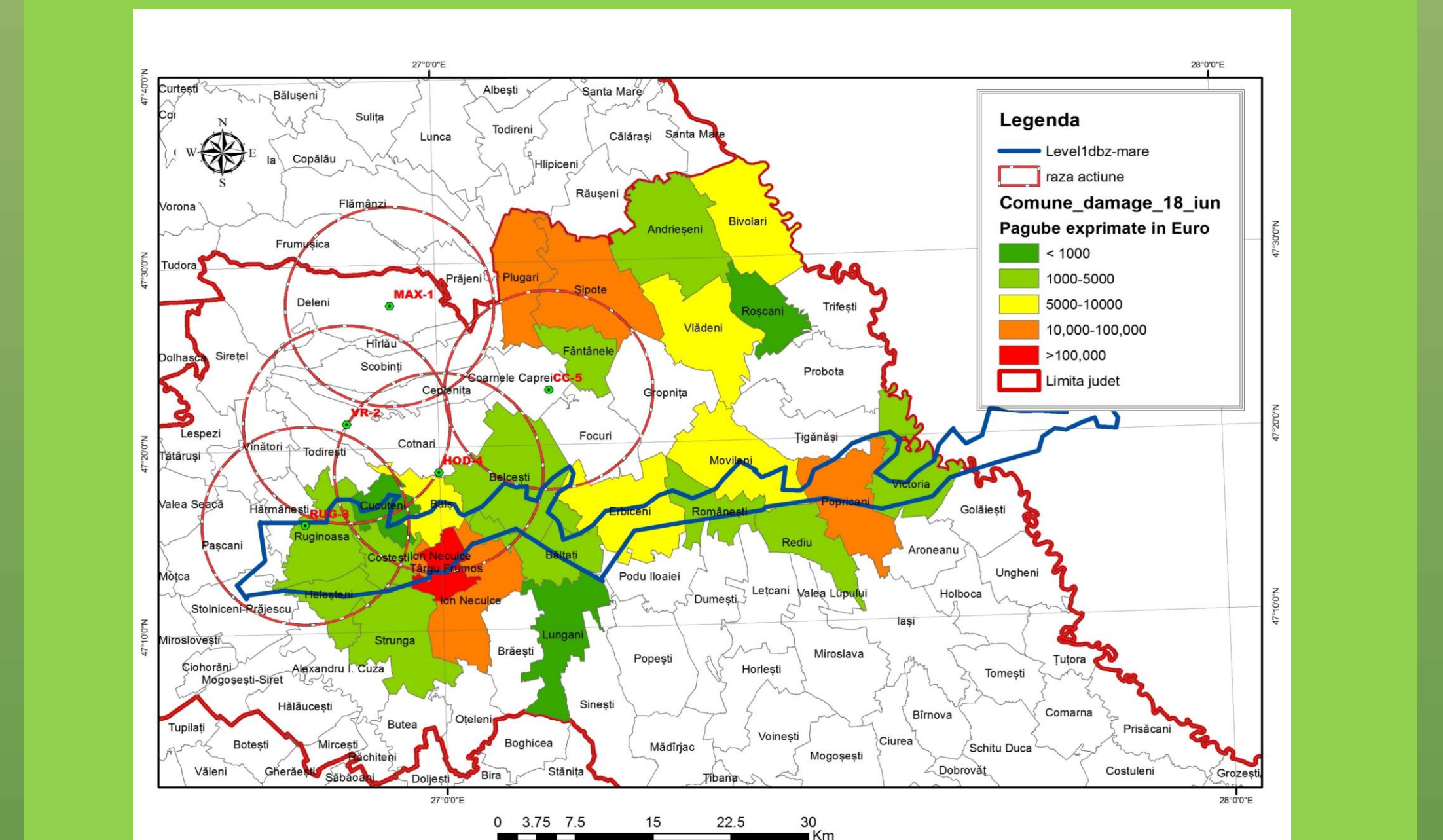


Areas associated with 55-dBZ contours at 0.5° elevation (between 500 and 700 m) from WSR-88D volume scans – for 18 June 2016 supercells



Temporal evolution of radar detected hail size (red line) and Max dBZ (blue line) for 18 June 2016 first supercell

Temporal evolution of VIL value (blue line) and VIL density (red line) for 18 June 2016 first supercell



Conclusions

Observing the losses caused by hail in Moldavia, in the Hail Suppression Unit protected areas and in the unprotected areas, we can conclude that it is necessary to improve and develop the system to cover areas as large as possible, to minimize damage cause by hail.