



Seismo-tectonic Information System in the SE-Carpathians

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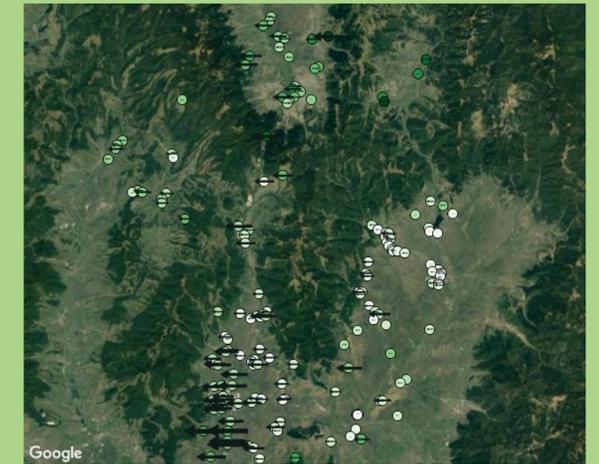
1. Introduction

The SE-Carpathians is important part of the European Plate for geoscientists because of its diverse geodynamics. Related to the current subduction, the youngest volcano in the Carpathian Basin (Ciomadul) is located there. Moreover, the Vrancea-region is the most seismically active in Europe.

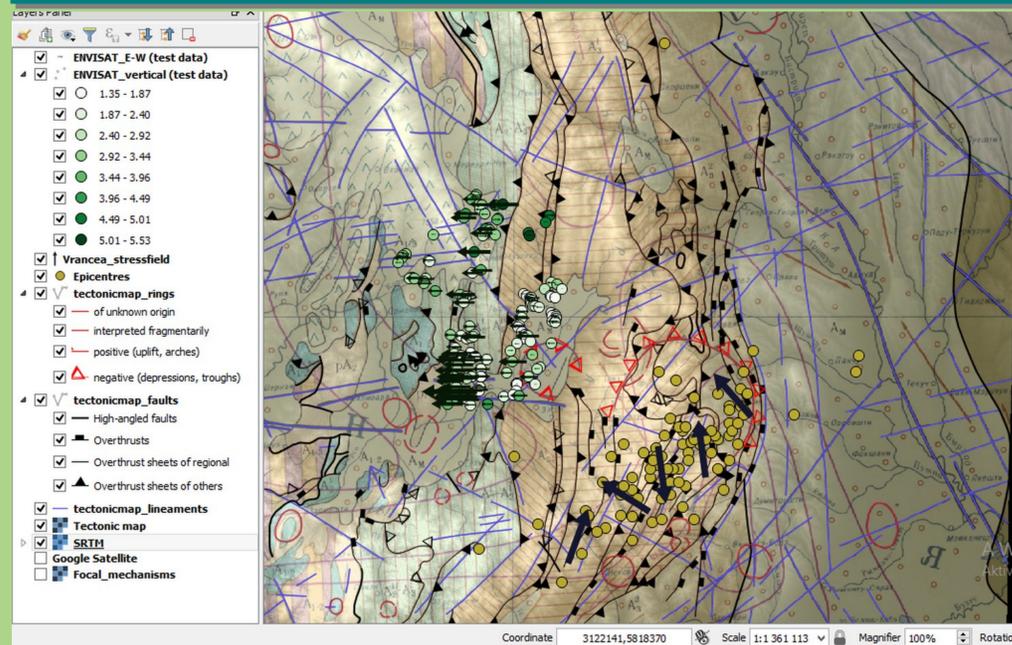
In order to facilitate the investigation of this region, to understand the recent deformations due to surface and mantle processes, we have collected SAR-images, seismic data and thematic maps (SRTM [1], tectonic map [2]) to create a Seismo-tectonic Information System. We have visualised the datasets in Quantum GIS.

2. Data

Velocities of E-W- and vertical movements in the vicinity of the Ciomadul volcano from ascending and descending SAR-images of ENVISAT



3. Discussion and conclusions

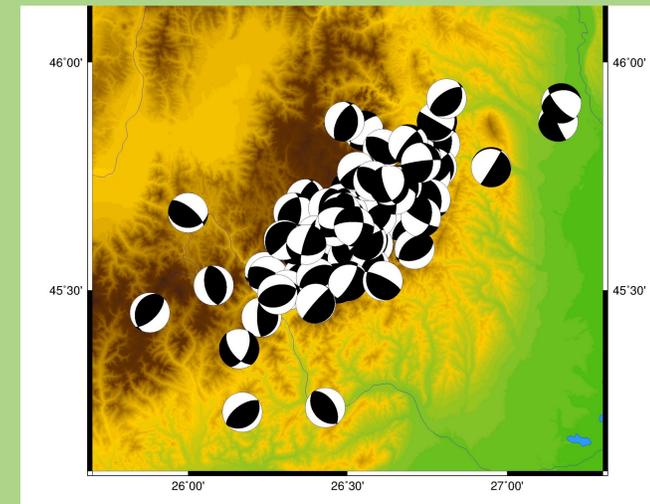


1, Deformation velocities derived from archive SAR images in the region of the Ciomadul volcano, the uplift is in the range of 1-5 mm/yr and the E-W velocity components are dominated by westward motions.

2, Stress data derived from FMS: the main orientations in the Vrancea-region are NNE-SSW and E-W. Thrust faults are the most frequent tectonic regimes.

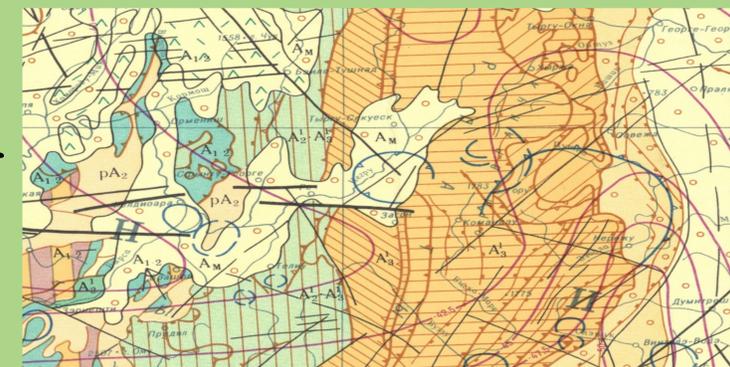
3, On the tectonic map we can see overthrusts, lineaments of unknown origin and ring structures of tectonic origin.

Used focal mechanism solutions (FMS) for stress inversions in the Vrancea region [3] → variables maximum horizontal compressive stress (S_{hmax}), thrust faults



Conclusion: It is very likely that the subduction is still ongoing, although we do not know its exact origin. We need further measurements and other thematic maps to understand the surface-mantle coupling and the motions of these processes.

Georeferenced and clipped tectonic map of the studied area [2]



References:

[1]: The CGIAR Consortium for Spatial Information – <http://srtm.csi.cgiar.org/>

[2]: Mezelovskij, N. V., Conseil d'assistance économique mutuelle (1987): Space tectonic map of european countries – the CMEA members and SFRY/Council for Mutual Economic Assistance, Echelle 1:1000 000 (E 8° - 30°, N 54° - 42°), Moskva: Mingeo, Fédération de Russie

[3]: Generic Mapping Tools: <http://gmt.soest.hawaii.edu/>