

THE BASPUNAR GEODYNAMIC OBSERVATORY (BGO) LOCATION

Located near the Ciucurova settlement, within Tulcea county, BGO is a permanent station run by the Solid Earth Dynamics Department in the Institute of Geodynamics of the Romanian Academy. BGO is part of the Romanian national geodynamic infrastructure and is aimed at monitoring crust deformation along the Peceneaga-Camena Fault (PCF) that represents a major contact separating the Moesian Microplate (MoP) and East European Plate (EEP). PCF in depth extension has been revealed by seismic tomography down to more than 150 km.

TECHNICAL FACILITIES

The BGO infrastructure mainly consists of two geodetic devices for high accuracy determination of distances between the fault flanks (Leica TPS 1200 total stations of 2 ppm accuracy), along with a weather station (WS2355) for monitoring the atmospheric parameters.

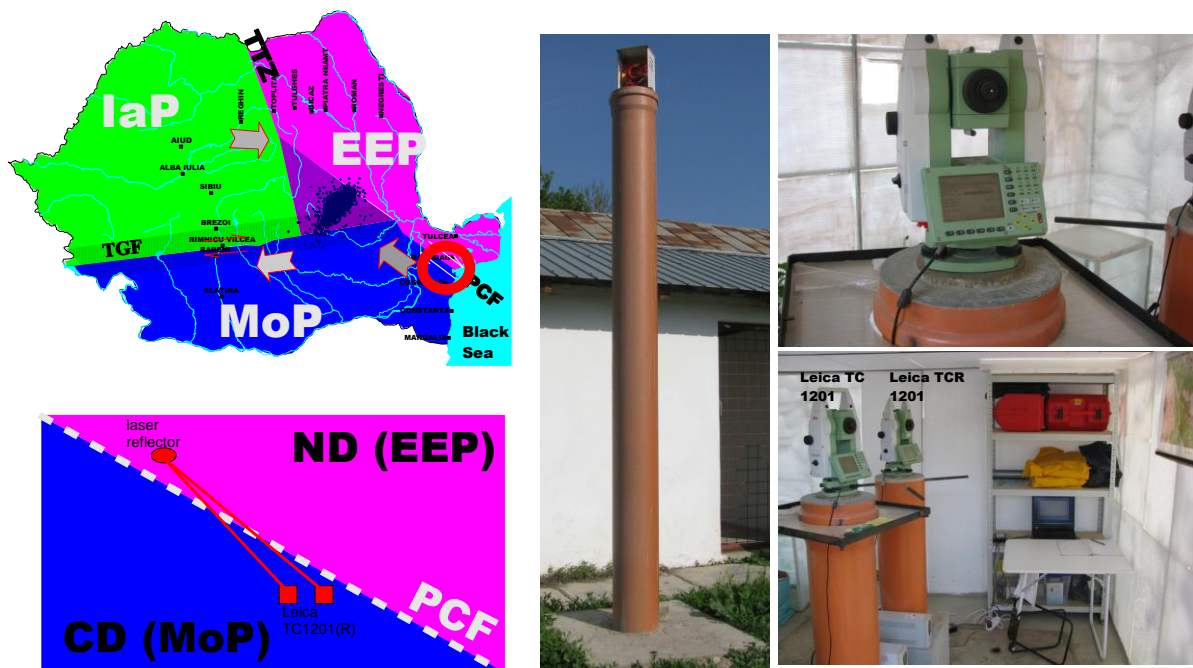


Fig. 1 BGO location and technical facilities

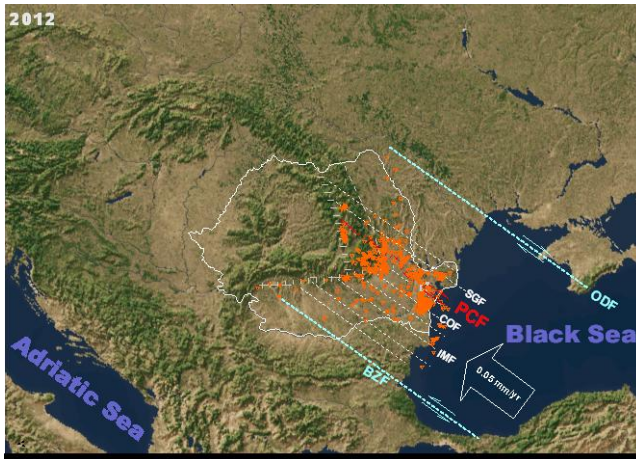
The two total stations, located on the Proterozoic Green Schist series of Central Dobrogea unit, belonging to MoP, point towards laser reflectors installed on the North Dobrogea Paleozoic deposits (Triassic sandy limestones) belonging to the EEP. The distance between each total station and its laser reflector is observed and stored every minute in a computer. Then, time series are corrected for atmospheric parameters (air pressure, temperature and relative humidity).



It is worth mentioning that the PCF track and shallow structure within BGO area was subject to some joint geophysical research performed by specialists from Institute of Geodynamics of the Romanian Academy and Institute of Geophysics of the National Academy of Sciences of Ukraine.

Fig. 2 Magnetic survey jointly conducted by Romanian and Ukrainian specialists within Baspunaru area

PRELIMINARY RESULTS



Based on the 2012 records, monthly average PCF slips have been determined and compared with the monthly seismicity of the both crust and intermediate-depth earthquakes occurred in the bending zone of East Carpathians showing an apparently good correlation between slip rate and seismicity.

Fig. 3 Crust seismicity in front of East Carpathians. Dotted lines mark active faults: ODF, Odessa fault; SGF, Sf Gheorghe fault; PCF, Peceneaga-Camena fault; COF, Capidava-Ovidiu fault; IMF, IntraMoesian fault; BZF, Burgas-Zimnicea fault)

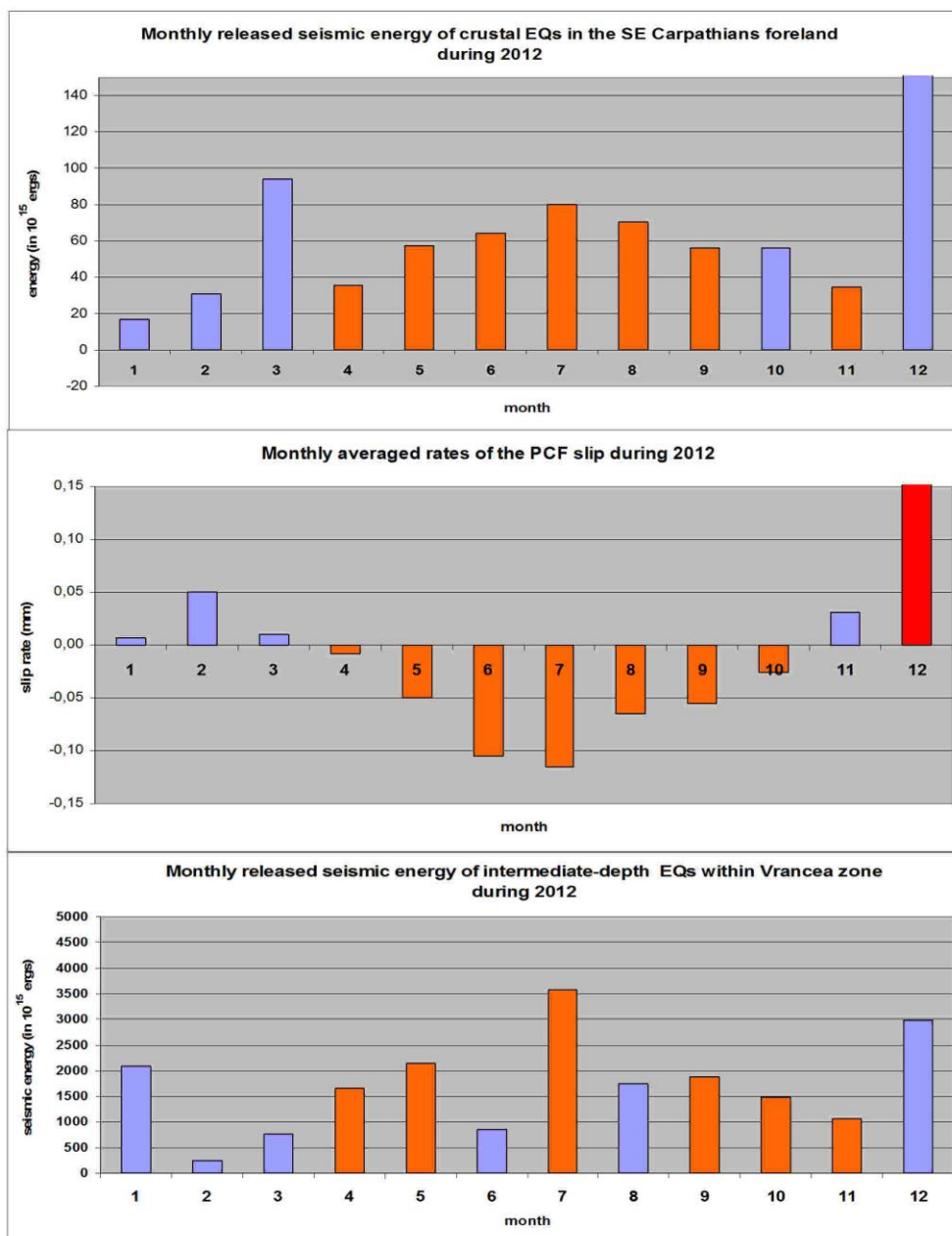


Fig. 4 Correlation of the PCF monthly average slip with seismic energy released during 2012 by crustal earthquakes (up) and intermediate-depth events (bottom)