

Seismological monitoring in the Czech Republic improved by CONA

The Institute of Physics of the Earth (IPE) is a member of the Faculty of Science, Masaryk University Brno in the Czech Republic. Its activities are mainly focused on seismological monitoring in local, regional and global scale, seismotectonic analysis in the Bohemian Massif region and its vicinity, regional geophysics and structural geology. The close cooperation between the IPE and ZAMG started in 1992. Joint research projects comprised new seismic stations, revision of geophysical fields and historical catalogues of earthquakes and data exchange. Recently data from the CONA seismic station have improved the knowledge of the seismic activity in both countries.

The Czech Republic is seismically not a very active region. The epicentres of stronger earthquakes are mostly situated in its border regions. The strongest felt shocks were observed in northern Bohemia and in western Bohemia and caused light or moderate damage only.

Seismic activity in the Czech Republic is monitored by fifteen permanent seismic observatories and six local networks by several institutions. The IPE Brno operates four broadband seismological stations in the eastern part of the Czech Republic - JAVC, KRUC, MORC, and VRAC. They are equipped by very sensitive broad-band STS-2 seismometers and Quanterra digitizers and are able to record weak local tremors as well as earthquakes from all over the globe. Data are provided to international seismological centres. The VRAC station situated north of Brno is engaged into the International Monitoring System CTBTO (Comprehensive Nuclear-Test-Ban Treaty Organization). The IPE operates also two short period local networks.

Data only from internal stations are often not sufficient for a precise location of earthquakes. The international data exchange with neighbouring countries is vital. The most important long-time partner of the IPE is the Central Institute for Meteorology and Geodynamics (ZAMG) in Vienna. Many tasks were solved in the joint ACORN project (Alpine Carpathian On-line Research Network): new seismic stations and their integration into the network, on-line data exchange between ZAMG and IPE; detection and localization of numerous of seismic events from the central Europe; compilation and revision of historical

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earthquakes and analysis of combined geophysical data.

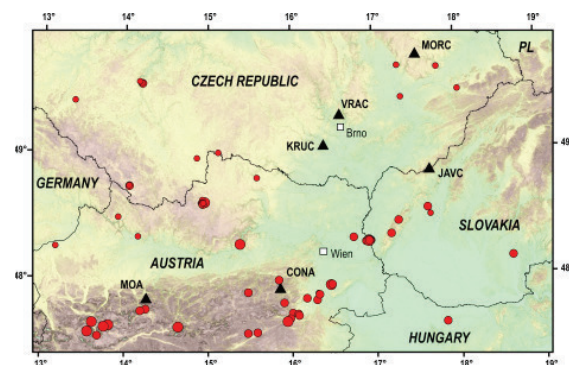


Figure 1: ZAMG and IPE seismic stations and earthquakes in 2010

The detection and localization of earthquakes in the Czech-Austria-Slovakia border region was strongly improved by the launch of the CONA seismic station at the Conrad Observatory. The station filled a gap in the spatial distribution of seismic stations. The much improved geometry of the virtual Austrian-Czech network has already enabled localisation of several weak but important earthquakes which could have been located only thanks CONA seismic recordings. The analysis of very small tremors that are indicators of seismic active faults constitutes an important aspect of seismic studies concerning the seismic hazard.

References:

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