

## The Seismic Network in Austria

The Seismological Service of Austria was founded after the Ljubljana earthquake in 1895. In 1904 the service was officially moved from the Austrian Academy of Sciences to the Central Institute for Meteorology and Geodynamics (ZAMG) in Vienna. Victor Conrad, after whom the discontinuity separating the Earth's crust into an upper and a lower part has been named, worked at the ZAMG and developed his own seismometer – the Conrad pendulum. In his honour the observatory at the Trafelberg in Lower Austria was named.

The seismic network consists currently of twelve broad-band and several strong-motion stations for recording severe ground motions as several stronger earthquakes are known to have happened in Austria during the past. In addition, five short-period stations are still in operation.

All broad-band stations are recording ground motions in real-time and transmit the data to the Geophysics Department at the Central Institute for Meteorology und Geodynamics (ZAMG) in Vienna.

The time-delay between recording transient ground motions and its analysis in the data centre in Vienna amounts to approx. 10 seconds. The data are then automatically analyzed. After a manual check the data – such as location and magnitude – are published on the homepage of the ZAMG.

The network is embedded in the networks of the neighbouring countries to permit an improved earthquake detection in the border region, and forms part of the Virtual European Seismic Network (VEBSN). The waveforms can be accessed via AutoDRM by interested parties, and are permanently transmitted to earthquake research institutes.

All stations are protected against lightning surges and are equipped with uninterruptable power supplies (UPS). As sensors either strong-motion sensors by Kinemetrics® - that is FBA23 plus a K2 or EpiSensors with Q330 data loggers, - or STS-2 as broad-band sensors together with various Quanterra data-loggers are used. All K2-equipments will be replaced by Basalt® in the following years. The time-base is given by either DCF or GPS-receivers.

The few short-period sensors, which are still in use, are Teledyne S13.

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At the ZAMG in Vienna the Antelope®-software has been chosen 15 years ago as the main acquisition system for the National Seismological Service of Austria. Experience has shown that the software can be easily adapted to local needs and allows easy control of data transmission processes and state-of-health.

Annually more than 600 tremors are recorded originating on Austrian territory. Half of which are a result of blasts in quarries. In addition, more than 4000 world-wide earthquakes are analysed per year. The Conrad Observatory serves as the master station in this regard as well as research centre for instrumentation and the comparison of signals recorded with different seismometer types.

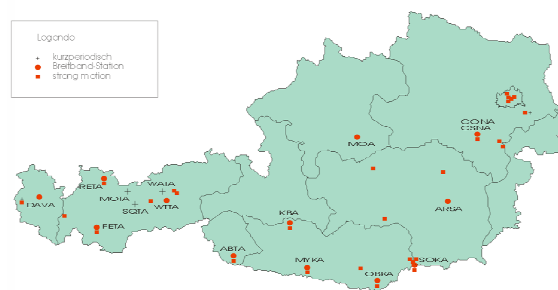


Figure 1: Seismic Network in Austria

### References:

- W.A. Lenhardt, P. Melichar, 2000. The Austrian Seismic Network. <http://orfeus.knmi.nl/newsletter/vol2no3/>.  
W.A. Lenhardt, 2001. The Austrian Seismic Network. Proceedings of 'Integrating the Seismic Monitoring in Central Europe', Udine, September 14-15, 2001.

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