

New Strong Motion Stations in Vienna

Fifteen years ago, a strong motion network was established in Vienna, the capital of Austria. The network serves to monitor local ground motions resulting from stronger earthquakes in the Vienna Basin and the Tulln Basin, which occurred frequently in the past, causing panic and destruction. In 2011 this network was completely overhauled to meet today's standards.

The seismic network in Vienna was established in 1996 due the potential threat of earthquake shaking posed by the seismic activity in the Basins of Vienna (SE) and Tulln (effects in Vienna see Fig. 1). Especially the Vienna Basin is rather active, with the last event exceeding a magnitude of 4,9 on July 11, 2000, resulting in building damage in Ebreichsdorf, some 37 km from Vienna.



Figure 1: Damage in Vienna in 1590.

Because of this seismic activity, five strong motion stations were installed across Vienna (Fig. 2). These stations were originally equipped with SMACH-Sensors from Switzerland. These sensors are not serviced today anymore.



Figure 2: Network in Vienna.

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In 2011 all sensors were replaced by a newer generation, so-called BASALT® - Sensors of Kinematics®. Today, the data are transmitted automatically, once a site dependant threshold is exceeded. In Fig. 3 the seismogram of the earthquake in Bovec (Slovenia) is shown. This earthquake was the reason to establish a 24h-stand-by for seismologists at the ZAMG at the request of the federal warning centres in Austria to warn the public, should an earthquake happen near a nuclear power plant in the neighbouring countries.

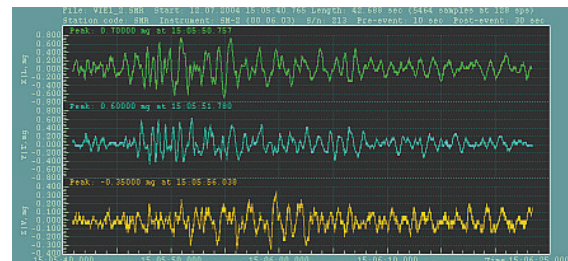


Figure 3: Seismic record of the earthquake in Bovec (Slovenia) on April 12, 1998 at the station in the 9th district of Vienna, which is sited almost 300 km from the epicentre.

All sensors were tested for several months at the Conrad Observatory to ensure their proper functionality and adherence to internal standards. All sites were equipped with GPS-antennas and placed on a special pier.

The stations were officially inaugurated on September 21, 2011 by representatives of the City of Vienna.

A sixth station is being added to the network at the ZAMG in 2012, thus commencing again continuous seismic measurements at the main building of the ZAMG, which were abandoned in 1983 due to increasing traffic noise.

References:

Duma, G., Horn, N. & Vogelmann, A. 1996. Seismisches Strong-Motion Messnetz in Wien. Endbericht im Auftrag des Bundesministeriums für Wissenschaft & Forschung und der Stadt Wien.