

Testing of Reftek broadband stations at the Conrad Observatory

To help better understand Earth structure and seismicity in Austria and neighbouring regions, the University of Vienna has acquired a set of 15 portable broadband seismometer stations. These stations were tested in the Conrad Observatory in August 2011.

Each station consists of a three-channel datalogger Reftek 130 and an active velocity broadband sensor 151-60. The stations are shown in Figure 1, together with GPS antenna that are used to obtain an accurate timing signal.

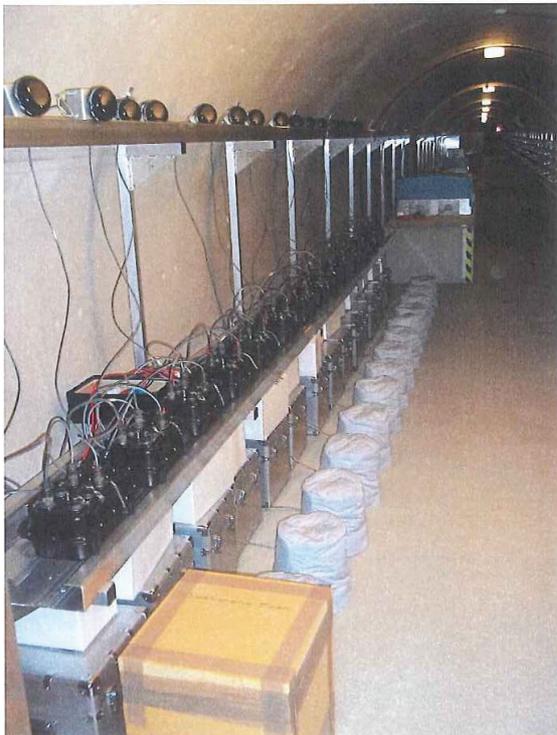


Figure 1: 15 broadband sensors, recorders, and GPS antenna in the tunnel of the Conrad Observatory.

The instrument response is flat between 60 seconds and 50 Hz. Figure 2 shows the spectra that were obtained from the vertical components of three stations during an 8 hr time window. A thermal insulation had been used only on one of the three stations, the one showing lowest noise at long periods. The general noise level is relatively low, especially

given that measurements were not placed on the pier, but on the tunnel floor. This attests to the good measurement conditions in the Conrad Observatory.

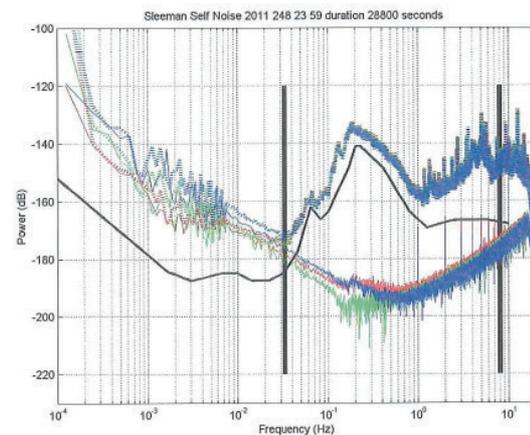


Figure 2: Spectra recorded on three instruments, together with the Peterson low-noise model NLNM. The curves in the lower part show self-noise spectra, calculated according to Sleeman et al. (2006).

The instruments will be used in temporary experiments for determining the Earth structure beneath Austria and surrounding regions, and to better understand seismicity in the area. People involved in the testing were Ian Billings (Reftek), Günter Ertl (Trinac), and the author. Norbert Blaumoser (ZAMG) helped with logistics.

References:

R. Sleeman, A. van Wettum and J. Trampert, 2006. Three-channel correlation analysis: a new technique to measure instrumental noise of digitizers and seismic sensors. *Bull. Seism. Soc. Am.*, Vol. 96, No. 1, pp. 258-271, doi: 10.1785/0120050032.

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