Geophysical Research Abstracts
Vol. 15, EGU2013-3018, 2013
EGU General Assembly 2013

The New Very Broadband Seismic Station TROLL, Antarctica

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Troll is the name of the Norwegian permanent research station in Dronning Maud Land, Antarctica. The research base is located inside the continent, at an elevation of about 1300 m and at a distance of about 230 km from the shelf ice border. In the first week of February 2012, a new very broadband seismic station was installed at TROLL.

Contrary to many other seismic stations inside the Antarctic continent, the new seismic sensor could be installed on bedrock (migmatite), on a hill at about 300 m distance from the main buildings of the Troll research base. A bedrock installation has the advantage that seismic signals are not disturbed by multiples due to the thick Antarctic ice sheet. The equipment consists of a Streckeisen STS-2.5 broadband sensor and a Quanterra Q330HR 26 bit digitizer. All data are transferred in real time via a satellite link to NORSAR for analysis and further distribution.

During the first year, the new seismic station and corresponding data transmission has been running very stably. Initial analysis of the station's event detection capability shows that the performance is comparable to, and sometimes better than, the best performing three-component stations of the International Monitoring System (IMS). We will present examples of diurnal and seasonal variations in the background noise level of the station, the observed global, regional and local seismicity, and the very exciting monitoring capabilities of icebergs drifting along the coast of Dronning Maud Land.