Geophysical Research Abstracts
Vol. 16, EGU2014-15263-1, 2014
EGU General Assembly 2014


# A New Seismic Broadband Sensor Designed for Easy and Rapid Deployment

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Properly deploying digital seismic broadband sensors in the field can be time consuming and logistically challenging. On active volcanoes the time it takes to install such instruments has to be particularly short in order to minimize the risk for the deployment personnel. In addition, once a seismometer is installed it is not always feasible to pay regular visits to the deployment site in order to correct for possible movements of the seismometer due to settling, sliding or other external events. In order to address those issues we have designed a new type of versatile and very robust three component feedback sensor which can be easily installed and is capable of self correcting changes of its tilt and measuring orientation changes during deployment. The instrument can be installed by direct burial in soil, in a borehole, in glacial ice and can even be used under water as an ocean bottom seismometer (OBS). It components are fitted above each other in a cylindrical stainless steel casing with a diameter of 51 mm. Each seismic sensor has a flat response to velocity between 30s to 100 Hz and a tilt tolerance of up to 20 degrees. A tilt sensor and a two axis magnetometer inside the casing capture changes in tilt and horizontal orientation during the course of the deployment. Their output can be fed into internal motors which in turn adjust the actual orientation of each sensor in the casing. First production models of this instrument have been deployed as OBS in an active submarine volcanic area along the Juan de Fuca Ridge in the NE Pacific. We are currently finishing units to be deployed for volcano monitoring in Icelandic glaciers. This instrument will be offered as an analogue version or with a 24-bit-digitizer fitted into the same casing. A pointy tip can be added to the casing ease direct burial.