



## **MUG-OBS - Multiparameter Geophysical Ocean Bottom System : a new instrumental approach to monitor earthquakes.**

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Real time monitoring of seismic activity is a major issue for early warning of earthquakes and tsunamis. It can be done using regional scale wired nodes, such as Neptune in Canada and in the U.S, or DONET in Japan.

Another approach to monitor seismic activity at sea is to deploying repeatedly OBS array like during the amphibious Cascadia Initiative (four time 1-year deployments), the Japanese Pacific Array (broadband OBSs “ocean-bottom broadband dispersion survey” with 2-years autonomy), the Obsismer program in the French Lesser Antilles (eight time 6-months deployments) and the Osisec program in Ecuador (four time 6-months deployments). These autonomous OBSs are self-recovered or recovered using an ROV. These systems are costly including ship time, and require to recover the OBS before to start working on data.

Among the most recent alternative we developed a  $\frac{3}{4}$  years autonomy ocean bottom system with 9 channels (?) allowing the acquisition of different seismic or environmental parameters.

MUG-OBS is a free falling instrument rated down to 6000 m. The installation of the sensor is monitored by acoustic commands from the surface and a health bulletin with data checking is recovered by acoustic during the installation. The major innovation is that it is possible to recover the data any time on demand (regularly every 6-months or after a crisis) using one of the 6 data-shuttles released from the surface by acoustic command using a one day fast cruise boat of opportunity. Since sensors stayed at the same location for 3 years, it is a perfect tool to monitor large seismic events, background seismic activity and aftershock distribution. Clock, drift measurement and GPS localization is automatic when the shuttle reaches the surface. For remote areas, shuttles released automatically and a seismic events bulletin is transmitted. Selected data can be recovered by two-way Iridium satellite communication. After a period of 3 years the main station is self-recovered by acoustic.