

Expanding the Capabilities of Free Fall Ocean Bottom Seismometers (OBS): Güralp Aquarius

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Historically, free fall Ocean Bottom Seismometers (“OBS”) have sacrificed real-time availability for increased portability allowing offshore arrays to be deployed with greater ease. However, in recent years, Güralp System Ltd. have developed their 3rd generation of free fall OBS system, known as the Aquarius, which addresses this historical trade off by integrating real-time acoustic transmission technology into the OBS system.

The seafloor-to-surface acoustic communication technology allows for state-of-health and noise performance interrogation during installation followed by retrieval of seismic data throughout the deployment period. The communications will allow for semi-automatic and near real-time retrieval of data via multiple methods.

The Aquarius incorporates the Güralp omnidirectional broadband seismometer, allowing the Aquarius to land and operate effectively on steep slopes without requiring a mechanical gimbal mechanism that inherently introduces noise and failure modes. Raw data is recorded uncorrected for orientation to allow users to correct during post-processing.

Intelligent battery design allows for typical 18-month deployments. Batteries are charged via Power-over-Ethernet through the same cable used for data download. This allows recharging, download and configuration simultaneously on the ship in between deployments.

Ease of configuration, deployment and recovery followed by simple data processing are all central themes to the Aquarius. The capital investment required to purchase OBS systems often means that OBS form instrument pools that inherently must be adaptable to a range of use-cases.

OBS pools create huge opportunities to investigate unknown regions as well as augmenting land arrays. This is evident in the 120 Aquarius units being supplied to the National Facility for Seismic Imaging, Canada, forming a pool which is already scheduled to be deployed in several ocean basins within the next few years.

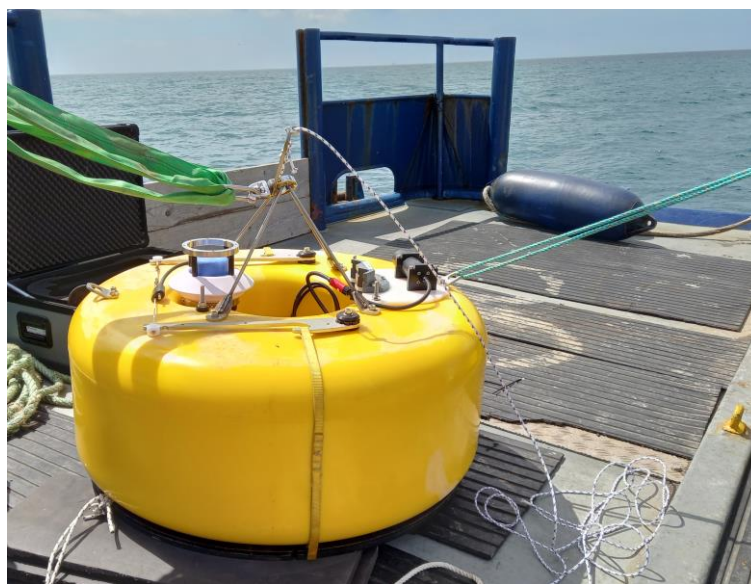


Figure 1: Aquarius OBS unit on deck ready for deployment.