

SESSION 12- Advances in Marine Seismology, Seafloor Networks and Ocean-Bottom Earthquake Observation

Conveners

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Session Description

Marine seismology has entered a period of rapid expansion driven by major advances in ocean-bottom instrumentation, permanent and temporary seafloor networks, and new analysis techniques that enable high-resolution investigation of offshore earthquake processes. The combination of OBS arrays, cabled observatories, fiber-optic sensing, marine geodesy, and complementary geophysical measurements now provides access to fault systems, tectonic domains, and geohazard environments that were previously poorly monitored or entirely unknown.

This session focuses on recent scientific and technological developments that enhance our ability to observe, model and understand seismic and aseismic deformation beneath the seafloor. We welcome contributions on the deployment, performance, and integration of OBS systems both autonomous and cabled as well as studies leveraging seafloor networks to characterize microseismicity, rupture dynamics, slow-slip behavior, crustal deformation, and the coupling between tectonic and oceanographic processes.

We particularly encourage submissions addressing:

- Innovations in OBS instrumentation, noise reduction, sensor integration, and long-term monitoring strategies;
- Microseismicity patterns, earthquake swarms and fault-zone structure in subduction zones, rifts, volcanic regions, and transform domains;



- Seafloor deformation measurements using acoustic, geodetic, and fiber-optic approaches;
- OBS-based characterization of tsunami sources, submarine landslides, and other marine geohazards;
- Multidisciplinary use of seafloor observations to link seismic, hydrothermal, volcanic, oceanographic, and anthropogenic processes;
- Modeling, data processing, and analysis methods that improve the interpretation of offshore seismic and geophysical datasets.

By bringing together expertise from seismology, geodesy, marine technology, and ocean sciences, this session aims to highlight how emerging observational capabilities are reshaping our understanding of earthquake and fault processes beneath the oceans and strengthening the foundation for future global seafloor monitoring systems.

