

Institut für Geophysik
Geophysikalisches Kolloquium
Sommersemester 2025

Montag, 16.06.2025

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**Monitoring Arctic seismicity with ocean bottom seismographs and
underwater acoustics**

Earthquake monitoring typically relies on land-based seismic networks. At sea, ocean bottom seismographs (OBS) can supplement the permanent, land-based networks, improving the detectability of smaller earthquakes. However, OBS deployment is typically time constrained (often to ~1 year), costly, and not feasible in ice-covered areas. Thus, there is a large monitoring gap in the oceans where only the larger events are detected. This is true also for the High Arctic region, where the ultra-slowly spreading Gakkel Ridge hosts most of the seismicity. In this presentation, I will demonstrate how we explore different approaches to seismological monitoring in the Arctic. I first present the results of a 1-year OBS monitoring campaign along the spreading ridge west of Svalbard. By combining recordings from the land-based seismic networks with data from three OBS systems, we increased earthquake detection by a factor of three and saw a clear improvement in location uncertainties. I then present how we exploit underwater acoustic data to improve earthquake monitoring in the high Arctic. Hydrophones have been deployed on four different moorings placed under the ice cover near the Gakkel Ridge in the Arctic Ocean. Previous studies have shown that seismic phases (P and T-waves) are well detected in such sound recordings. I will present explorative results based on data from previous experiments to demonstrate how underwater acoustics allows us to improve detection thresholds and location accuracy in remote areas far from land based seismic networks.

Das Kolloquium findet um 16:00 Uhr im Seminarraum GEO 315, Corrensstr. 24, 48149 Münster statt. Alle an dem Thema Interessierten sind hierzu herzlich eingeladen.

Die Dozenten des Instituts für Geophysik