



Session 03

Seismological studies in polar regions and the cryosphere

Conveners:

Myrto Pirlil¹, Peter Voss², Fabian Walter³

¹ Independent Researcher, Norway

² Geological Survey of Denmark and Greenland – GEUS, Denmark

³ Swiss Federal Institute for Forest, Snow and Landscape Research WSL, Zurich, Switzerland

The Polar Regions attract increased scientific, social and economic attention, holding special significance as regions strained the most by the consequences of climate change. Unanswered questions on their tectonic evolution, the fate of the ice sheets and implications of natural resources and the UN Law of the Sea Treaty stimulate further interest in them. Seismological challenges in the Polar Regions comprise the origin and properties of intraplate seismicity, the mechanisms of ultraslow seafloor spreading, the structure and dynamics of aseismic ridges, subglacial cratons and orogens, the role of glacial rebound in seismicity triggering, seismogenic glacier sliding and iceberg production. As an imaging tool both in depth and on the surface, apart from revealing the Earth's structure, seismology contributes to studies of paleoclimate, sea-ice characteristics, and ice and permafrost structure. Seismology has also established itself as an effective instrument to study ice dynamics and monitor glacier-related natural hazards. The rich cryoseismological wavefield provides unrivalled insights into the poorly accessible subglacial environment and ice-ocean boundary.

We invite submissions on seismology in the Polar regions and glaciated environments with temperate climates. All seismological topics are welcome, including monitoring and analysis of seismicity (tectonic and cryogenic), related natural hazards, near-surface processes, studies of recent larger seismic events, seismotectonics, and seismic imaging of ice, crustal and mantle structure. We welcome contributions on recent research results, and on passive and active experiments, including deployments of large-N networks and fibre-optic infrastructure for distributed acoustic sensing, under the special conditions of the polar environment and mountain glaciers.

