



ID: P1.2-080

Type: E-poster

of determining an earthquake focal mechanism using Distributed Acoustic Sensing data

Earthquake source parameters are valuable for seismology, including monitoring the Comprehensive Nuclear-Test-Ban Treaty. One needs to determine the hypocentre location, seismic moment, radiated energy, event size, and released stress drop. A stress-strain pattern of the crust is inferred from a statistical analysis of focal mechanisms. It provides information on geometry and kinematics of fault zones. Focal mechanisms of earthquakes with $M_w \geq 5$ are calculated by seismological centers and published in Global CMT, USGS, and other catalogs. Focal mechanisms of weak events are commonly obtained from body wave first-motion polarities recorded by regional seismic networks. Often the networks are poor for determining focal mechanisms of weak earthquakes. In the Russian Federation, such a situation is realized in Yakutia, Transbaikalia, etc. Using pre-existing telecommunication cables as DAS sensors can fill the gap in seismological data for these regions, providing good azimuthal coverage of earthquake sources and, therefore, significantly enlarging a number of seismic events with well-constrained nodal planes. The methods for source parameters determining, for which converting strain-rate data in ground motion quantities is not required, are especially interesting. We examine challenges of DAS using, approaches of their overcoming and discuss the potential of DAS for determining earthquakes focal mechanisms.

E-mail

kvkislov@yandex.ru

In-person or online preference

Primary author: FILIPPOVA, Alena (Pushkov Institute of Terrestrial Magnetism, Ionosphere and Radio Wave Propagation of RAS)

Co-authors: FOMOCKINA, Anastasia (Institute of Earthquake Prediction Theory and Mathematical Geophysics Russian academy of sciences); Dr KISLOV, Konstantin (Institute of Earthquake Prediction Theory and Mathematical Geophysics (IEPT RAS))

Presenter: FILIPPOVA, Alena (Pushkov Institute of Terrestrial Magnetism, Ionosphere and Radio Wave Propagation of RAS)

Session Classification: P1.2 The Solid Earth and its Structure

Track Classification: Theme 1. The Earth as a Complex System: T1.2 The Solid Earth and its Structure