



Session 15

Advancements in methodology and diverse applications of single-station seismometry across multiple disciplines

Conveners:

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The capability of single-station-based methods has benefited many branches of seismology since those early studies on mantle attenuation or nuclear surveillance. Specifically, in passive seismology, the single-station techniques imply a lower degree of labor intensity; they are economically advantageous and suitable for their applications in tough terrain conditions. Two of the methodologies that use the seismic ambient noise wavefield have been gaining great popularity in the past decades: the horizontal-to-vertical spectral ratio (HVSr) and the interferometry based on auto-correlation.

The HVSr method was initially conceived to help in site response studies. However, since its emergence, the technique has undergone many improvements in all forms of acquisition, processing, and theory and is increasingly applied in diverse processes, hazards and materials.

The study of relative changes in ambient noise waveform inferred from ambient noise interferometry (single-station) created a complementary tool to investigate deformations (altered elastic and scattering properties) caused by mechanical processes (migration of pressurized magma, change in rigidity and rheology and environmental stressors), which tend to show spatial-temporal evolution. However, this technique is comparatively less adopted.

In this session, we cordially invite the broad applications of the techniques based on single-stations targeting a range of environments of Earth's surface (mass movement, hydrologic, cryospheric, archeo-geophysics, among others) and studies dedicated to developing state-of-the-art methods.

