SESSION 55- *Seismology for Volcano Structure and Stress*

Conveners

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Rosalia Lo Bue, Istituto Nazionale di Geofisica e Vulcanologia – Osservatorio Etneo, Catania, Italy;
Brandon Paul VanderBeek, School of Earth and Environment, University of Leeds, UK; soon to join University of Oxford, UK.
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Session Description

Understanding the internal structure and stress state of volcanoes is essential for reconstructing their evolution, assessing hazards, and interpreting the interplay between magmatic and tectonic processes. Volcanoes are inherently complex and heterogeneous systems, where lithological variations, topography, and intricate conduit networks strongly influence the generation and propagation of seismic waves. Characterizing these features and their temporal evolution requires a broad spectrum of seismological approaches.

This session aims to bring together observational, experimental, and modelling studies that explore how seismology can reveal the physical properties, dynamics, and stress conditions of volcanic systems. Topics of interest include, but are not limited to:

- *Seismic tomography and high-resolution structural imaging*
- *Event detection, classification, and seismicity catalogues*
- *Moment tensor and source mechanism studies*
- *Shear-wave splitting and stress analysis*
- *Ambient-noise interferometry and time-lapse imaging*
- *Wave propagation and numerical modelling of complex volcanic structures*
- *Integration of seismic data with geodetic, geochemical, or other geophysical observations*
- *Novel methodologies, including machine learning and advanced instrumentation*

We welcome contributions addressing both active and quiescent volcanoes. By combining complementary observations and models, this session seeks to showcase the latest advances and highlight open challenges in using seismology to unravel volcano structure and stress.