SESSION 54- *Interpreting volcanic unrest and eruption data for effective crisis management*

Conveners

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Session Description

Volcanoes often undergo episodes of unrest that dedicated observatories should monitor, interpret, and manage. The mechanisms driving unrests, their timescales, and the associated precursory signals are challenging to translate into reliable forecasts of eruption style and intensity. Yet the consequences for nearby populations are potentially profound. Formulating hypotheses about the evolution, or cessation, of unrests requires understanding complex and deep earth processes, a task that is especially challenging when monitoring infrastructure is limited.

Interpreting both the historical and contemporary behaviour of volcanic systems is complex but essential. In recent decades, numerous well-documented episodes of unrest have been observed, some of which have culminated in eruptions, while others have not. Notable non-eruptive cases include the Campi Flegrei caldera, Santorini, Dofen and the Chiles–Cerro Negro volcanic complex. By contrast, eruptive examples include Whakaari, Fuego, Kīlauea, Sierra Negra, Cumbre Vieja and many others. These events have yielded rich, multidisciplinary datasets that may enhance our understanding of processes driving unrest, eruption, and co-eruptive dynamics within volcanic conduits, magmatic systems, and flanks.

We invite contributions that investigate the underlying processes of volcanic unrest and focus on the interpretation driven by those global crises. Studies integrating seismic monitoring with complementary approaches, including infrasound, geodesy, gravimetry, geochemistry, petrology, thermal imaging, and visual imaging, are particularly encouraged.

This section will be a joint session between the 40th General Assembly of the European Seismological Commission (ESC2026) and the SSA Annual Meeting 2026.