SESSION 27- Integrating Seismological and Hydrogeophysical Methods for Sustainable Groundwater and Subsurface Characterization

Conveners
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Session Description

The intersection of seismology and hydrogeophysics offers transformative opportunities for understanding groundwater systems, fault-controlled aquifers, and subsurface processes critical to sustainable water management and hazard mitigation. Recent advances in seismic imaging, ambient noise tomography, and electrical and electromagnetic techniques such as CSAMT, MT, and ERT are enabling high-resolution characterization of aquifers, fractures, and permeability structures across complex geological terrains.

This session invites contributions that integrate seismological, hydrogeophysical, and modeling approaches to investigate subsurface hydromechanical behavior, aquifer dynamics, and fluid–fault interactions. Topics of interest include seismic–hydrological coupling, time-lapse monitoring of groundwater changes, fault-zone permeability estimation, and the role of seismic data in assessing groundwater sustainability and geo-hazards.

We particularly welcome interdisciplinary studies linking seismology with environmental geophysics, hydrogeology, and climate resilience, as well as research that leverages machine learning, joint inversion, and data assimilation techniques for multi-physics subsurface modeling.

By bridging the gap between seismic and hydrological sciences, this session aims to foster dialogue and collaboration among researchers and practitioners working toward sustainable subsurface resource management and risk reduction in diverse geological and climatic contexts.