



## Session 38

### Geophysical testing and modelling of seismic site effects in complex geomorphological environments

Conveners:

**Samuel Bignardi, Giovanna Vessia, Chiara Faraone**

*Department of Engineering and Geology (INGEO), University of Chieti and Pescara, "G d'Annunzio", Italy*

**Topic:** seismic hazard and risk, including site effects

Modern subsurface characterization strongly relies on Geophysical methods. The opportunity of imaging the subsurface in terms of the spatial distribution of physical properties of the constituent materials is extremely valuable. Electrical methods such as ERT and IP provide information on the electrical properties of soil, enabling the investigation of aspects related to the distribution of underground water (e.g. void detection, location of potentially liquefiable layers, detecting subsurface slip planes and unstable slopes, monitoring the quality of under-foundation soil). Conversely, methods based on seismic wave propagation (S-waves refraction, MASW, REMI, ESAC, among others) convey information on S-wave propagation, providing a direct link to soil mechanical resistance.

Direct sampling (boreholes, logs, Cone penetration tests, etc.) although point-wise, constitutes a strong benchmark for geophysics-derived models and helps in making the latter more robust, and reliable enough not only for decision-making purposes but also for the application of subsequent risk assessment techniques leveraging advanced numerical simulation. In areas exposed to seismic risk, in particular, the combined use of the aforementioned tools is key to seismic microzonation. Furthermore, they find applications in building and infrastructure design, urban planning, natural risk mitigation, and environmental investigations. In this session, we warmly welcome contributions combining geophysical methods, direct sampling, and numerical modeling, especially in the presence of complex lithology, addressing challenges in the aforementioned (or closely related) scientific areas.

