



## Session 13

### New data and methods for earthquake risk assessment: Statistical models and machine learning tools applied to ground and satellite data

#### Conveners:

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A large amount of new and high-quality data (including satellite observations), collected in recent years at different space-time scales, and the increased computational capabilities offer an unprecedented opportunity for the development of new statistical and physical models, model testing, and validation. At the same time, they also represent a major challenge towards the design of novel and effective data-driven tools for the adequate characterization of the different components of seismic risk assessment.

Widespread applications of new tools for data analysis (ranging from statistical data analysis to machine learning and artificial intelligence methods), and the development of new models provide new insights in the field of statistical seismology, which have a direct effect on time-dependent seismic hazard and risk assessment. Physical modelling and statistical methods for quantifying earthquake related hazards (e.g. tsunami and landslides), as well as methods for cascading risks assessment are of special interest.

Particular emphasis will be placed on:

- statistical models for earthquake occurrence and space-time clustering, development and testing;
- time-dependent seismic hazard assessments (including aftershocks contribution);
- novel methods for data processing (e.g. statistical machine learning analysis) in earthquake risk assessment
- the contribution of remote-sensing data analysis to the characterization of the different seismic risk components (including exposure);
- data and models for multi-hazard and cascading effects assessment.

