



Session 16

Advances in models, observations and verification towards operational earthquake forecasting

Conveners:

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Which are the physical processes that take place in the Earth crust before the earthquake nucleates? How can we observe, describe and model them statistically and physically? Significant steps have been made towards assessing earthquake space-time correlations, clustering, and the emergence of seismicity patterns, showing the potential for reproducible and testable earthquake forecasting. But seismicity is only one manifestation of Earth's complex dynamics preceding catastrophic earthquakes. Besides identified patterns and probabilistic models of earthquake occurrence, a large amount of newly available data provide nowadays opportunities for systematic analysis and model testing. A variety of physical observables, ranging from ground-related deformation patterns (GPS, SAR, etc.) to pre-earthquake changes (be they geochemical, electromagnetic, hydrogeological or thermodynamic), may be related to stress variations in the lithosphere prior to a large earthquake.

With this session, we intend to better understand the feasibility and practical relevance of earthquake forecasting methods. Contributions addressing the following theoretical and practical issues are welcome:

- State-of-the-art and novel observations from ground based or satellite based techniques;
- Systematic analysis, physical interpretation and modeling of pre-earthquake processes;
- Models validation and statistical assessment of the proposed physical-based precursors;
- Statistical methods and issues in earthquake forecast validation;
- Earthquake forecasting experiments for real-time model testing at global scale and in specific test areas;
- Time-dependent seismic hazard assessment, based on reproducible earthquake forecast;
- Dissemination and use of earthquake forecasting information;
- Possible extension to seismic risk and loss forecasting.

Presentations addressing these problems, in both probabilistic and deterministic approaches, are welcomed