



Session 31

Advances in monitoring, modeling, hazard assessment, and inputs for managing of anthropogenic seismicity

Conveners:

Alexander Garcia¹, Beata Orlecka-Sikora², Olivier Lengliné³, Harsh Gupta⁴, EPOS Thematic Core Service Anthropogenic Hazards⁵

¹*Istituto Nazionale di Geofisica e Vulcanologia (INGV), Sezione di Bologna, Italy*

²*Institute of Geophysics, Polish Academy of Sciences (IGF PAS), Krakow, Poland*

³*EOS/ITES - Université de Strasbourg/CNRS, France*

⁴*National Geophysical Research Institute (NGRI), Hyderabad, India*

⁵*TCS AH, Consortium*

Anthropogenic seismicity often accompanies industrial activities such as mining, creation of artificial water reservoirs, injection and withdrawal of fluids associated with gas storage operations, CO₂ sequestration, hydrocarbon and geothermal energy exploitation, wastewater disposal and shale gas production. Although the physical principles at the origin of anthropogenic seismicity are well known, it is still difficult to establish a cause-effect relationship between industrial operations and consequent seismicity. Anthropogenic seismicity problems require a holistic and interdisciplinary approach, as well as access to integrated and standardized data. Monitoring of seismicity, deformation, pore pressure variations and stress perturbations is thus of primary interest. Furthermore, a new generation of methods and tools for geophysical data processing as well as the implementation of quantitative models to improve our understanding of the causal relationship between industrial operations and seismicity are needed. Moreover, advances in the understanding of human-induced seismicity are fundamental for developing science-based decision support tools for managing anthropogenic seismicity. This session focuses on recent advances in monitoring, processing geophysical data, time-dependent seismic hazard assessment, especially with the use of multi-disciplinary approaches developed to facilitate research in the field of anthropogenic seismicity. The session covers both theoretical and experimental aspects. We encourage contributions targeting the analysis and modeling of anthropogenic seismicity at different spatial and temporal scales, the development of new processing methods for geophysical data analysis, multidisciplinary studies combining different data types and observations, and studies focusing on hazard assessment and on the implementation of science-based decision support tools for managing human-induced seismicity.

