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EPOS Thematic Core Service "Anthropogenic Hazards" - e-research platform

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EPOS Thematic Core Service ANTHROPOGENIC HAZARDS (TCS AH) aims to create new research opportunities in the field of anthropogenic hazards evoked by exploitation of georesources. TCS AH, based on the prototype built in the framework of the IS-EPOS project (https://tcs.ah-epos.eu/), financed from Polish structural funds (POIG.02.03.00-14-090/13-00), is being further developed within EPOS IP project (H2020-INFRADEV-1-2015-1, INFRADEV-3-2015). TCS AH is is an open virtual access point for researchers studying anthropogenic seismicity and related hazards. This environment is designed to ensure a researcher the maximum possible liberty for experimentation by providing a virtual laboratory, in which the researcher can design own processing streams and process the data integrated on the platform. TCS AH integrates: (i) data gathered in the so- called "episodes", comprehensively describing a geophysical process, induced or triggered by human technological activity, which under certain circumstances can become hazardous for people, infrastructure and the environment and (ii) problem-oriented, specific high-level services, with the particular attention devoted to methods analyzing correlations between technology, geophysical response and resulting hazard. Presently six episodes are available; the next at least 20 new episodes related to conventional hydrocarbon extraction, reservoir treatment, underground mining and geothermal energy production are being integrated within the framework of EPOS IP project. The heterogeneous multi-disciplinary data (seismic, displacement, geomechanical data, production data etc.) are transformed to unified structures to form integrated and validated datasets.
Services which will be implemented in EPOS IP project are grouped within six blocks: (1) Basic services for data integration and handling; (2) Services for physical models of stress/strain changes over time and space as driven by geo-resource production; (3) Services for analysing geophysical signals; (4) Services to extract the relation between technological operations and observed induced seismic/deformation; (5) Services to quantitative probabilistic assessments of anthropogenic seismic hazard - statistical properties of anthropogenic seismic series and their dependence on time-varying anthropogenesis; ground motion prediction equations; stationary and time-dependent probabilistic seismic hazard estimates, related to time-changeable technological factors inducing the seismic process; (6) Simulator for Multi-hazard/multi-risk assessment in ExploRation/exploitation of GEoResources (MERGER) - numerical estimate of the occurrence probability of chains of events or processes impacting the environment.
TCS AH platform: https://tcs.ah-epos.eu/ is open for the whole research community. In addition it is also meant serve the public sector expert knowledge and background information. In order to fulfill this aim the services for outreach, dissemination & communication will be implemented. The platform is also designated to be used in research projects. Presently, all episodes gathered in the framework of "Shale gas exploration and exploitation induced risks" project (Horizon 2020, call LCE 16-2014) are integrated on TCS AH.
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