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An engine for social-ecological risk analysis and NBS recommendation to support risk mitigation management

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During the past decades, risk assessment experienced increasing interest in social science but also natural science and other disciplines. At the same time, risk reduction and mitigation gained in interest from local to global level due to the shift from reactive to proactive management. Hazard and risk assessment have been approached on different levels, nonetheless, they are lacking elements such as cross-border assessment or the integration of an ecological risk assessment. One of the objectives of the H2020 Operandum project is to provide an automated science-based assessment of risk for the social-ecological system and further of the applicability and performance of Nature-based Solutions (NBS) for risk mitigation of hydro-meteorological hazards.

Within this project, an interactive webGIS analytical engine and an NBS catalogue are being developed as part of the Geospatial Information Knowledge Platform (GeoIKP). The analytical engine will encompass open Europe-wide hazard maps and link them with local high-resolution information from public and innovative data sources (e.g. Facebook). These two geo-tools are combined into a recommendation engine - NBS toolkit - trained on existing NBS. Using a holistic approach, the NBS toolkit aims at providing risk assessment and advanced recommendations on NBS usage for mitigation. For this approach, the NBS toolkit incorporates hazard and risk assessment in space and time, cost-benefit analysis, and additionally main drivers and constraints for NBS implementations as well as their geographical transferability, replicability and performance/effectiveness.

This contribution will offer an insight into the concept and development of the NBS toolkit. Primarily, it will focus on the added value of the NBS toolkit for future nature-based implementation, risk mitigation management and decision-making at all levels. Challenges and current limitations of real-time risk assessment will also be discussed, with a focus on their implications on NBS monitoring and effectiveness.