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Integrated decision support system for risk assessment and management of the water-sediment-soil system at river basin scale in fluvial ecosystems

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Reporting

Project Information			
RAMWASS		Funded under Sustainable Development, Global Change and	
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Final Report Summary - RAMWASS (Integrated decision support system for risk assessment and management of

the water-sediment-soil system at river basin scale in fluvial ecosystems)

Global climatic changes and human activities proved to have severe impacts on wetlands and aquatic ecosystems adjacent to river basin areas; thus interest in the water, sediment and soil (WASS) system modelling in fluvial regions increased rapidly during the previous years. The development of efficient methods and WASS simulation tools could assist public administrators and emergency services in the risk assessment and management of different prevention, mitigation and remediation scenarios.

The objective of RAMWASS project was to develop and validate a new decision support system (DSS) for risk assessment and management, in order to prevent and reduce the negative impacts caused by human activities on WASS systems at river basin scale. The DSS integrated environmental and geophysical data from different sources and contributed to the evaluation of the ecological impact and the design of effective response actions, which maximised the integrity and safety of ecosystems and human lives.

The developed tool was calibrated, validated and assessed in terms of its performance, scalability and effectiveness via its implementation in selected fluvial ecosystems, adjacent to important European river catchments.

Among DSS significant elements were the options for wind, infiltration and evaporation losses and rainfall inflows' simulations, which were validated by comparison with field data and remote sensor images. Moreover, a two-dimensional model for calculating sediment transport in channels was developed and optimised. Finally, a modelling code for elastic compaction and subsidence analyses was generated and refined.

A virtual database, including information on the test sites, was also established as part of the project and a reasoning approach to support decision-making under different scenarios was created. In addition, a set of guidelines and recommendations for risk assessment of hazards in fluvial ecosystems was developed, along with proposals for future enhancement and expansion of the DSS. Finally, RAMWASS included various dissemination activities to enable exploitation of the acquired knowledge.

Related documents

Final Report - RAMWASS (Integrated decision support system for risk assessment and management of the water-sediment-soil system at river basin scale in fluvial ecosystems)

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