

Title:

Risk management of natural hazards through monitoring and risk modelling in Swanetia (Georgia) - Risk models (loose rock) and subsurface (SwanRisk) Grant reference: 03G0904B.

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Project executing organisation:

Project Management Organisation Jülich, Forschungszentrum Jülich GmbH Commissioned by the Federal Ministry of Education and Research

Project leader:

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Project partners:

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Geoinformatikbüro Dassau GmbH
Thamm Geo-Technic

Jähmig GmbH
EA Systems Dresden GmbH
Bayerisches Landesamt für Umwelt

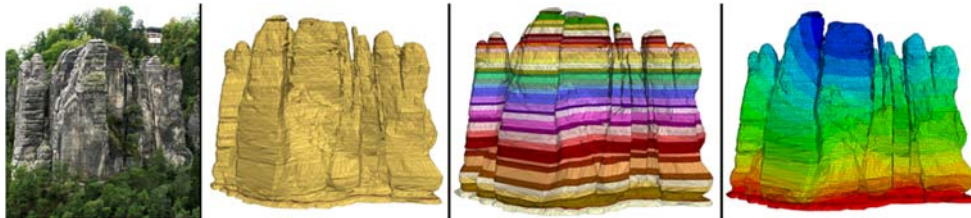


Fig. Creation of a geotechnical risk model of a sandstone rock: rock area, geometric model, material model of corresponding layers, calculations.

Project description:

The main scope of the project is to develop an authentic approach toward the natural risks management with the emphasis on mass movements in Swanetia (Caucasus, Georgia).

The Swanetia region in Georgia is prone to frequent massive landslides, rockfalls and floods leading to numerous deaths and the destruction of infrastructure. Due to the ever-increasing development of tourism attraction and the construction of hydropower plants, the risk of these natural disaster is grown to a significant level.

In this regard, the geological engineering site investigations and the geotechnical risk models are used to assess the corresponding hazards to slope instabilities and to make a comprehensive inference about the properties of the subsoil.

As a key to find a solution for the mentioned challenge, a concept is developed for the soil mechanical and experimental investigations. Hydrological and climatic influences will also be recorded and integrated into the monitoring and early warning system.

To complete the technical assessment, a numerical simulation are used to evaluate the risks for mass movements in the **unconsolidated** loose rock. The hydraulic and climatic parameters are also included in the calculations in order to develop and implement appropriate material constitutive models.

The outcome will prepare a basis to define a classification for the risk levels and to derive an inclusive recommendations for safety concepts and constructive solutions in **unconsolidated** loose rock. The aim is to ensure a safer and more cost-effective construction for the future.

The findings will be incorporated into a recommendation for preventive action by the authorities when natural disaster arising from mass movement. A group of "Natural Risks" expert is formed in order to ensure that the instructions for the preventive action are implemented. The expert group serves as a multiplier in order to apply the final product, including the developed techniques and methods, in other areas where the hazard assessment is applicable.