

ADVANCED NUMERICAL MODELING OF SLOPE DISASTERS

400 - GEOMECHANICS AND NATURAL MATERIALS

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ABSTRACT

Slope disasters, such as landslides, debris flows, slope failures, rockfalls and rock avalanches pose significant threats to human lives, infrastructure, and the environment. The damage from these disasters has become even more severe in recent years due to intensifying external forces like earthquakes and heavy rains, and mitigating the damage is a common concern for countries around the world.

In recent decades, numerical simulations have been recognized as powerful tools for predicting and assessing the risk of slope disasters. The integration of sophisticated computational techniques with high-resolution input data now allows for more accurate simulations and a deeper understanding of the mechanisms of these disasters.

This mini-symposium aims to bring together researchers and practitioners to share recent progress in advanced numerical modeling of slope disasters. Topics of interest include:

- Discrete and continuum-based numerical modeling
- Coupled hydrologic-geotechnical analysis
- Large deformation analysis
- Data-driven and machine-learning-assisted approaches
- Probabilistic approach-based risk assessment
- Model verification and validation (V&V) and uncertainty quantification (UQ)
- Case studies on practical applications in slope disaster prevention and mitigation