

Erosion risk assessment along coastlines, rivers, and lakes

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An effect of the expected climate changes is that densely populated areas will be more exposed to natural hazards. There is a rising concern about geotechnical challenges associated with the transition zone between water and land, in particular with regard to erosion. This needs to be considered as part of the climate adaptation strategies in the society and applies to both coastal settlements and to settlements along rivers. Climate change, as reported by the IPCC, includes global warming, sea level rise as well as more precipitation, both with respect to intensity and frequency. A larger number of cities are expected to be affected by floods and with higher frequency. With large floods, the current speed in rivers and hence their erosion potential increases, leading to scouring along riverbanks, where important transport routes and other infrastructure are often located. The frequency and intensity of storm surges are expected to increase, as well as the risk of coastal erosion. In steep terrain, the likelihood of debris flows increases. The project "Multi-scale Erosion Risk under Climate Change" was initiated to prepare for such challenges as well as local climate adaptation. The project is an internal NGI strategic project funded by the Research Council of Norway for the period 2017 – 2019.

The project aims to investigate relevant erosive and mass-flow processes in the coastal zone, along rivers, and in lakes. Further, the knowledge and tools to be developed within the project aim to reduce the risk associated with these processes, through appropriate land-use planning and innovative mitigation measures.

The project is thematically subdivided into the following five work packages:

- WP1: Modelling of erosion processes in rivers, at the coast and in mass movements
- WP2: Floods, debris flows and sediment mobility in complex topography
- WP3: Coastal hydrodynamic processes
- WP4: Monitoring, warning and non-physical mitigation measures
- WP5: Dissemination and knowledge sharing

In our contribution, we will give an overview of the ideas and the background of the project and present the first preliminary results.