

HYDRO-MORPHOLOGICAL ANALYSIS IN THE MEGHNA DELTA

ASSESSMENT OF FUTURE COASTAL DEVELOPMENT

The Meghna delta located in Bangladesh is a highly morphodynamic area. Coastal regions along the Meghna delta are subjected to rapid erosion, while new land (or so-called chars) emerge in other areas. As part of the Char Development and Settlement Project (CDSP) Svašek Hydraulics has been requested to analyse a coastal stretch that is eroding rapidly. Svašek Hydraulics assessed the future development of this coastal stretch and provided recommendations for future activities to manage the uncertainties in this dynamic coastal area.

In the past decade, the project area has experienced a significant coastline retreat, resulting in the loss of vast amounts of land and forcing many households to leave the area. To prevent further erosion, new embankments need to be constructed. However, due to the rapid pace of coastal retreat, it is not feasible to build coastal protection near the present coastline position.

To determine a setback line for the construction of protection measures, an assessment of the coastline development has been carried out. To this end, our in-house hydro-morphodynamical model FINEL has been applied. This state-of-the-art model uses morphological modules to calculate sediment transport and seabed development.

Although FINEL is a highly advanced model, predicting erosion and sedimentation rates remains a challenging task in the complex and highly morphodynamic environment of the Meghna delta. The area involves hydrodynamic interactions between river and tidal flows, and there is significant variability and uncertainty in river discharges.

To improve the model results, FINEL has been calibrated using available water level and flow measurements, and the improved model has been used for forecast simulations. Based on the modelled erosion trends and expert judgement, recommendations have been made for future activities.

CLIENT

Euroconsult Mott MacDonald

LOCATION

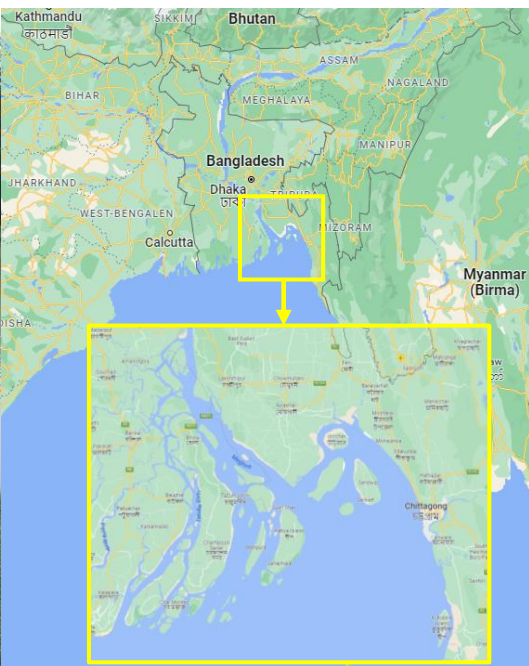
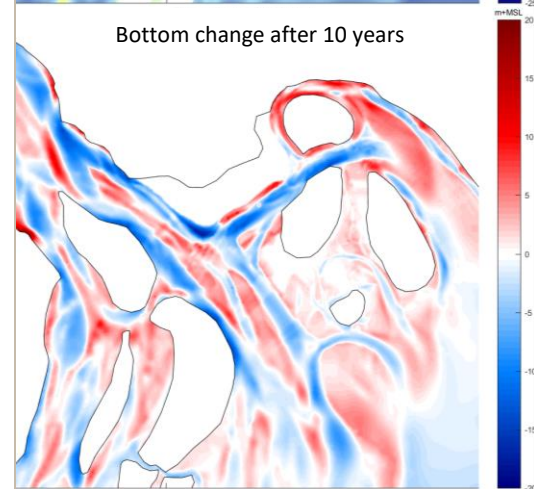
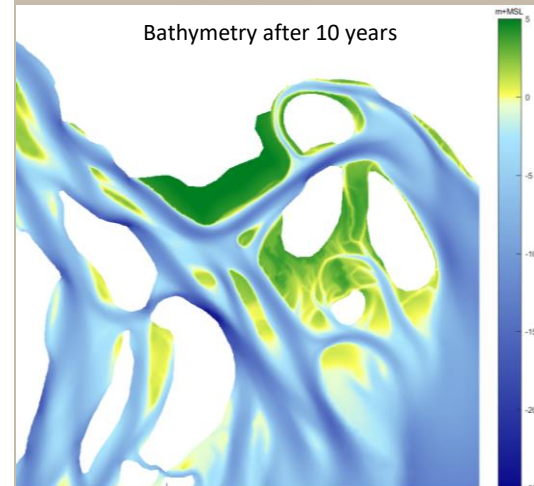
Meghna delta, Bangladesh

DATE

2022

SERVICES

Hydro-Morphological analysis and modelling of the Meghna delta



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