

Geological Survey of Denmark and Greenland (GEUS)

Decision support systems (DSS) for coastal vulnerability assessments

In Denmark, a DSS has not been developed for application in coastal vulnerability studies. GIS is the primary DST. It is utilised to analyse and aggregate spatial data and to present data on a WebGIS platform. Numerical modelling softwares like XBeach, Mike21 and Sfincs are also widely used.

The outputs are interactive vulnerability maps presented in a WebGIS solution ('Kystplanlægger' eng. Coastal Planner) which provides information on erosion and flooding susceptibility, economic cost of damage (vulnerability), and recommendations on mitigation strategy. These maps use a 100 m x 100 m grid and account for climate change impacts for susceptibility and vulnerability in 2070 and 2120 (output for 2020 is also available). A Social Vulnerability Index for flooding and erosion, incorporating demographic and economic data to assess susceptibility and resilience is also utilised.

Input parameters mentioned in the figure may comprise multiple sub-parameters. For more information on the input parameters see Larsen et al. (2025; Table 1, p 17).

Further readings:

Larsen, I. R., Ernsten, V. B., Maspataud, A., Dakin, N., van Heteren, S., Koutroulli, A., Poyiadji, E. & the GSEU T5.4 Consortium (2025). EGDl multifunctional 2D/3D decision-support module v1. GSEU Report on Deliverable 5.7, 165 pp.

