



Scaldis Coast



Flanders
State of
the Art

Scaldis Coast is a state-of-the-art hydro-morphological model for the Belgian coast and Westerschelde estuary. The model was developed by Flanders Hydraulics in collaboration with IMDC as part of the Flemish Bays project, later project Coastal Vision.

The model was built in the TELEMAC-MASCARET model toolkit (Hervouet et al., 2007). Scaldis Coast consists of a coupled 2D hydrodynamic model, spectral wave model and a sediment transport and bottom update model.

The model includes the entire Belgian coast, the Scheldt estuary and the Western Scheldt to Antwerp. An advanced grid generator GMSH is used to build the grid. GMSH allows automatic refinement in the vicinity of complex geometries and infrastructure works or soil variations (Geuzaine et al., 2009).

The figures show the model domain, and a zoom of the computational grid around Zeebrugge. The resolution ranges from 750m offshore to about 20 m in the surf zone. The grid is flexibly constructed and allows for local refinement for project-specific reasons.

Among other things, Scaldis Coast is used to estimate medium-term morphological changes under the influence of changing climate. Effects of human interventions such as infrastructure works, navigation channels, dredging and disposal strategies, beach and foreshore replenishment on bed level evolution can also be investigated with this model. Local short-term bed level changes under the influence of extreme weather conditions, for example, can also be investigated with this model. For example, the model was successfully applied in a hindcast of the rapid siltation of the Blankenberge harbour channel during storm Ciara in the winter of 2020.

