Marina inlet sedimentation in Blankenberge and beach erosion in Wenduine, Belgium

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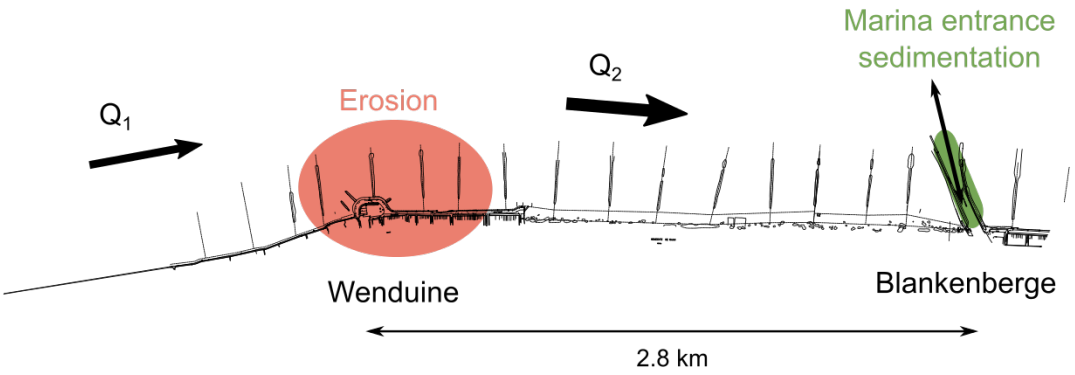
Problem statement

Blankenberge and Wenduine are two neighbouring Belgian coastal towns that are each experiencing specific morphological issues. The access channel to the Blankenberge marina is constrained by two low jetties and experiences sedimentation due to littoral drift. Authorities aim to restrict dredging activities in the access channel to winter months only, and avoid dredging works during the summer tourist season. However, channel sedimentation rates are currently too high and summer dredging is sometimes needed after storm events. Less than three kilometres to the west, Wenduine is located at a breakpoint in coastline orientation and experiences structural erosion. Beach nourishments are regularly performed to mitigate the erosion but typically have a short lifespan.



Schematic overview of the Wenduine-Blankenberge area.

Toward a smart solution

In 2017, a design study will be performed to develop structural solutions for both Blankenberge and Wenduine. The study will compare several different options, including raising and extending the marina jetties and setting up a buffer zone updrift of the Blankenberge inlet, raising or extending groynes between Wenduine and Blankenberge, and performing a (mega-)nourishment. Numerical simulations with XBeach and MIKE21-BW (among others) will be performed in order to find the optimal solution.

Since the Wenduine-Blankenberge case forms a textbook example of coastal morphology and how it affects coastal communities, we will host an interactive poster presentation. First, we will sketch the problem, including the current morphological system functioning and the causes for the problems at hand. We will also highlight the different aspects that are to be considered, such as coastal flooding protection, swimmer safety, nautical accessibility, ecological value, executability, and cost-effectiveness, and describe the currently proposed solutions. Then, we will host an interactive discussion in which all NCK participants, from students to experts, can test their coastal skills by proposing practical solutions and weighing them against existing ideas.