

BRAAKMANHAVEN

SILTATION PROCESS ANALYSIS

The Braakmanhaven near Terneuzen is subject to siltation. Zeeland Seaports has initiated a project with the aim to reduce the maintenance dredging effort. To gain insight into the driving forces behind this siltation, Svašek Hydraulics has performed current and turbidity measurements and has carried out a FINEL3D model study.

To measure the current and turbidity in the port, an AWAC and OBS have been placed upon the seabed. During 6 weeks the current measurements have identified a complex 3D flow pattern in the entrance of the Braakmanhaven. During flood, inflow occurs in the upper part of the water column and outflow in the lower part of the water column. During ebb, the flow direction is the other way around and a strong inward current is detected near the sea bed.

Turbidity measurements show high suspended sediment concentrations in the incoming current near the bed during ebb. This incoming current during ebb amounts for a significant part of the port's siltation.

A FINEL3D model of the Western Scheldt has been set up to model the current. The model results show a good reproduction of the measured current. The driving force behind the complex 3D flow pattern appears to be a small natural density variation over the tide in the Western Scheldt.

After calibration the model has been used to investigate the sensitivity of the 3D flow pattern to several interventions in the port geometry, and to investigate whether such interventions may reduce the siltation.

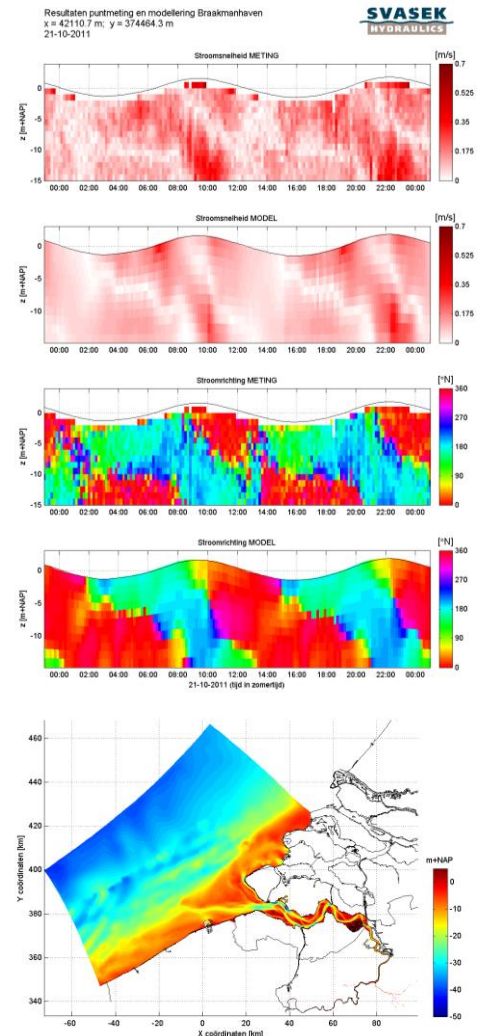
A reduction of the port entrance width appears to be the most promising measure.

CLIENT
Zeeland Seaports

LOCATION
Braakmanhaven, the Netherlands

DATE
2011-2014

SERVICES
Current and turbidity measurements
Data processing and analysis
3D current modelling (FINEL3D)



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