



## SWAN Hindcast tidal inlet Eastern Scheldt

In order to get more confidence in the performance of the numerical wave model SWAN for the derivation of the Hydraulics Boundary Conditions, hindcasts are carried out. The inlet of the Eastern Scheldt, characterised by banks, tidal channels and a shallow foreshore is an interesting area for this.

Svašek Hydraulics was asked to assess the performance of SWAN with respect to the wave penetration of combined swell and wind sea into the inlet of the Eastern Scheldt.

The study consists of three parts:

- 1) Data inventarisation and storm selection;
- 2) Execute SWAN hindcasts;
- 3) Analysis SWAN results, comparison with wave observations and statistical analysis.

For the storm selection, not only the availability of suitable wave data was important, but also the metadata like wind, water levels and bathymetry. Although double peaked wave spectra with considerable energy were rare, two storm events have been selected, December 2001 and December 2003.

In all cases SWAN underestimated the wave energy at the lower frequencies in location OS4 resulting in a severe underestimation of wave period. It turned out that the energy dissipation at the primary peak was strongly overpredicted. The representation of the significant wave height by SWAN was very good.

This study was part of the SBW project ("Strength and Loading of Coastal Structures").

### Svašek Hydraulics

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**Client**  
 WL | Delft Hydraulics

**Location**  
 Eastern Scheldt, the Netherlands

**Date**  
 December 2007

**Services**  
 storm selection, SWAN hindcasts, comparison with observations, statistical analysis