



## Reliability of SWAN in the Western Scheldt Comparison wave computations and measurements

The design wave conditions for the sea defences in the Western Scheldt are assessed with the numerical wave model SWAN in 1997 and 1998. In that period only few wave measurements were available, so the reliability between model results and reality was hard to determine. Recently new measurements are available which enable to determine the reliability.

Three storms are simulated based on 5 stationary SWAN runs for each storm. For each run wave measurements were available for approximately 17 locations in the North Sea and Western Scheldt to verify the model results. The analysis of the model results aimed at typical situations such as ebb and flood currents, wave breaking and occurrence of double peaked spectra.

Due to the use of many nested areas and the application of different SWAN versions, a total of 1260 SWAN runs are executed.

The analysis contains much statistical quantities and individual comparisons of wave spectra. On average for all locations the relative deviation between measurement and model simulation of wave height and wave period was less than 10%. SWAN sometimes underestimates the low frequency energy.

**Client**  
Rijkswaterstaat, RIKZ

**Location**  
Western Scheldt,  
the Netherlands

**Date**  
2002/2003

**Services**  
SWAN wave computations and  
statistical analysis for comparison  
with wave measurements

### Svayek Hydraulics

Schiehaven 13G, P.O. Box 91, 3000 AB Rotterdam, The Netherlands.  
Phone +31 10 467 13 61, Fax +31 10 467 45 59, Internet: [www.svasek.com](http://www.svasek.com), E-mail: [info@svasek.com](mailto:info@svasek.com)

SV1246