



Stowasus 1/50 yr wind velocity [m/s], directional sector: (0° - 360°)

## STOWASUS\*EU: Effect of 2xCO<sub>2</sub> on storm surges in the Southern North Sea

The STOWASUS project consists of two parts; the hydraulic modelling and the statistical analysis.

Based on numerical modelling the influence of a doubled amount of CO<sub>2</sub> in the atmosphere on the wind velocities, storm surges and water levels on the North Sea has been studied.

Statistical analysis of 29 simulated winter seasons resulted in  $2 \cdot 10^{-1}$ ,  $2 \cdot 10^{-2}$ , and  $1 \cdot 10^{-4}$  quantiles of wind velocities, water levels and surges (average occurrence of once in 5, 50, 10000 year) for both the situation with the present amount of CO<sub>2</sub> and for the situation with a doubled amount of CO<sub>2</sub>.

For the water level simulations use was made of the ZUNO model, a WAQUA model by Rijkswaterstaat, covering the southern North Sea. Water level boundary conditions came from a larger continental shelf model (NEAC), whereas the wind input originated from the ECHAM4 climate model.

**Client**  
National Institute for Coastal and Marine Management (RIKZ), the Netherlands

**Location**  
North Sea

**Date**  
2000 (study)

**Services**  
Hydraulic modelling, statistical analysis and water level predictions