



## WAQUA modelling IJsselmeer and IJssel for HBC 2011

In 2011 the safety of the Dutch dunes and dikes has to be assessed regularly by the Dutch government. As an input to the next round of this assessment, the Hydraulic Boundary Conditions (HBC) have been update in 2011. The HBC, consisting of representative wave and water level conditions are determined by means of a large number of SWAN (wave) and WAQUA (water levels) calculations. In this way a matrix is filled with a wide range of conditions that feeds a probabilistic model (Hydra) to determine the hydraulic load on the sea defenses.

The establishment of the 2011 HBC was a joint effort of Svašek Hydraulics and HKV LJN IN WATER. Over 5000 calculations were done within 2 weeks of time. In the same time the results were extensively checked. So unacceptable flaws in the model were recognised and repaired 'on the flow'.

In order to manage the large number of calculations, the pre-processing, quality control, execution and post-processing of the calculations are fully automated. Besides there is also a great need for processor capacity on the one hand, and processor flexibility on the other hand. Our privately owned high-performance Linux computing cluster is proved to be well suited to manage this high number of calculations in the given short time frame.

**Client**  
Deltares/  
Dutch Government

**Partner**  
HKV lijn in water

**Location**  
the Netherlands

**Date**  
2010/2011

**Services**  
WAQUA modelling  
SWAN modelling  
high-performance computing

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