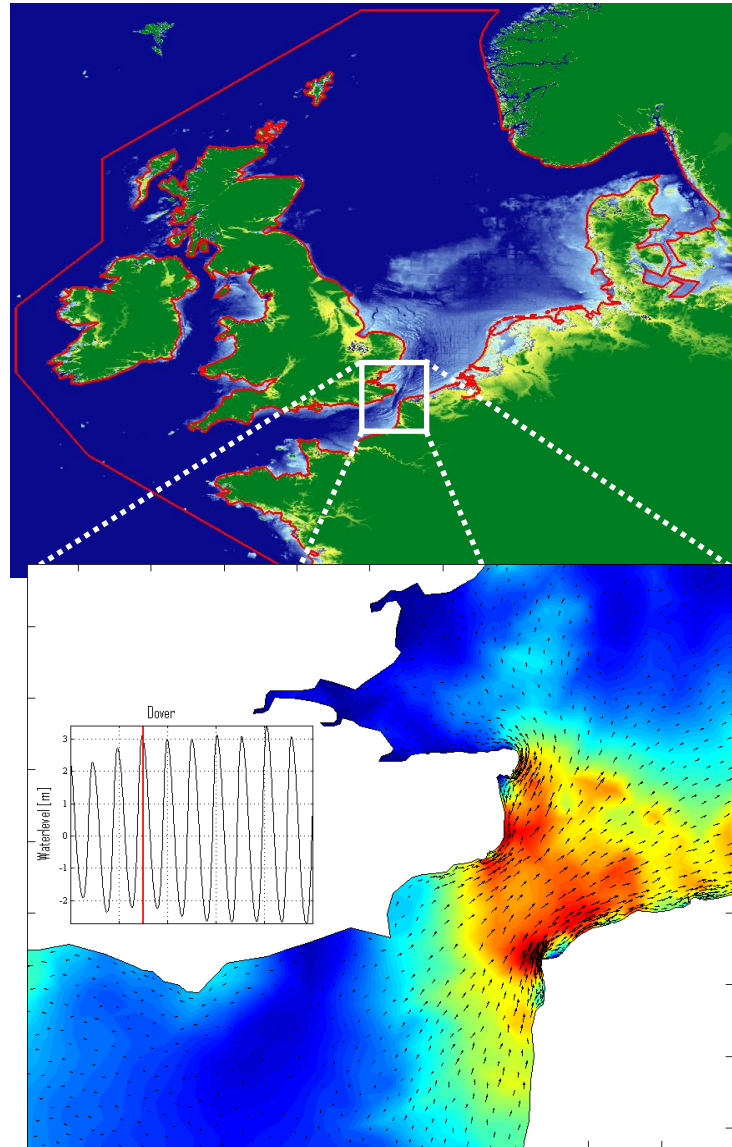# SVASEK HYDRAULICS

EUROPEAN CONTINENTAL SHELF MODEL

The European Continental Shelf Model, or ECSM in short, is developed by Svašek Hydraulics and provides high quality tidal data for the North Sea, the British Channel and neighbouring shallow parts of the Atlantic using numerical Flow simulation software FINEL2D (www.finel2d.com).

The top figure depicts the boundaries of the European Continental Shelf Model with the red lines. The inset shows a detail of flow velocities in the Strait of Dover during high tide.

Abilities

The ECSM can be utilized for a whole range of engineering purposes. Think for example of water level and current forecasts for ship routing, off-shore construction activities or extreme sea level analysis.

- **Ship routing**

The ECSM contains some of Europe's busiest ports inside its boundaries. Current forecasts can be done in order to optimize ship routing.

- **Workability predictions**

In the North Sea many construction activities take place, think for example of the numerous platforms and wind farm projects. The ECSM is forced with meteorological input, which enables you to get weather dependent water level and current forecasts.

- **Grid refinement**
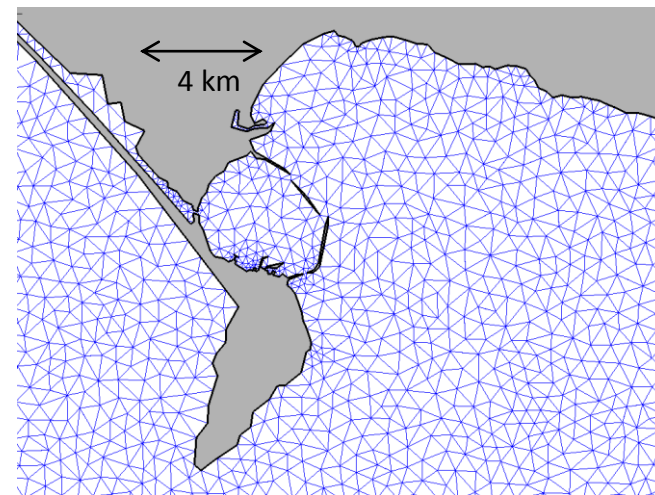
Any location within the model boundaries can be tailored to the required amount of detail. Here a grid refinement is carried out around Weymouth in Southern England.

To guarantee that the model is a reliable source of tidal data for the North Sea and British Channel, the performance of the ECSM can be checked by comparing model outcomes with measurements.
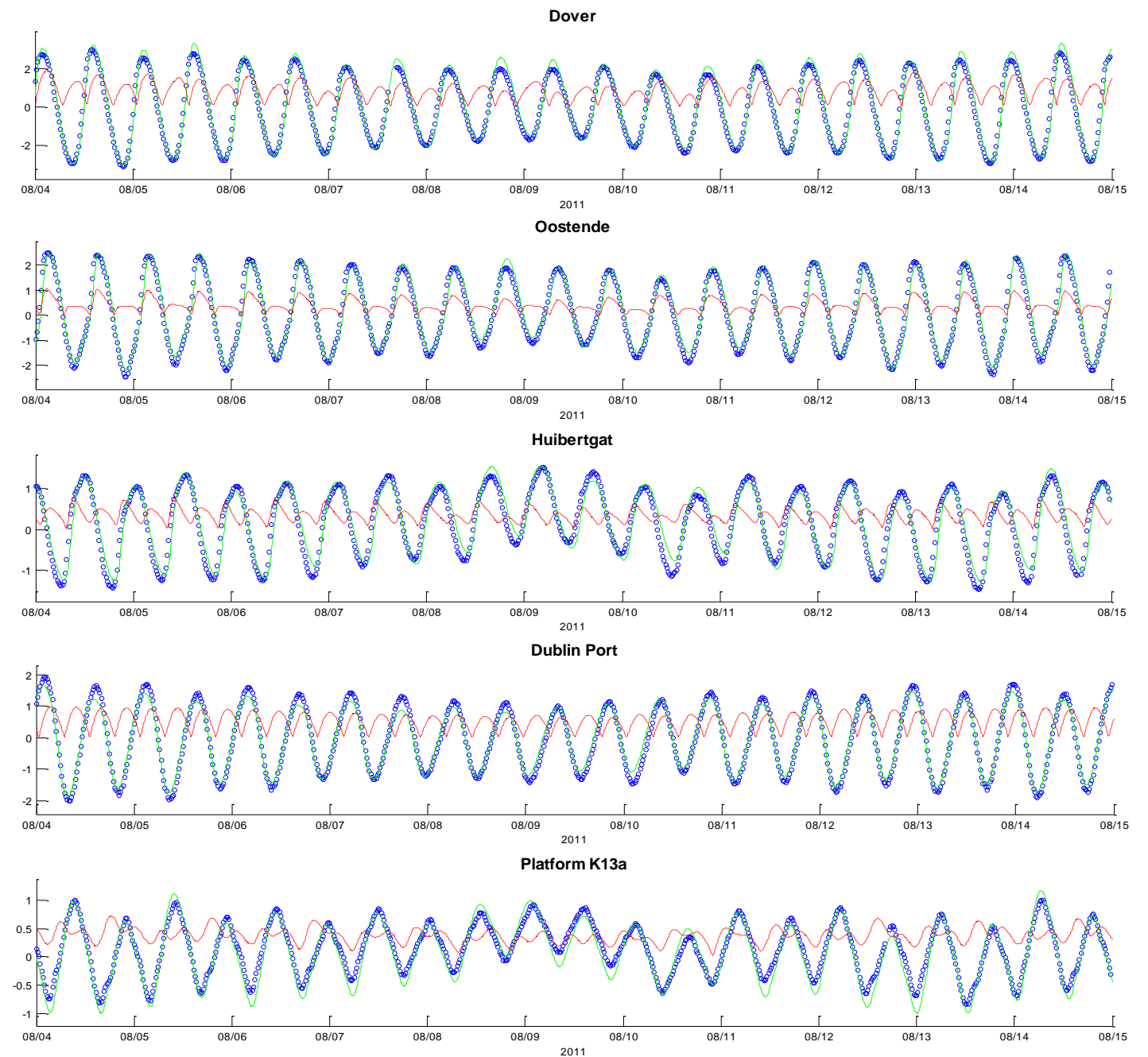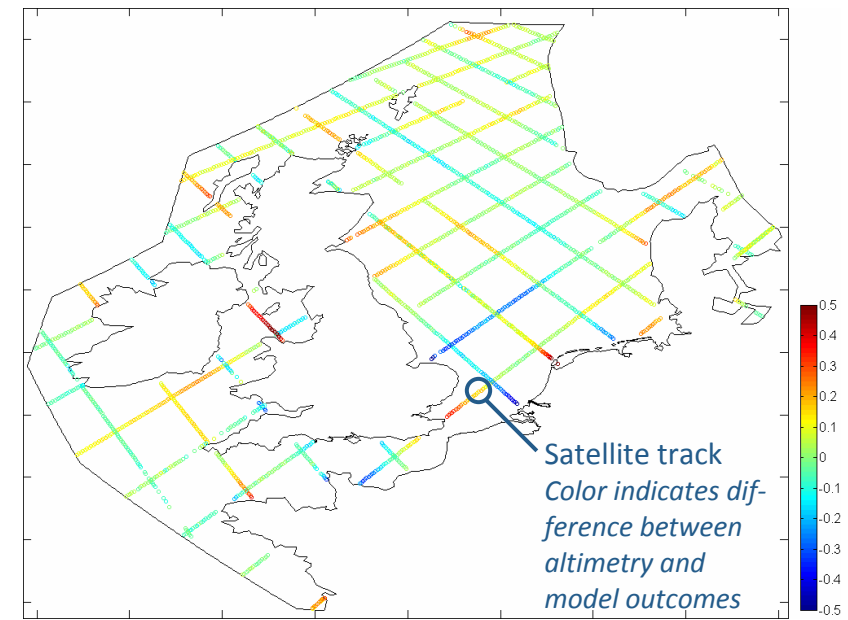
→ Water level time series

Time series of water levels provide a very effective way to verify a tidal model. Here the outcomes (green line) at five locations throughout the model domain are compared with actual measurements (blue dots) [1]. Note how the model almost perfectly mimics the meteorological 'bump' in the time series at Huibertgat and Platform K13a on August 9th. This demonstrates once more the big importance of meteorological effects in the shallow North Sea.

→ Satellite data

The NASA maintains a number of satellites with the purpose of measuring the sea surface height [2]. In this way a source of water level verification data throughout the whole model domain is obtained. The colour indicates the difference between measurements and model outcomes.

Svašek Hydraulics is a specialist consultant in coastal, harbour and river engineering. Visit us at **www.svasek.com**.

Satellite track
Color indicates difference between altimetry and model outcomes

[1] http://www1.rijkswaterstaat.nl/matroos/partners/   [2] http://sealevel.jpl.nasa.gov/