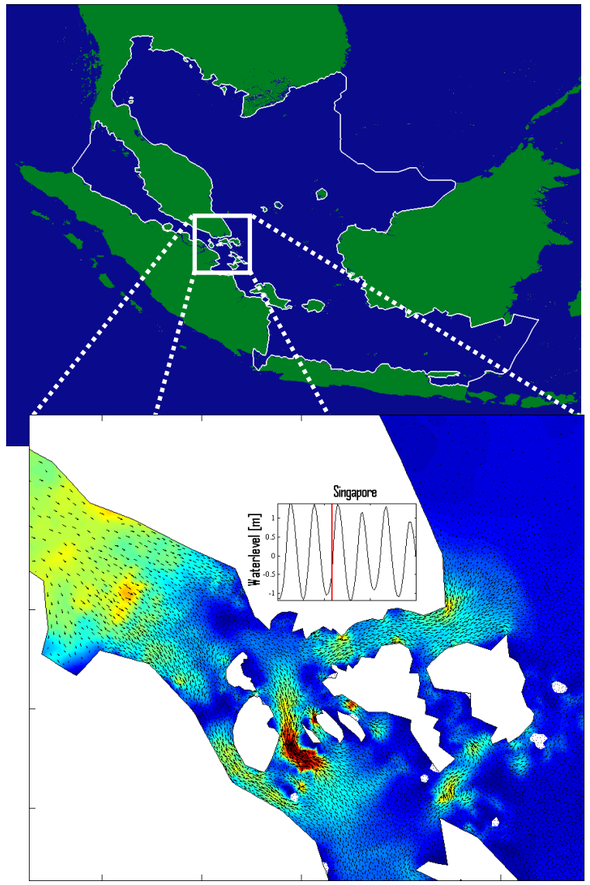
Svašek Hydraulics - Schiehaven 13G, 3024EC Rotterdam, The Netherlands

SOUTH EAST ASIA MODEL

The South East Asia Model, or SEAM in short, is developed by Svašek Hydraulics and provides high quality tidal data for the Gulf of Thailand, Java Sea and the Strait of Malacca using numerical flow simulation software FINE2D (www.finel2d.com).



The boundaries of the South East Asia Model are indicated by the thin white lines in the upper figure. The inset shows flow velocities around Singapore during flood current.

Abilities

The SEAM is able to serve many different purposes, ranging from ship routing to detailed research of the complicated tidal systems that are present in the waters of South East Asia.

- **Ship routing**

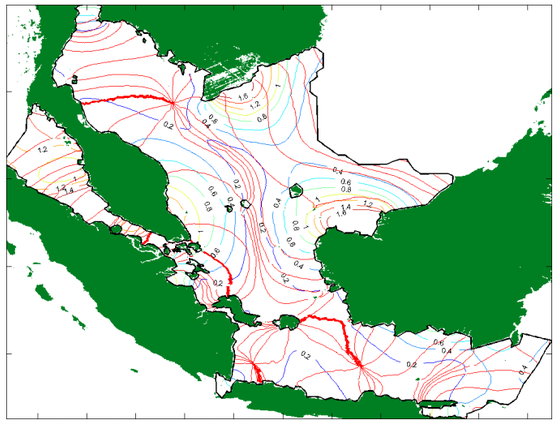
With the Strait of Malacca inside the model domain, the SEAM is capable of providing water levels and flow velocities for one of the world's busiest shipping routes.

- **Workability predictions**

When performing a construction job at open sea, workability predictions will optimize the construction schedule. The SEAM is forced with meteorological input, which enables you to get weather dependent water level and current forecasts.

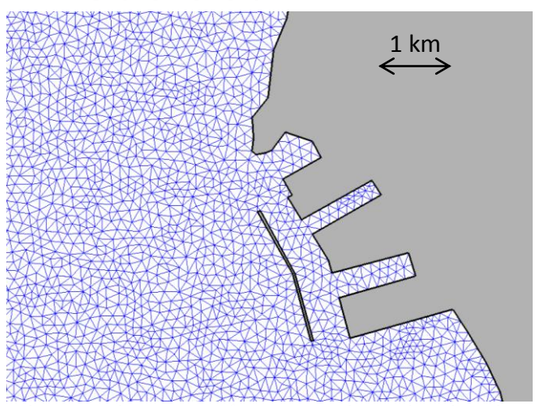
- **Specific research**

The SEAM is suitable for specific research. For example, the complicated tidal system of the waters in South East Asia has been studied, leading to insight into the so-called amphidromic behaviour of the sea.



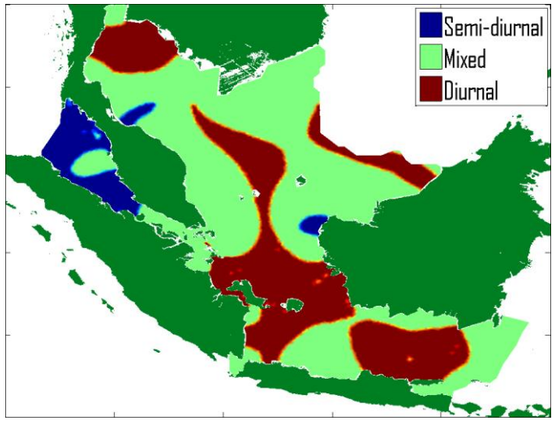
Amphidromic system in South East Asia, consisting of lines indicating equal tidal phase and equal tidal range.

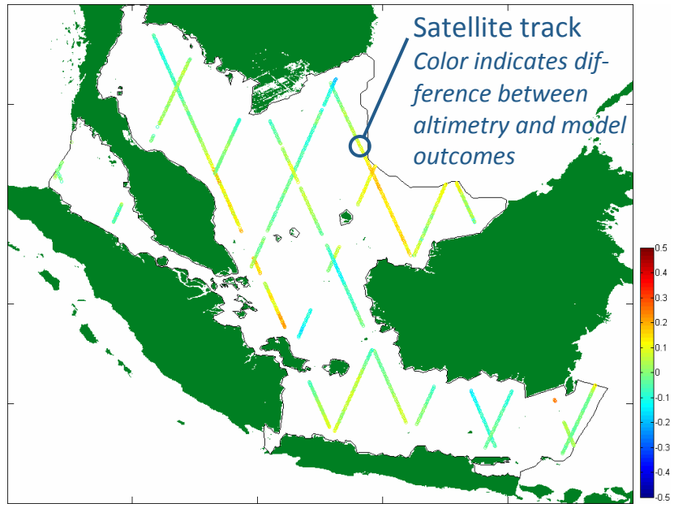
- **Grid refinement**



Whenever the region of interest is located within the boundaries, the model can be adjusted to fit the required grid resolution. Here a refinement is shown for Laem Chabang, the biggest port of Thailand.

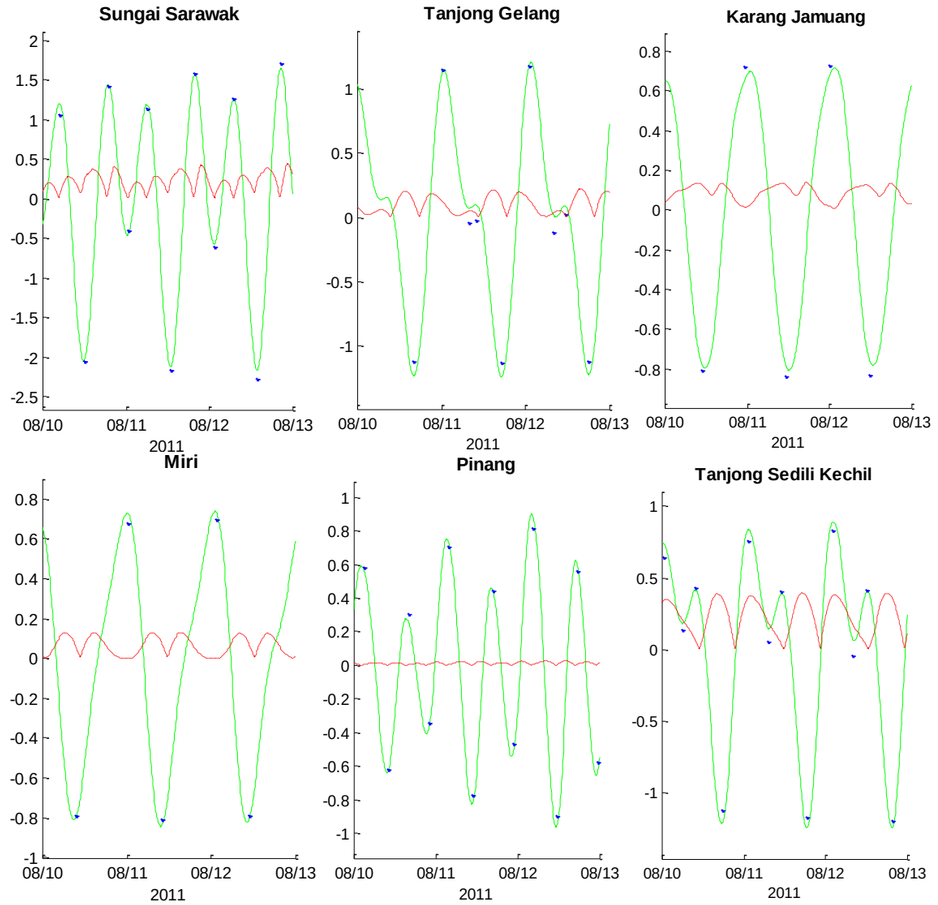
To guarantee that the model is a reliable source of tidal data in South East Asia, the performance of the SEAM can be checked by comparing model outcomes with measurements.





← Tide types

The South East Asian waters are known for its relatively predominant diurnal tide. Here the tide types as derived with the SEAM are shown, which corresponds very well with earlier observations [1].



↑ Satellite data

The NASA maintains a number of satellites with the purpose of measuring the sea surface height [2]. The color indicates the difference between measurements and model outcomes.

← Tide tables

Tide tables provide data of successive high and low tides for a certain location [3]. They are purely based on the astronomic tide and therefore don't include meteorological influences.

The green line indicates the model outcomes and the blue dots indicate the high and low waters as predicted by the tide tables. Note the alternation between diurnal and semi-diurnal tides.

[1] Zhou et al. (1994), Oceanology of China Seas, Kluwer Academic Publishers, Dordrecht

[2] http://sealevel.jpl.nasa.gov/

[3] http://www.flaterco.com/xtide/