MODELING AND CONSULTING SERVICES FOR PORT OF ROTTERDAM

Setup and maintenance of the 3D model of the Rotterdam Port and application in consultancy

The Port of Rotterdam has been using flow predictions and related services by Svašek Hydraulics for many years. Svašek collaborated on the setup of the Operational Flow Model Rotterdam and is still responsible for its maintenance and operational forecasting. In addition, Svašek conducts ongoing research for the Port Authority regarding new developments in the Port of Rotterdam, such as harbour basin expansions or channel deepening.

The Operational Flow Model Rotterdam (OSR) calculates highly detailed flow velocities and water levels in the entire Port of Rotterdam area in 3D. Advanced techniques such as Kalman filtering, nesting, and parallelization are used to generate reliable forecasts within a reasonable computation time. Model results assist the port authorities and pilots in safely guiding ships in and out of the Port of Rotterdam.

In addition to operational predictions, Svašek uses the OSR for various studies. If necessary, other models or methods are also employed, such as CFD modeling for small-scale turbulence (TUDflow3d), mild slope models for wave penetration (HARES), or expert judgment (morphology).

Examples of projects conducted by Svašek for the Port Authority include:

- Assessment of the nautical effects of changes in harbour or waterway geometry.
- Similar assessments for major developments like Feyenoord City.
- Determining the distribution of thermal discharges in the inland lake of the Tweede Maasvlakte.
- Calculating the effects of channel deepening and modifications on salt intrusion in the entire Rhine-Meuse Delta.
- Expert judgment regarding the effectiveness of a silt trap in the Botlek.
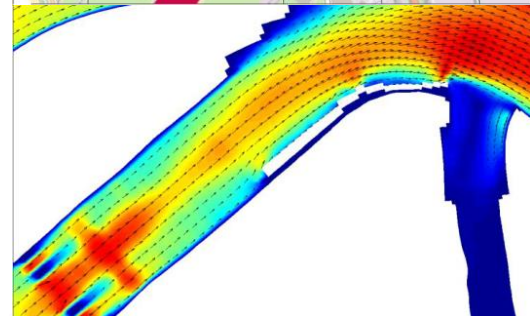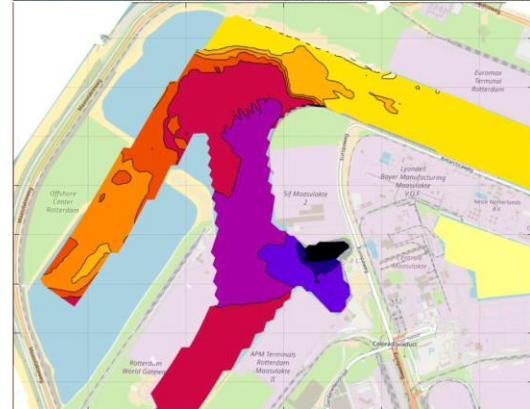
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