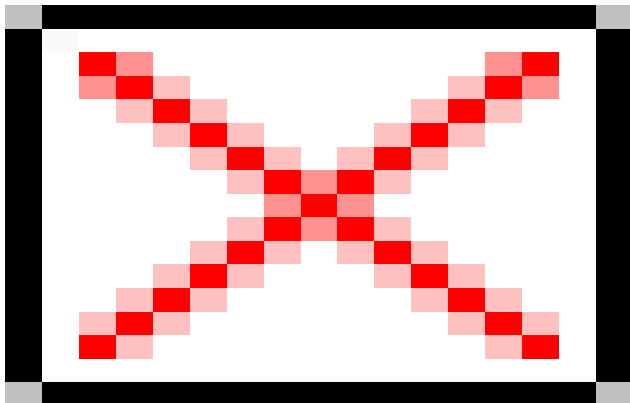


IMDC
Hydraulic and hydrologic river modelling
Flood forecasting
Location:
Antwerp, Belgium
Client:
Administration of Waterways - Department SeaScheldt



Project Contact Information

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Sigmaplan: online forecasting system

The numerical model which was developed within the scope of the Sigma Plan (I/FI/11202/02.006/BND) is also used as the core of an online forecasting system.

The system gathers every hour hydrometeorological data regarding discharges, water levels, gate levels and rainfall of different sites of the catchment. These data are instantly checked and, if necessary, corrected. Also, rainfall predictions (from the Royal Meteorological Institute of Belgium) are used.

All these data are fed into the numerical models that calculate the water levels every four hours and discharges to be expected in the next 48 hours in the whole catchment, permitting to anticipate possible inundations in time.

The numerical models calculate every four hours:

- The mean areal rainfall of the last 2 days for each catchment;
- The mean areal predicted rainfall for each catchment (2 days ahead);
- The potential evapotranspiration;
- The rainfall runoff as a result of the rainfall, taking into account the present soil conditions;
- Tidal forecasts at the downstream boundary based on the actual measurements (including possible storm surge) and calculations of the astronomical tide;
- Water levels and discharges in every point of the 350 km large model.

The online forecasting system uses complex updating routines (based on Kalman filtering techniques) in order to give an almost perfect match between measurements and calculations at the time of forecast.

If warning or alert levels are crossed, the system automatically calls one of the operators. After the operator has approved the forecast results, a notice can be broadcasted to local governments, the fire brigade, ? This can be done by mail, fax or SMS. A summary of the forecast results is published on the web for a wider public.

The forecasting system is fully operational since the end of 2004.

In the future the forecasting system will be coupled with the North Sea model, to be able to use even more accurate predictions of the downstream boundary.

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