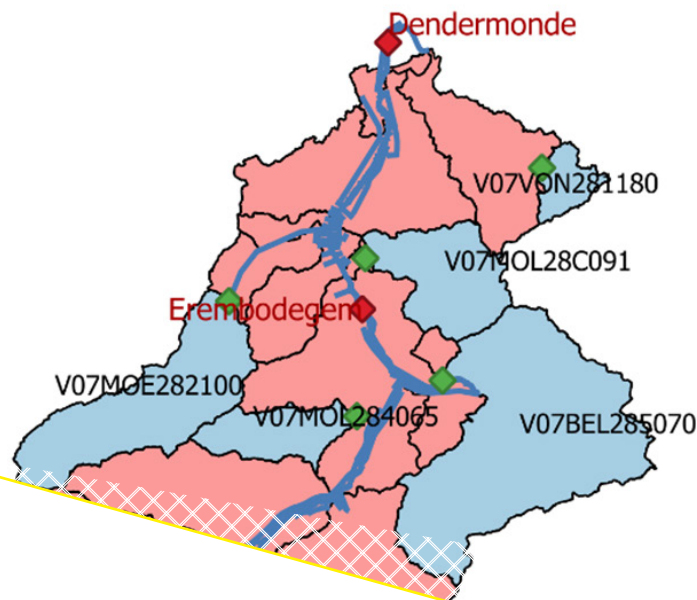




Hydrological models of the upstream basins of navigable waterways



Flanders
State of
the Art

Flanders Hydraulics has hydrological models of the (more than 300) upstream basins that drain into navigable watercourses in Flanders, including the relevant upstream areas in Wallonia and France. The hydrological models are primarily built using the NAM simulator (Nielson and Hansen, 1973), but versions for PDM (Moore 2007) and VHM (Willems et al. 2014) also exist. Since all these models are conceptual and area-averaged, parameter values should be estimated based on the agreement between measured and simulated discharge. For the measured upstream basins, parameter estimation was performed using a semi-automatic calibration procedure. The parameter values of the unmeasured basins were estimated based on proximity and agreement with measured basins, and validated based on simulations with the 1D hydrodynamic model (IMDC & SumAqua, 2023). Hydrological models are available for the upstream basins of following areas: IJzer, Leie-Upper Scheldt-Ghent Canals, Dender, Zenne- Zeekanaal, Demer and the Sea Scheldt and its tidal tributaries.

Applications

The output of these hydrological models includes flow rates on an hourly time basis. These are an indispensable input to our 1D-hydrodynamic models of navigable watercourses in their use for studies and advisory work, and for operational flood forecasting. They are also the input for the water balance models and for the preparation of synthetic boundary conditions for the preparation of flood hazard maps.

