

Demonstration case Scheldt

Use case b:

Linking tidal and non-tidal river model

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VMM/AWA - FH

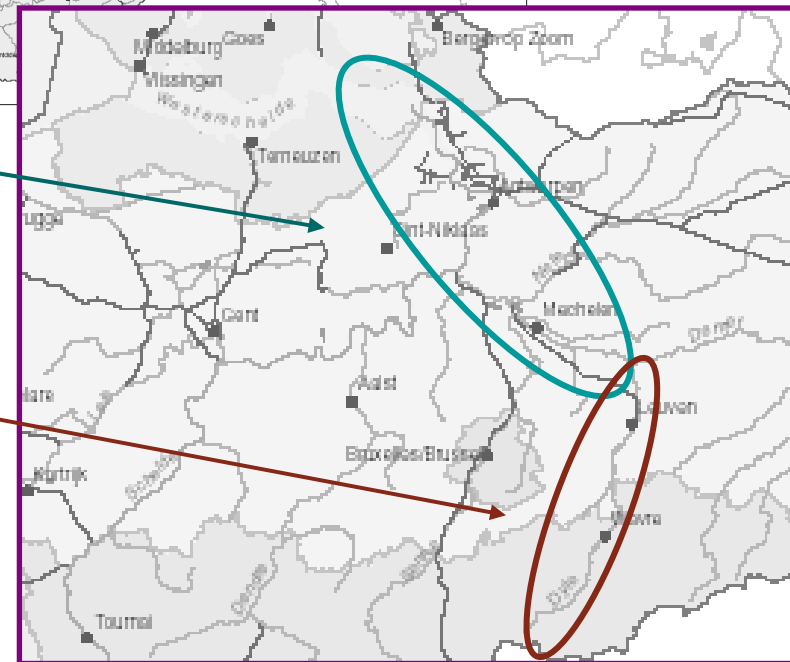
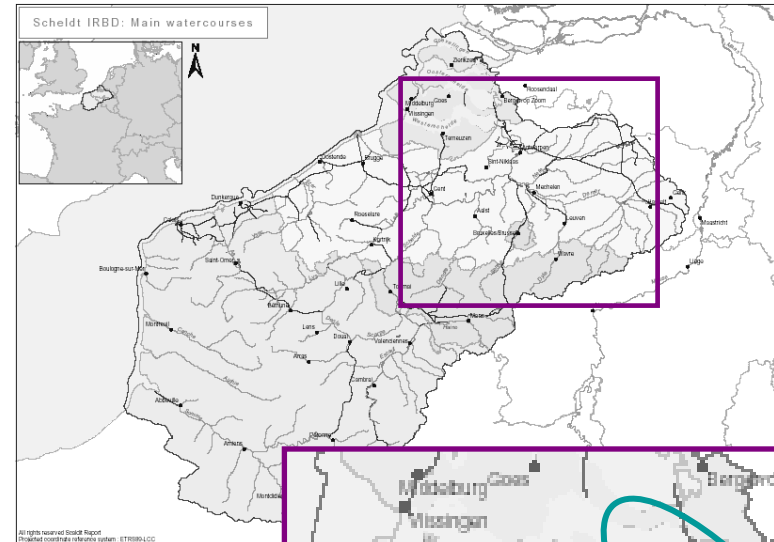
LIFE-Project OpenMI workshop
Wallingford, november 20th -21st 2007

Case description



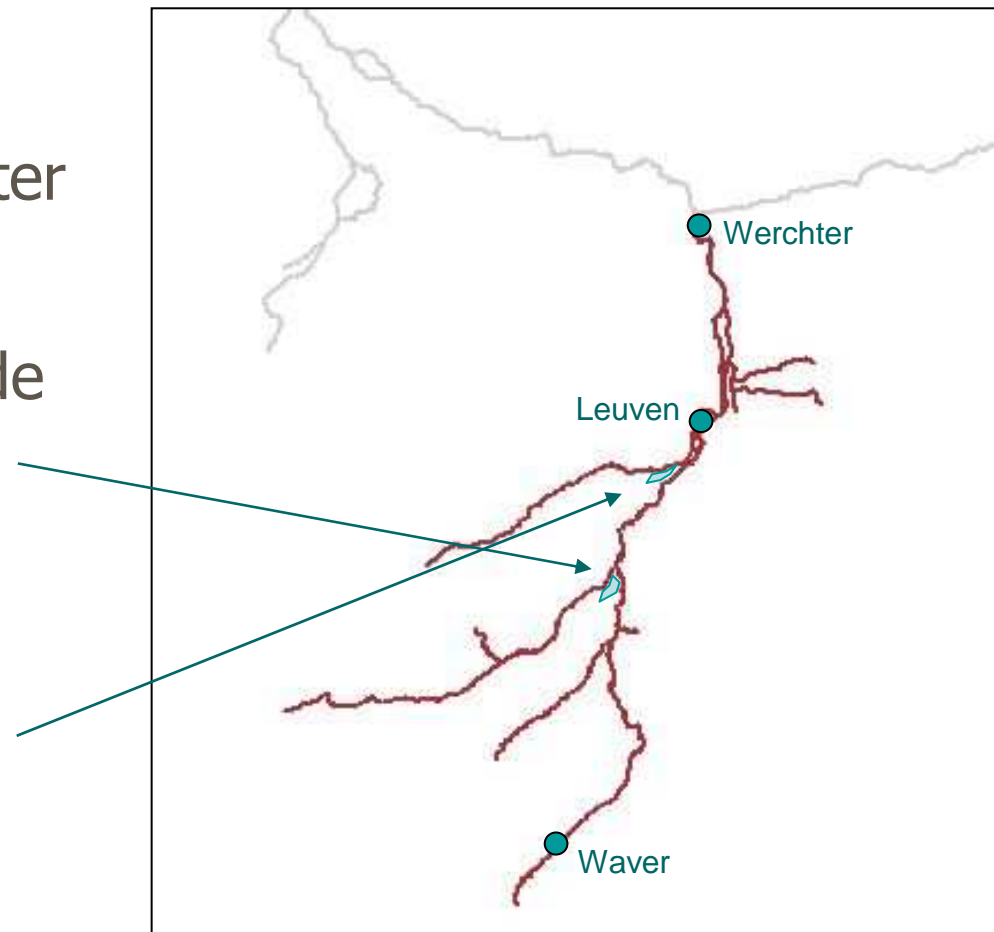
Linkage of:

- Downstream
Tidal river model
Dijle – Scheldt (FH)
- Upstream
Non-tidal river model
Dijle (AWA)



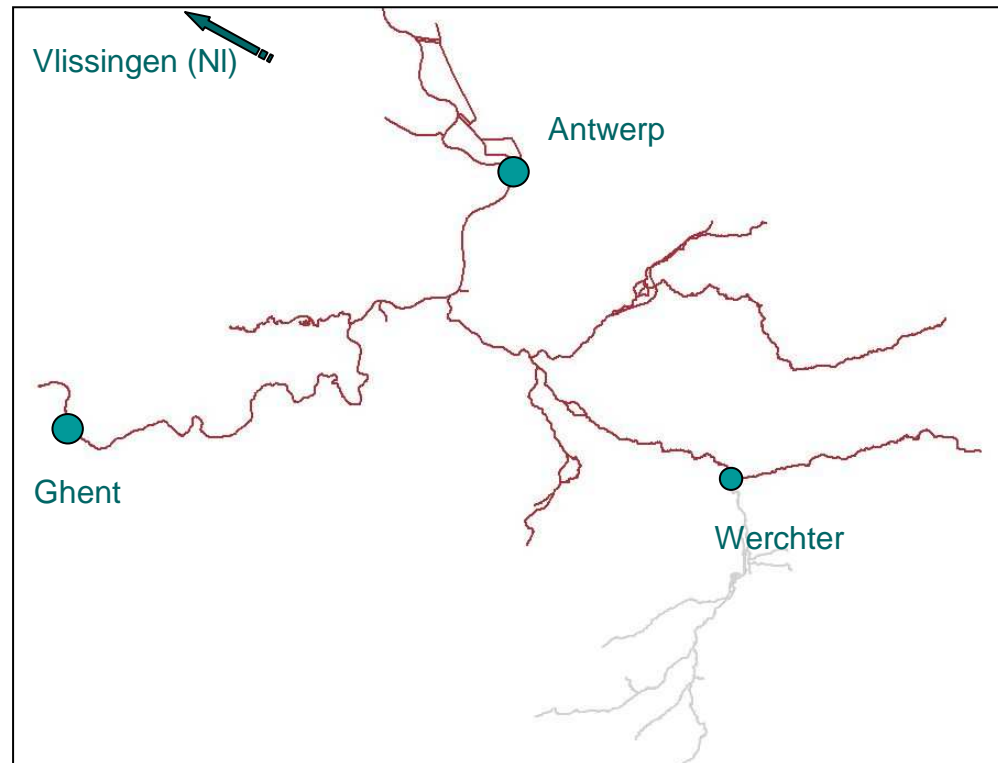
Non-tidal river model Dijle

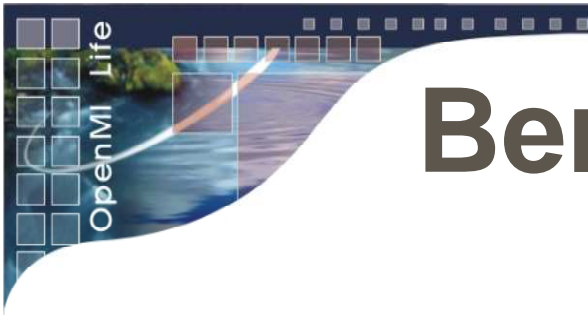
- Infoworks RS
- From Waver to Werchter (105 km)
- Natural flooding (Doode Bemden, $2 \times 10^6 \text{ m}^3$)
- Artificial reservoir with barrier upstream from Leuven (Egenhoven, $1 \times 10^6 \text{ m}^3$)



Tidal river model Dijle-Scheldt

- Mike 11
- From Ghent to Vlissingen (160 km, incl. Werchter)
- Update of SIGMA-plan:
protection against floods
 - Creation of flood areas (Controlled inundation areas - Reduced tidal areas)





Benefits of linking

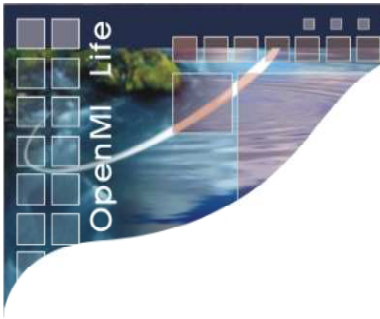


Interests for AWA

- Downstream boundary condition for model
- Improve results of model
- Supporting forecasting results needed from downstream

Interests for FH

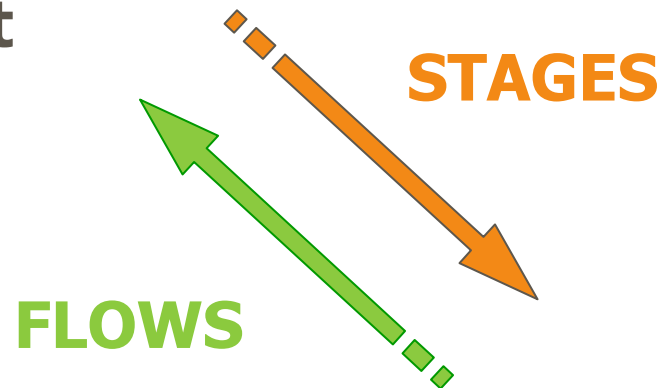
- Upstream boundary condition for model
- Better than hydrological model because:
 - Urbanized area
 - Flood control systems
- Supporting forecasting results needed from upstream



Linkage description



**Tidal river model
Dijle-Scheldt**



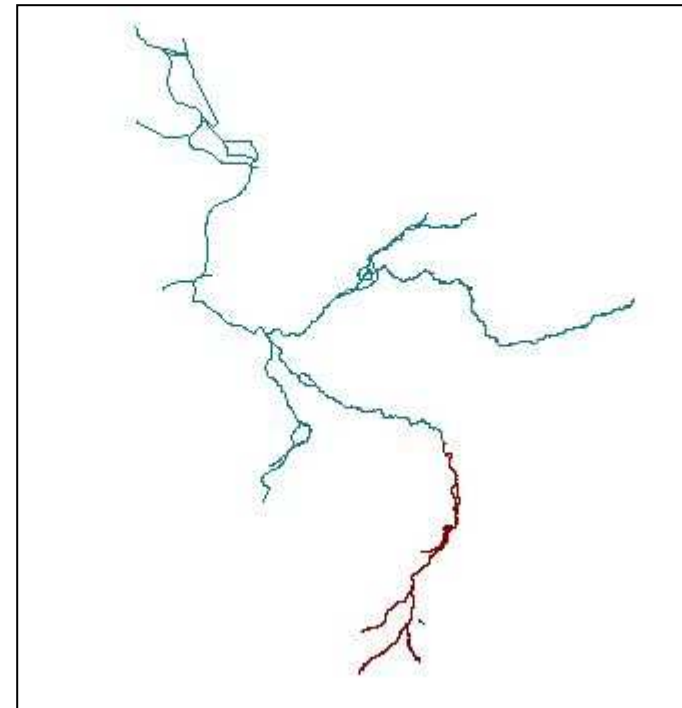
**Non-tidal river
model Dijle**

Spatial linking schemes

4 selected linking schemes

1. In the **Mike11 model** the Dijle is cut at the confluence of Demer and Dijle (Werchter) and the downstream boundary is replaced by the **IWRS Dijle model**. The Mike11 model of the Scheldt is also cut in Temse and is replaced by a time series (measurements).

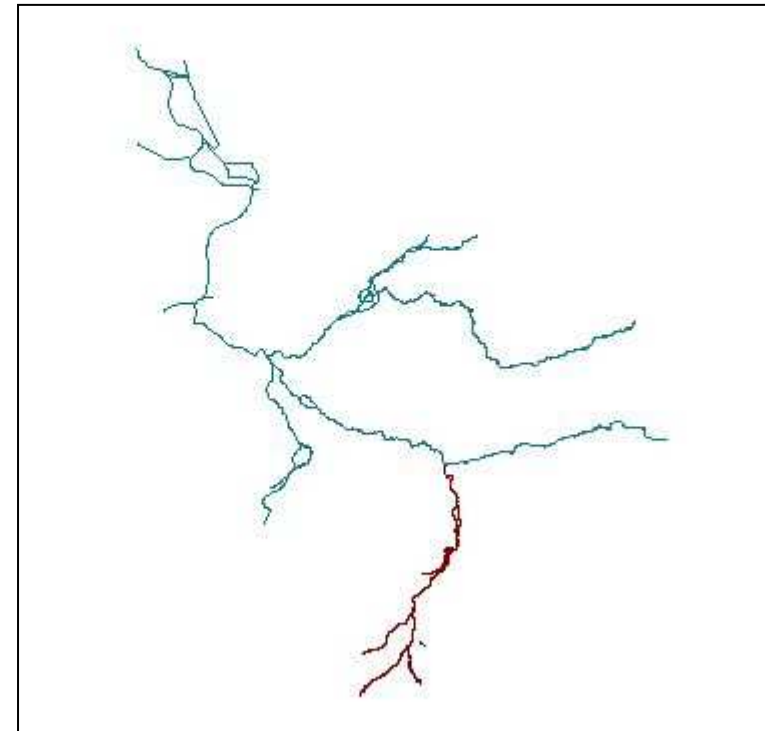
1 OpenMI link:
Mike11-IWRS



Spatial linking schemes

2. The Mike11 model is extended to include the Demer.

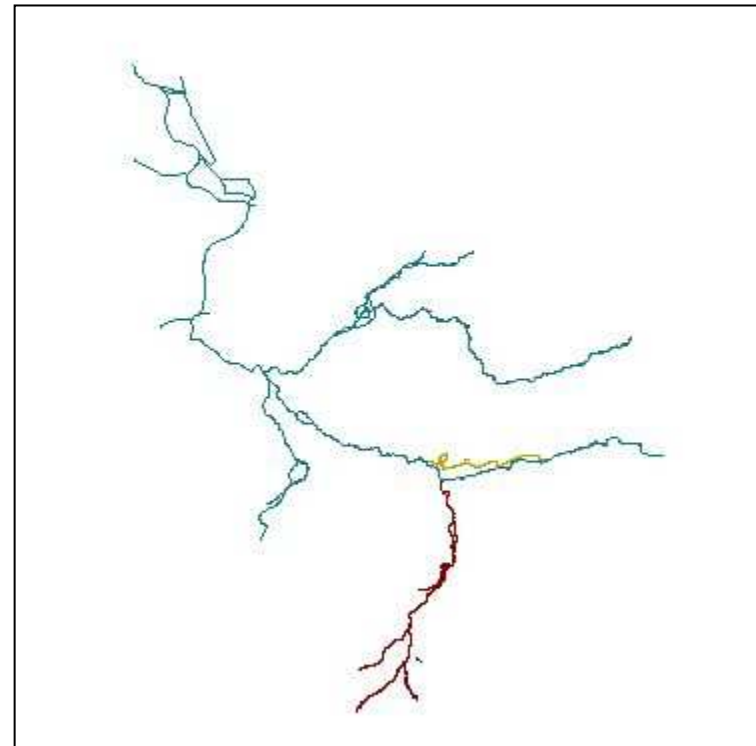
1 OpenMI link:
Mike11-IWRS

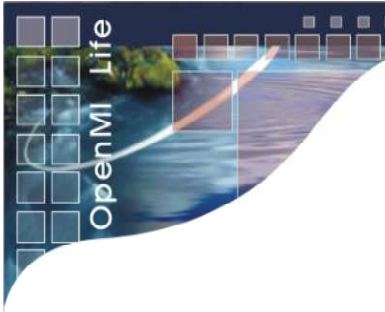


Spatial linking schemes

3. Two separate IWRS model, one containing the Grote Laak and one containing the Dijle.

3 OpenMI links:
3 Mike 11-IWRS

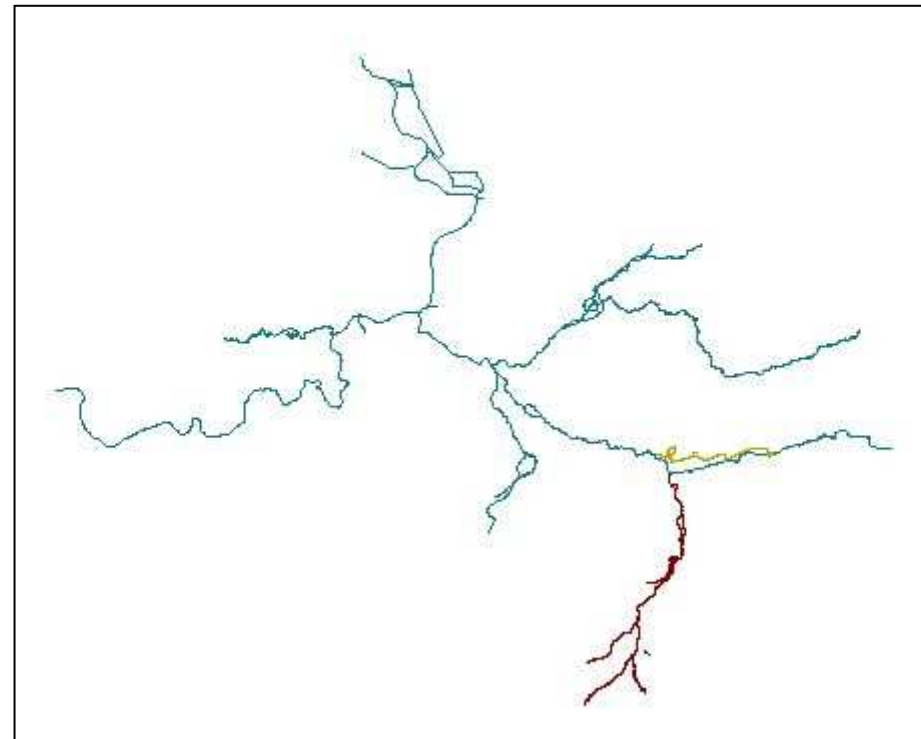




Spatial linking schemes

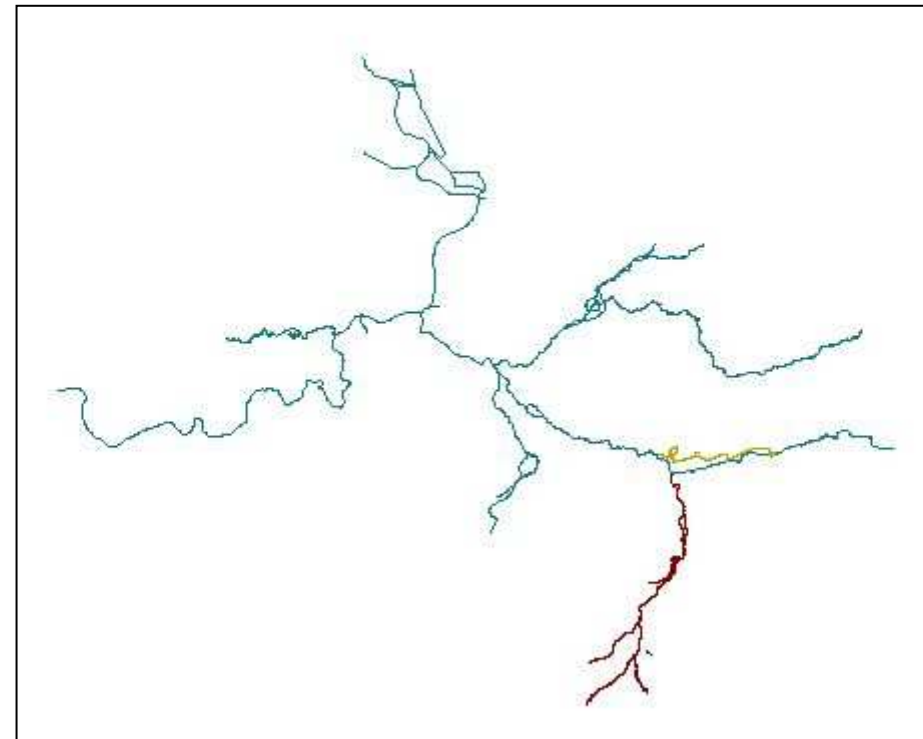


- 4. The Mike11 model is extended to its full extent
- 3 OpenMI links:
 - 3 Mike 11-IWRS



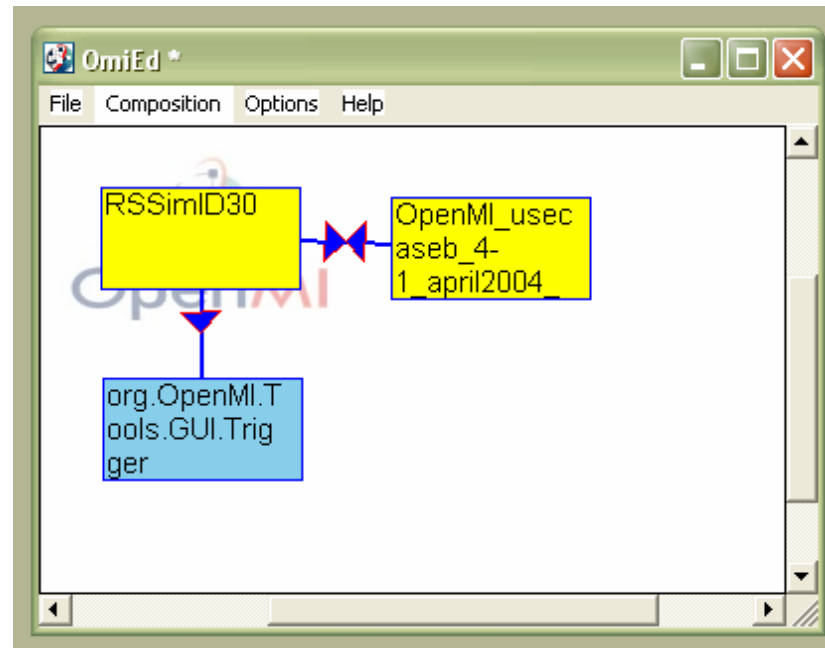
Future issues

Linking of flooding areas
at the confluence



Trial phase

New 8.5 IWRS release → able to upload and run the large IWRS Dijle-model



The linked models run to completion