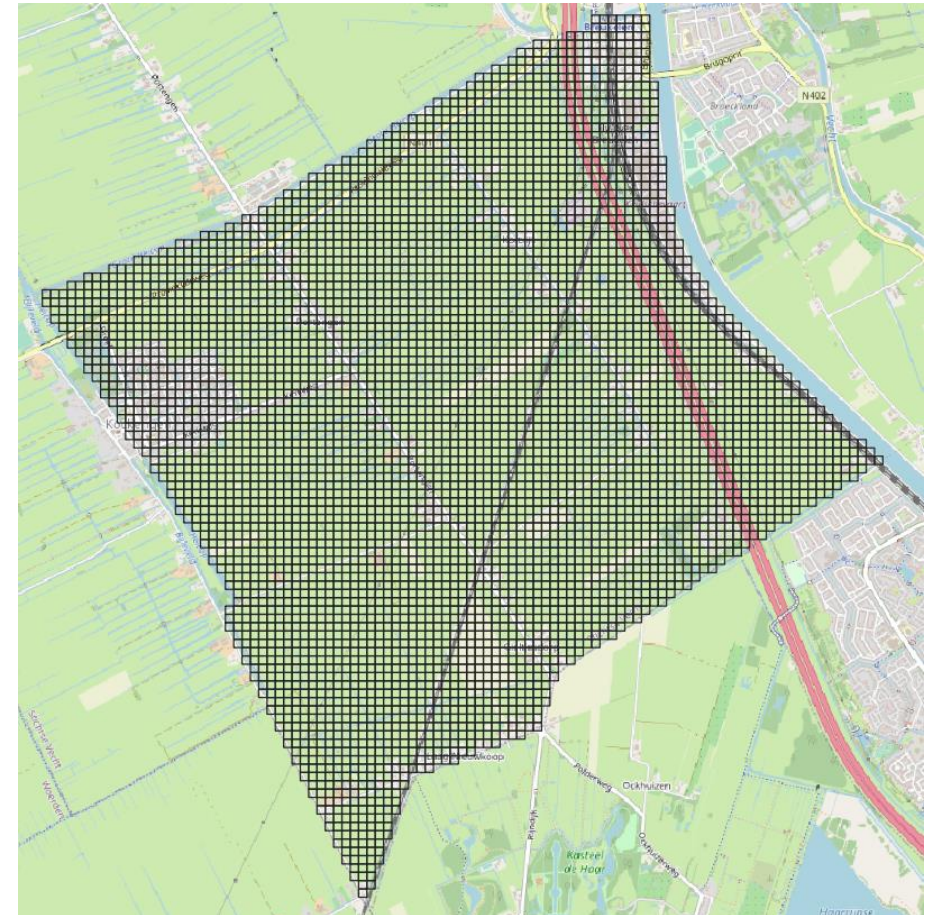


TKI-III Wflow HDSR

Wflow_sbm model polder de Tol

- Werk van Daniel Tollenaar voor HDSR
- Cel grootte 50 m
- Primaire watersysteem als river gedefinieerd (wflow_river.map), tertiaire sloten niet meegenomen
- Drainage laag benaderd door hoge Ksat waarden voor cellen met waterloop
- Maar: grondwaterstroming gebaseerd op helling oppervlak (kinematisch)



Groundwater balance

$$\frac{dS_g}{dt} = \Delta x \Delta y R + \sum_1^4 Q_g - RG$$

S_g groundwater storage in cell [L^3]

R recharge to groundwater [L/T] (from SBM vertical concept)

Q_g lateral groundwater flow [L^3/T]

RG river-groundwater exchange [L^3/T]

Lateral groundwater flow

- Darcy's law and Dupuit Forcheimer assumption:

$$Q_n = wT \frac{(h_n - h)}{l}$$

Q_n positive flow in to cell [L^3/T]

w width of flow cross section [L]

T flow transmissivity [L^2/T]

h_n head in the n th neighbouring cell [L]

h head in center cell [L]

l distance between cells [L]

Four directions considered. Average T between two cells is used. See also Fan et al., 2007).

River-groundwater exchange

- Based on MODFLOW approach:

$$RG = RC(h_g - h_r)$$
$$RC = (K_{rb}/b_{rb})WL$$

h_g water table head in cell [L]

h_r river elevation [L]

RC river hydraulic conductance [L^2/T]

K_{rb} thickness of river bed sediment [L/T]

b_{rb} thickness of river bed sediment [L]

W river width [L]

L river length [L]

Design en budget

- Hoe toevoegen aan Wflow.jl? Dit vooral om laterale concepten (grondwater, en oppervlakte water stroming)
- 25 Keur voor implementatie in Wflow.jl

Discussie

- Routing oppervlakte water in principe door D-Flow FM (koppeling Wflow.jl en D-Flow FM model, offline)
 - Primaire watersysteem of ook teriair?
 - In Wflow.jl nog (simpel) concept nodig? Of uitgaan van opgegeven peilen?
- Kwel en wegzijging?
- Modelrand (flux)?