

Idealised morphodynamic modelling: Western Scheldt and mouth area

► **Bart De Maerschalck**

► **Abdel Nnafie**



Vlaanderen

is mobiliteit &
openbare werken

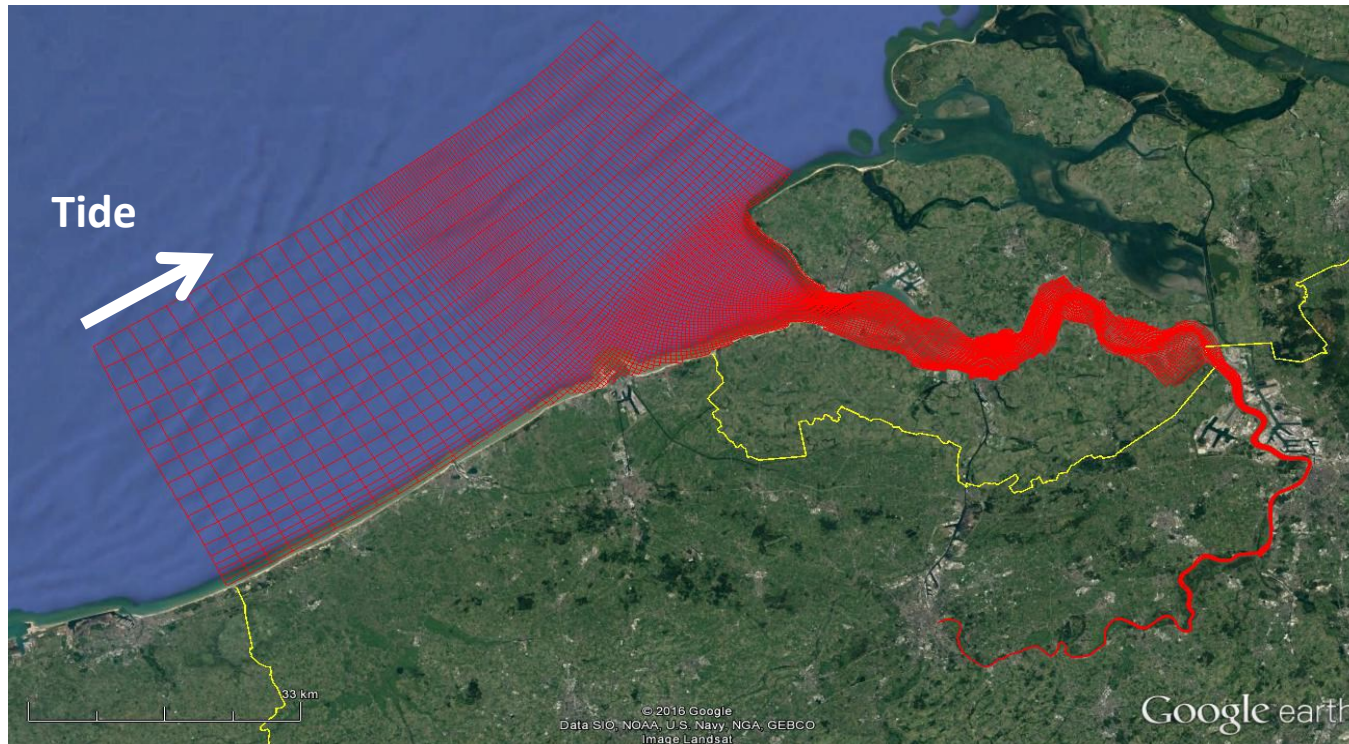
Idealised modelling

- Focus on longterm trends (decadal – centennial)
 - Reduction of input, only main forcing terms and processes
- Understanding of fundamental mechanisms
- Sensitivity analysis

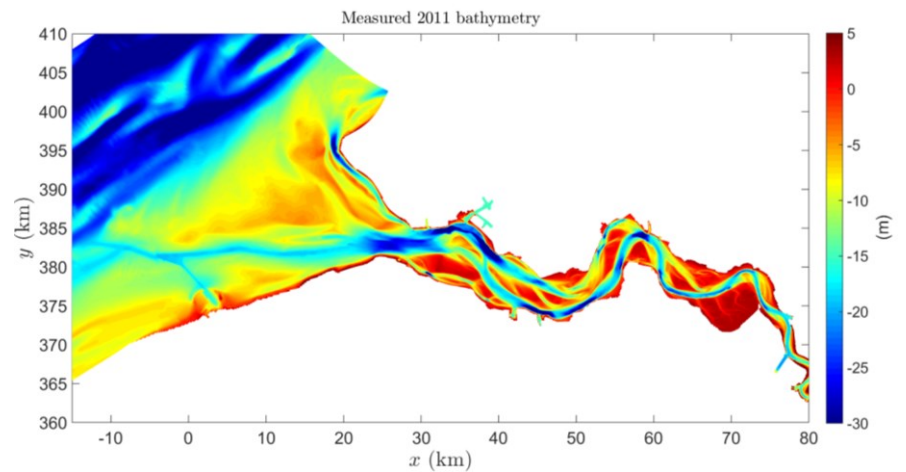
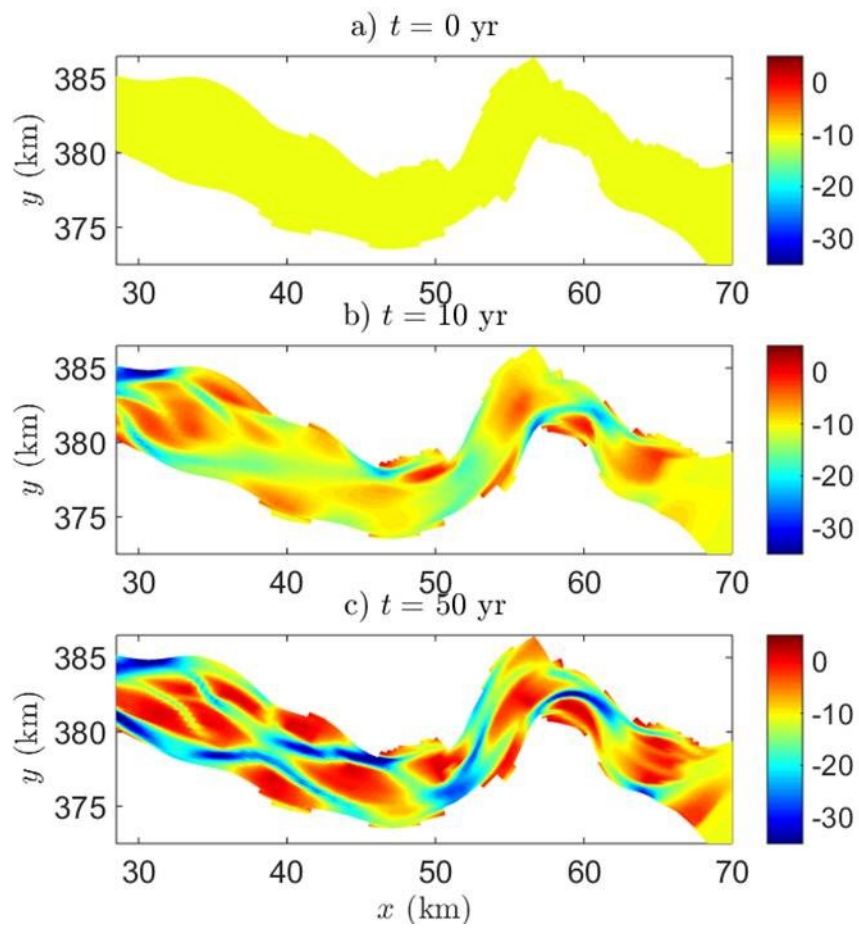
Methodology

- ☐ **Spin up the model from a flat bottom till “equilibrium” is reached (here: 300-400 years)**
- ☐ **Does this autonomous generated bottom represent main features of the system?**
- ☐ **The generated bottom is used as initial state of the system for scenario analyses**

Model description: Delft3D (2DH)



- **Tidal Wave** south → north (M2, M4 and M6)
- **Initial bottom:** flat bottom based on width averaged measured bottom



Vlaanderen

is mobiliteit &
openbare werken

Example: Long term effect of embankments



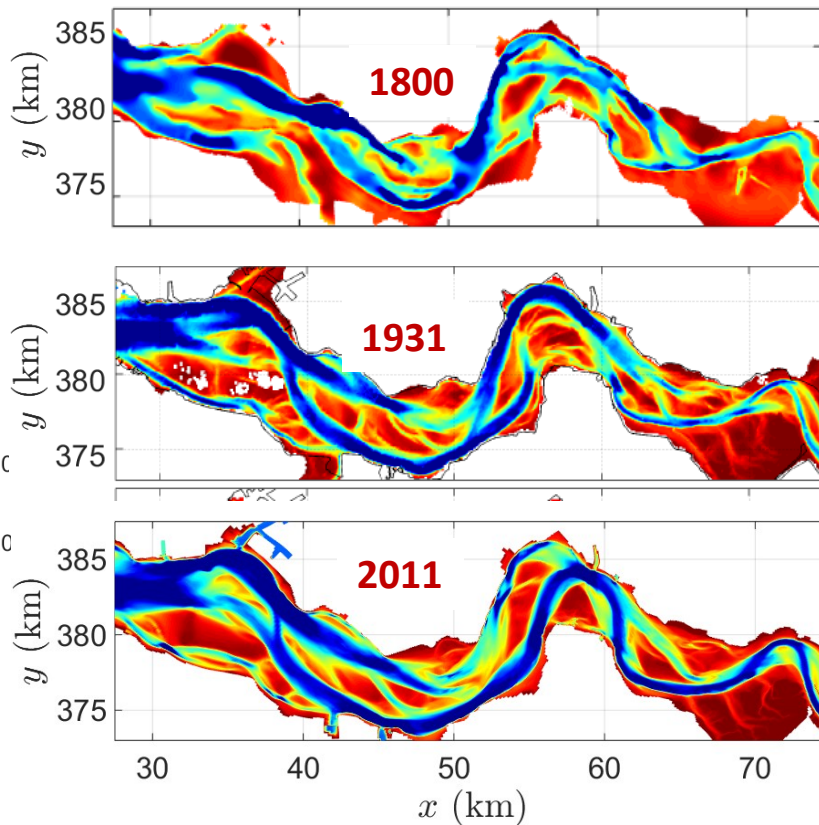
1800



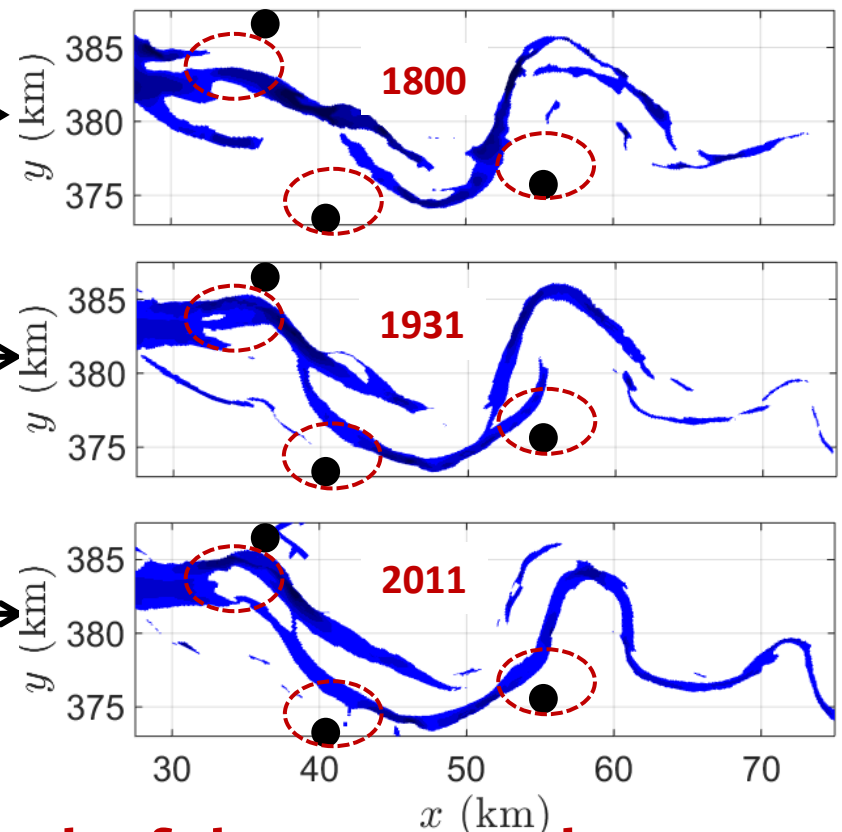
Vlaanderen
is mobiliteit &
openbare werken

Bathymetric evolution estuary 1800-present

Bed level development 1800-present

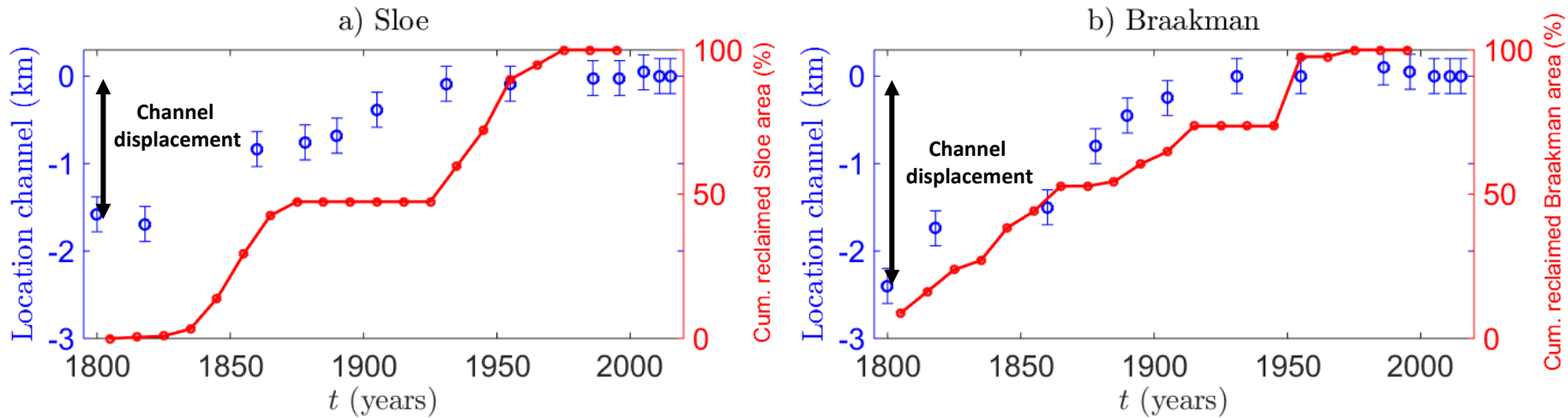


Channel network planforms 1800-present

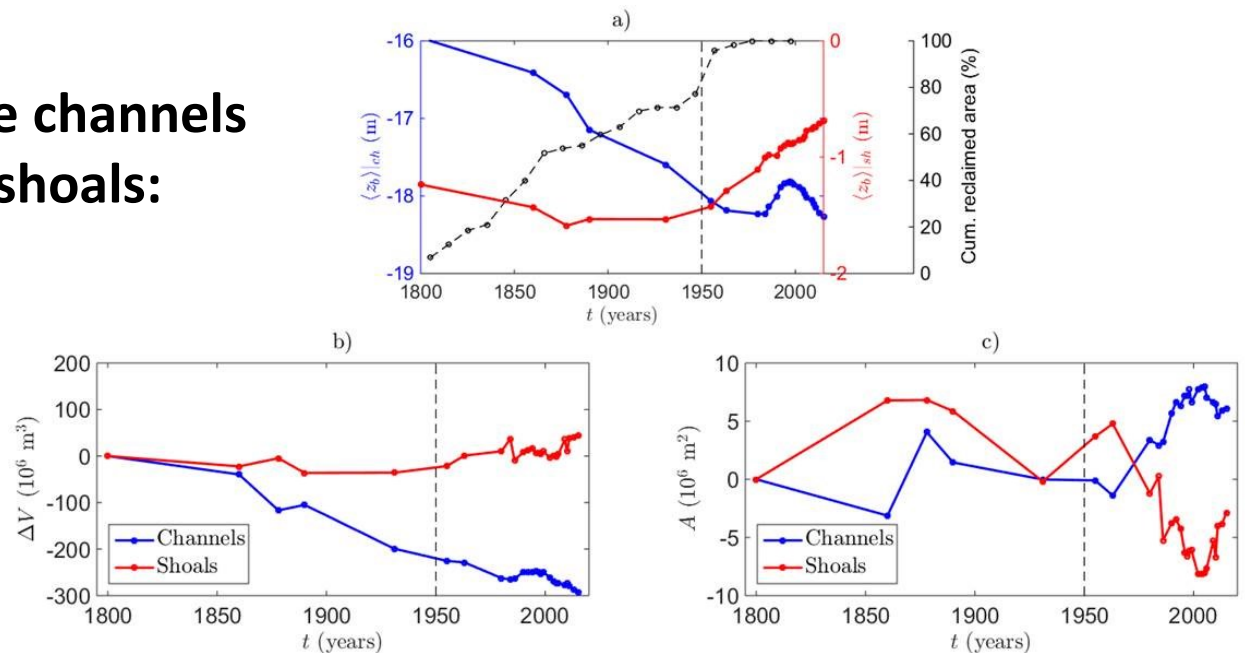


- **Migration channels towards bank of the estuary where former secondary basins were located.**

- **Migration of the channels:**



- **Mean depth of the channels and height of the shoals:**



Modelrun with and without “Sloe”

