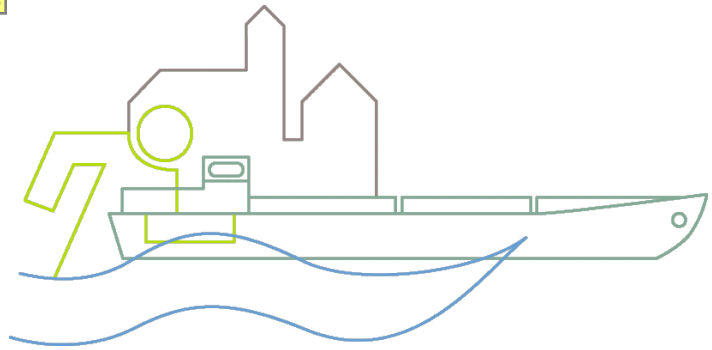

Bundesamt für Bevölkerungsschutz und Katastrophenhilfe

bfg Bundesanstalt für Gewässerkunde

CEMS Global Flood Forecasting & Monitoring Meeting

08.-09.02.2023

Exemplary evaluation results of the Global Flood Monitoring (GFM) product for applications in German federal agencies

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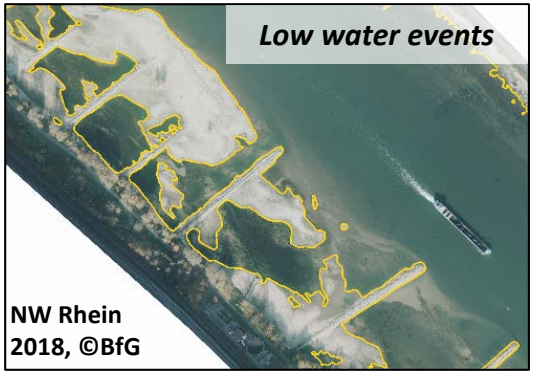
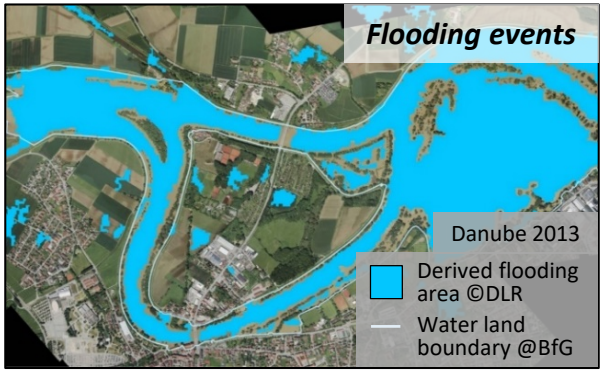
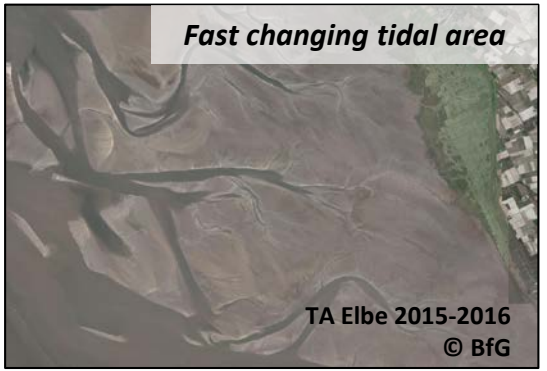
Objective: Monitoring of water-land-boundaries

- Water extent particularly for
  - inland and coastal waters
  - crisis evaluation, flood duration, morphological change detection, flow-model validation e.g. forecasts,…

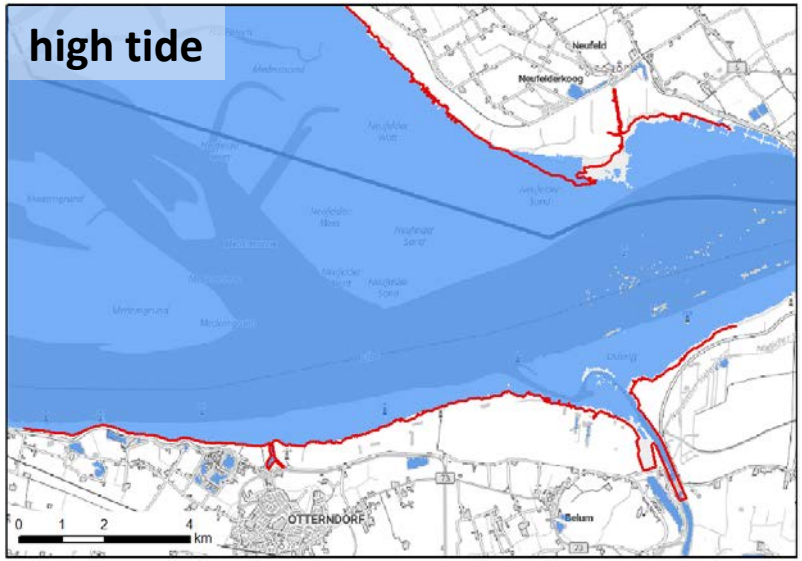


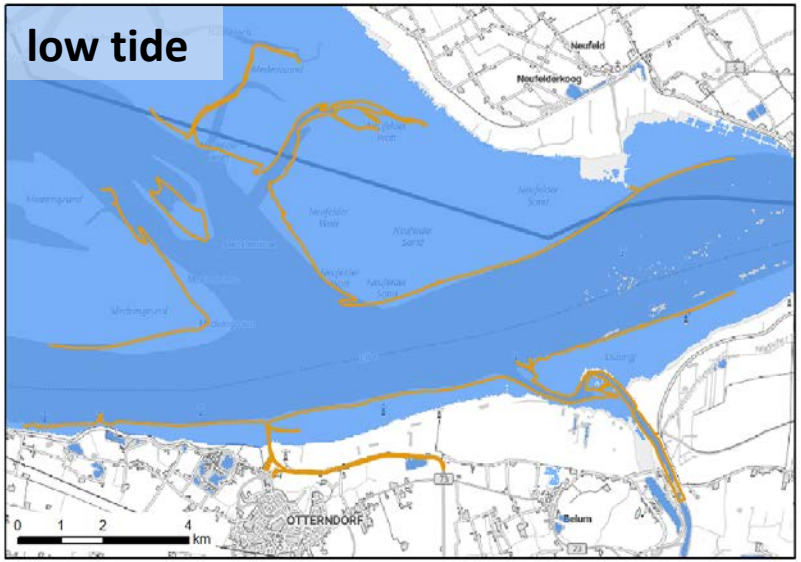




- Requirements
  - high accuracy and precision (< 25 m), without gaps
  - correct timing (e.g. flood peak, minimum water level, low/high/spring tide)

Evaluation of Global Flood Monitoring (GFM)





water mask @GFM

water-land-boundary according to validation data:
UAV, terrestrial measurements, DTM, high/low tide

Background: basemap © BKG 02/2023

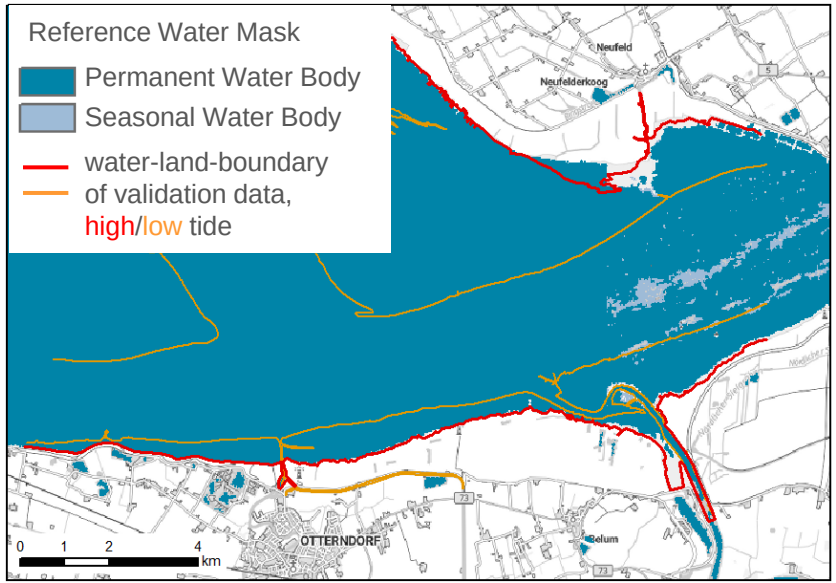
high tide: mostly within ca. 50 m ok

low tide: strong discrepancies

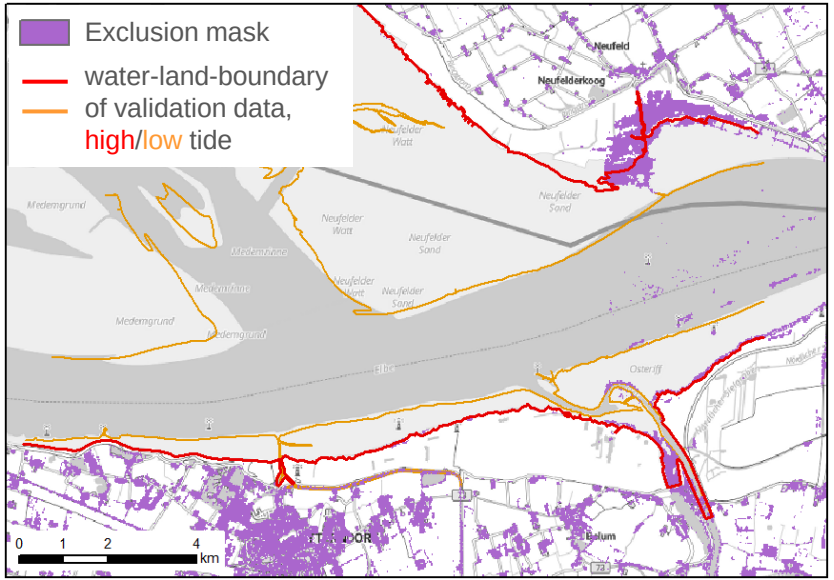
Reference water and exclusion mask of GFM

- **Reference water mask**
  - S-1 derived
  - “always water” in GFM products
- **Exclusion mask**
  - partly exclusion in the tidal area
  - no exclusion for assumed „permanent water“

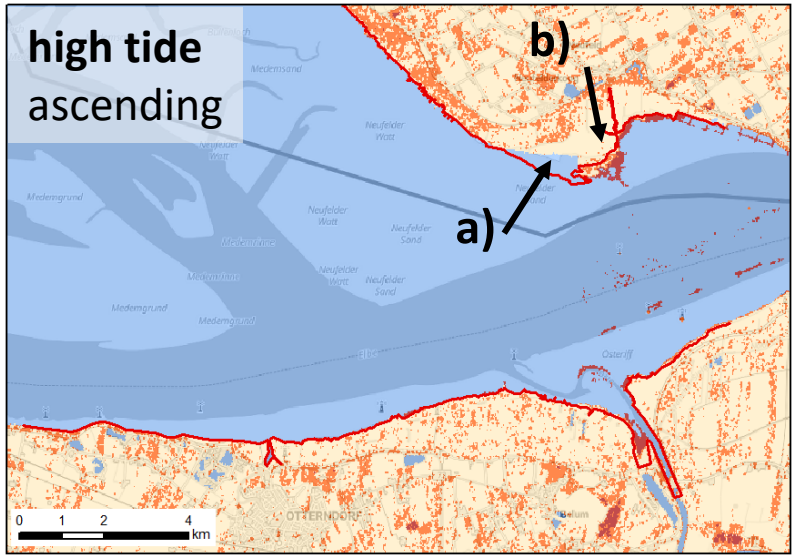
identical for low/high tide

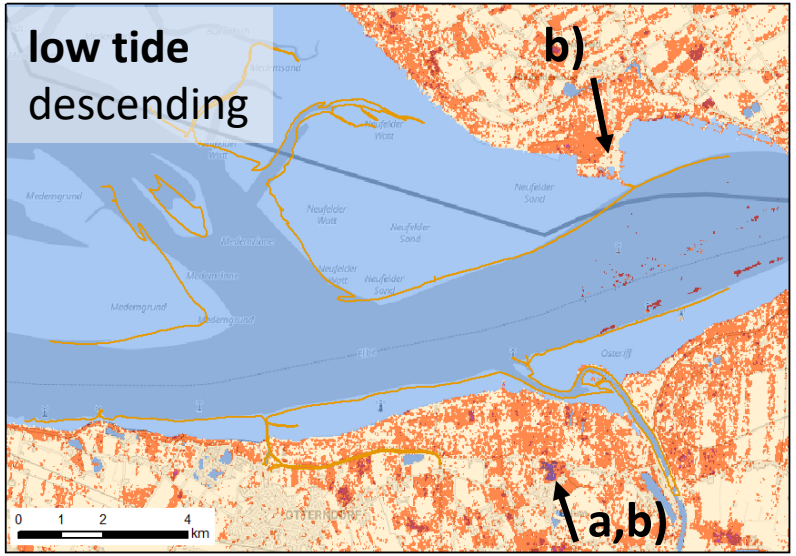


identical for low/high tide



Uncertainty values of GFM





- Low likelihood of flood classification
- 6-12 %
- 12-25 %
- 25-50 %
- High likelihood of flood classification
- water mask ©GFM

a) Only uncertainties for “land” and “flood”
no uncertainties for apparent “permanent water” 😐

b) Different uncertainties in the excluded areas for low/high tide 👍

Conclusions & Suggestions

- **Conclusions**
  - Promising results for coastal high water levels
  - Well accessible
  - Clear descriptions of product derivation
  - Not yet applicable for BfG

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16.11.2018

- **Suggested improvements from our point of view**
  - Application for low water levels
  - Pre 11/2021 products (for validation)
  - Source layer of data
    - data base for each pixel
  - Pixelwise uncertainties
    - for all pixel and all data sources
    - for selected scenes: user/producer accuracies

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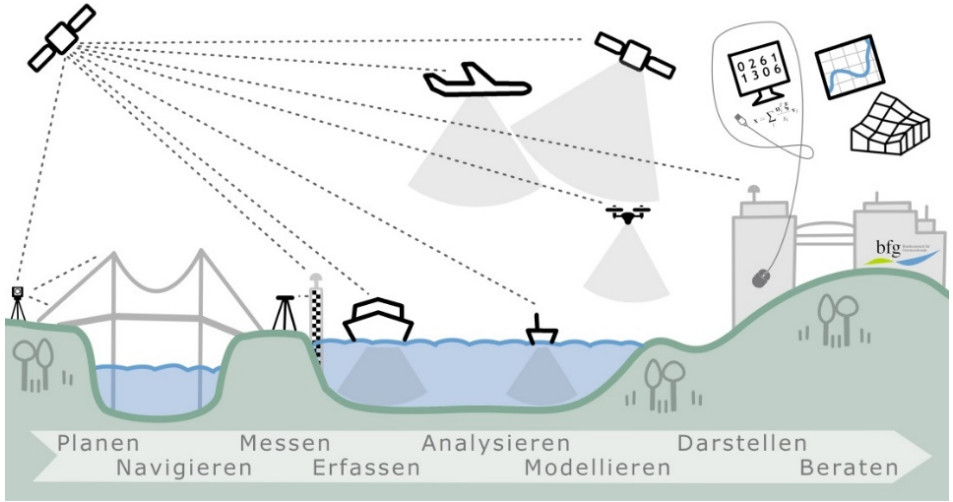

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Thanks for the Attention!

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