

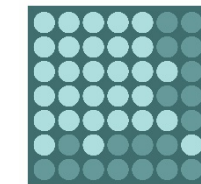
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TrilaWatt

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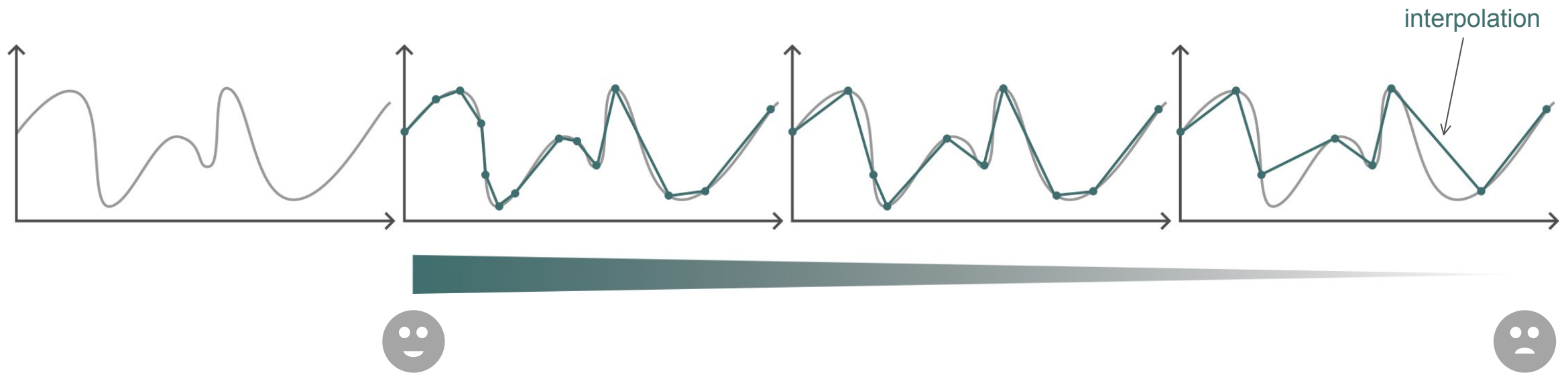
**Digital hydro-morphological twin of the Trilateral Wadden
Sea**

Wadden Sea Forum – Plenary 43: Bathymetric Analyses

Harlingen, The Netherlands, 28th March 2023

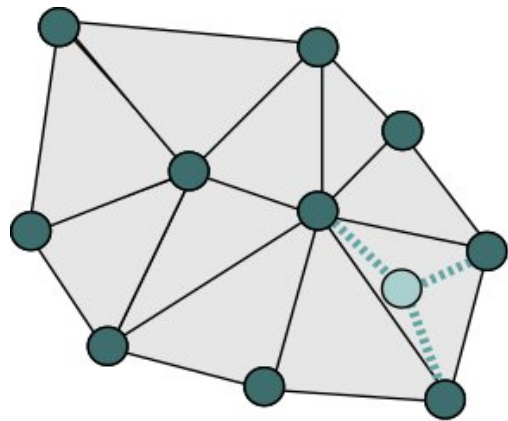
Crash course in bathymetric modeling

- A continuously changing property (like elevation) can be discretized to enable analyses and decrease resources needed.
- The higher the density of discretized features, the higher the quality of the representation.
- Not only density but also location, e.g. highly dynamic parts need more, gentle slopes less.

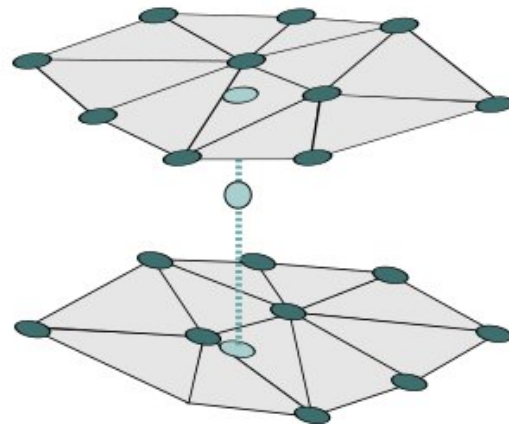


From data sets to a continuous representation

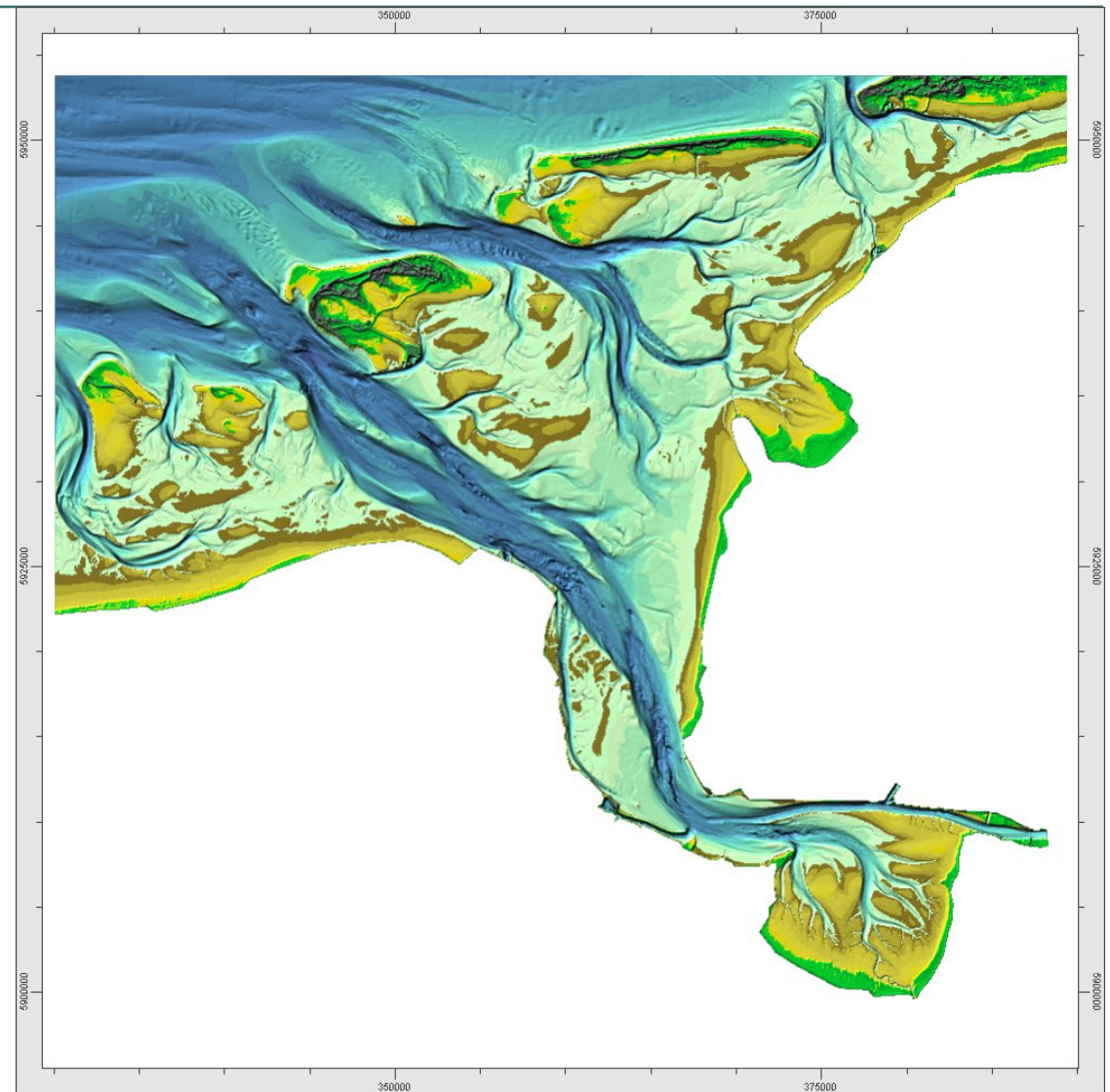
- Interpolation is possible within data sets
 - to make them spatially covering
- Also possible between data sets of two different times
 - to find out elevation where there was no measurement
- Combination: Spatio-temporal interpolation
 - can produce interpolated information *almost* anywhere and anytime



spatial interpolation

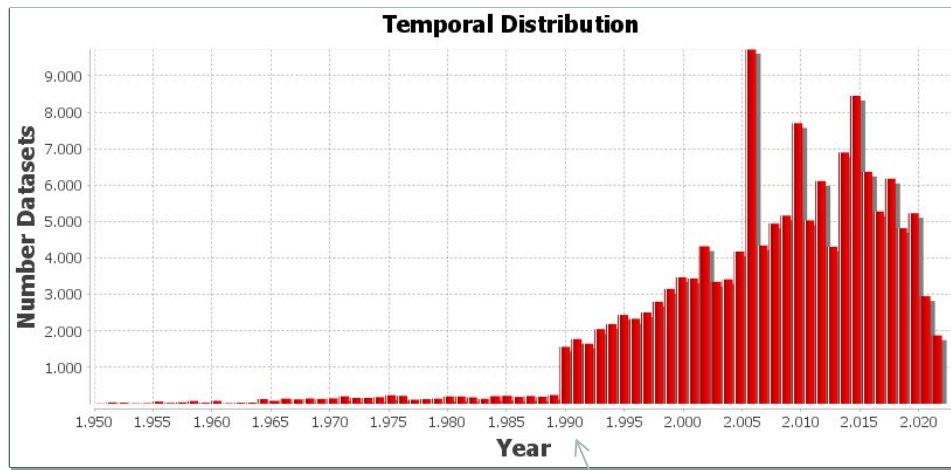


temporal interpolation



Bathymetric base data

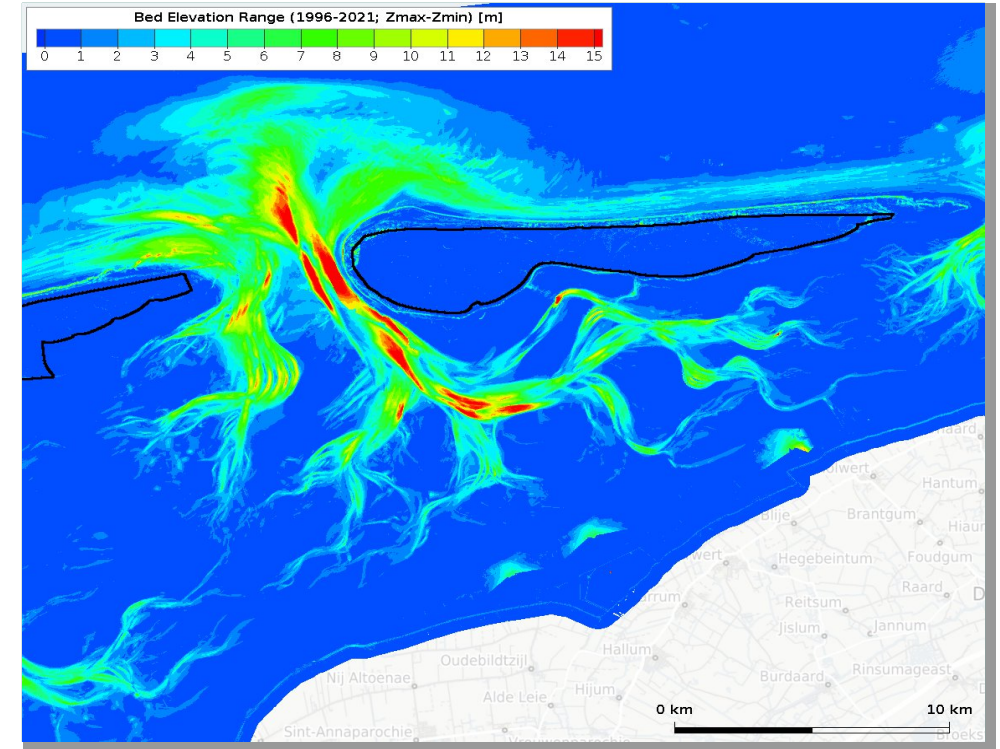
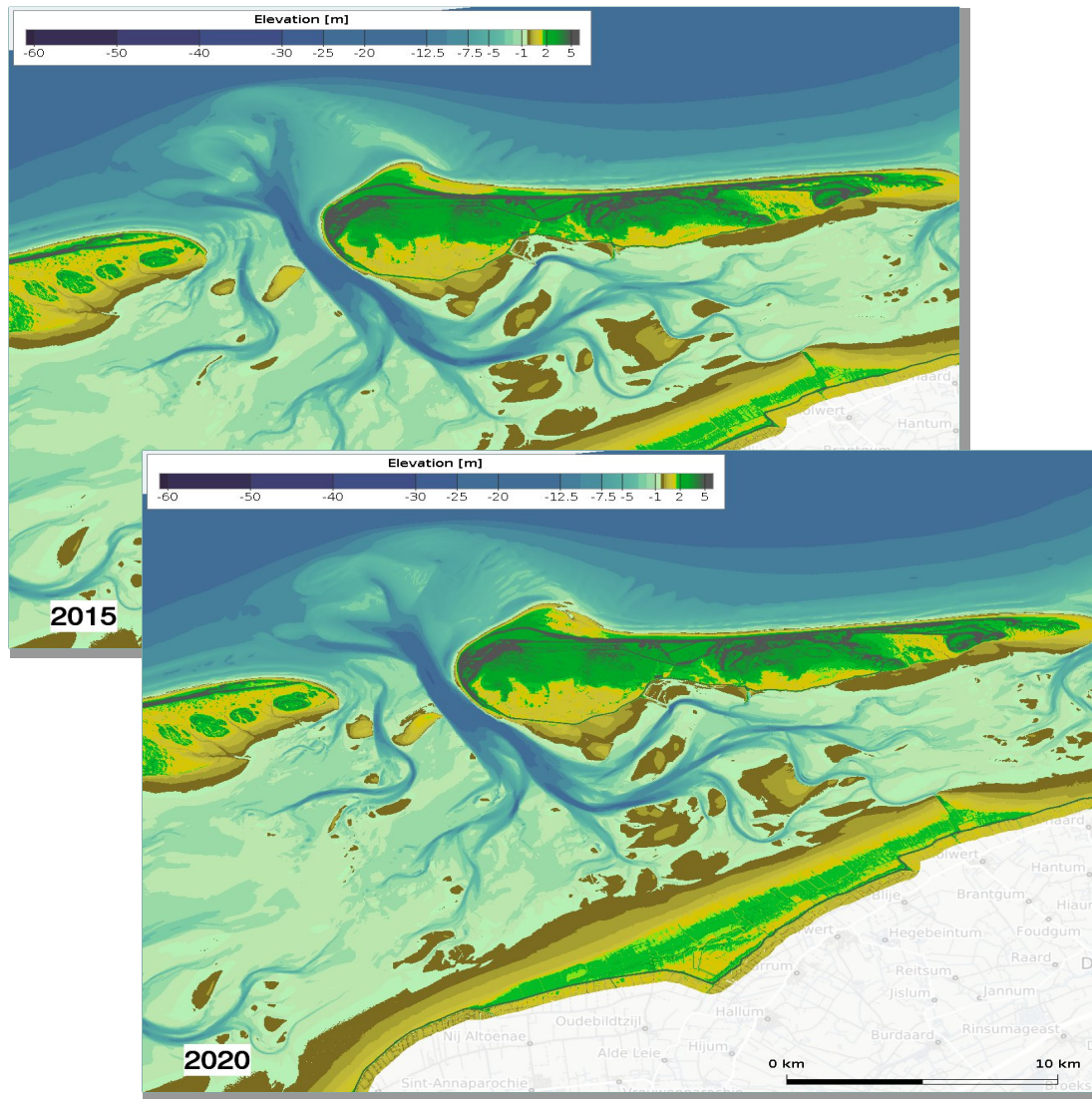
- Ability to interpolate elevation information strongly dependent on available base data
- Functional Seabed Model („FSM“) grew over almost two decades, still in development
- Around 144k base data sets ranging from digitized historic maps of Napoleon to ultra-dense LiDAR



broader usage of digital formats?

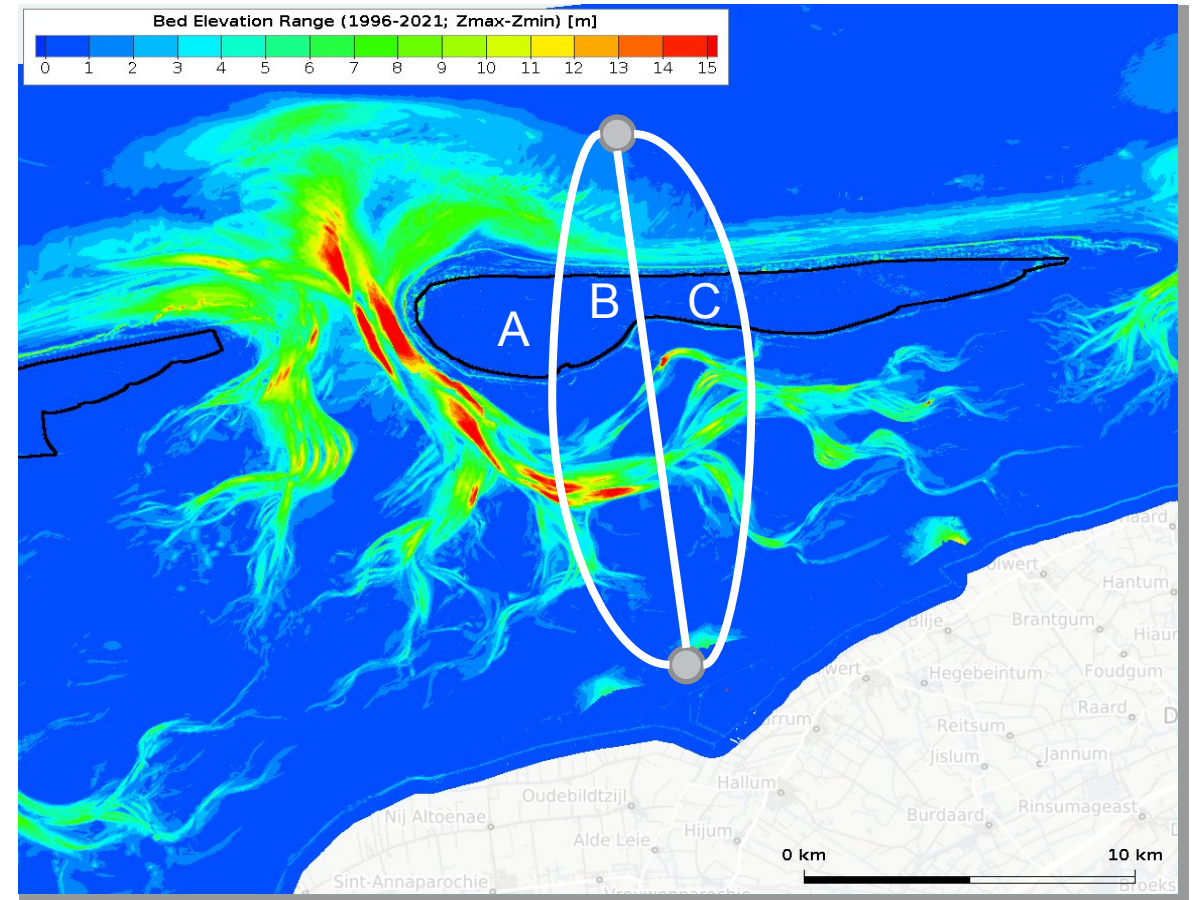


Actual analyses: Bed Elevation Range

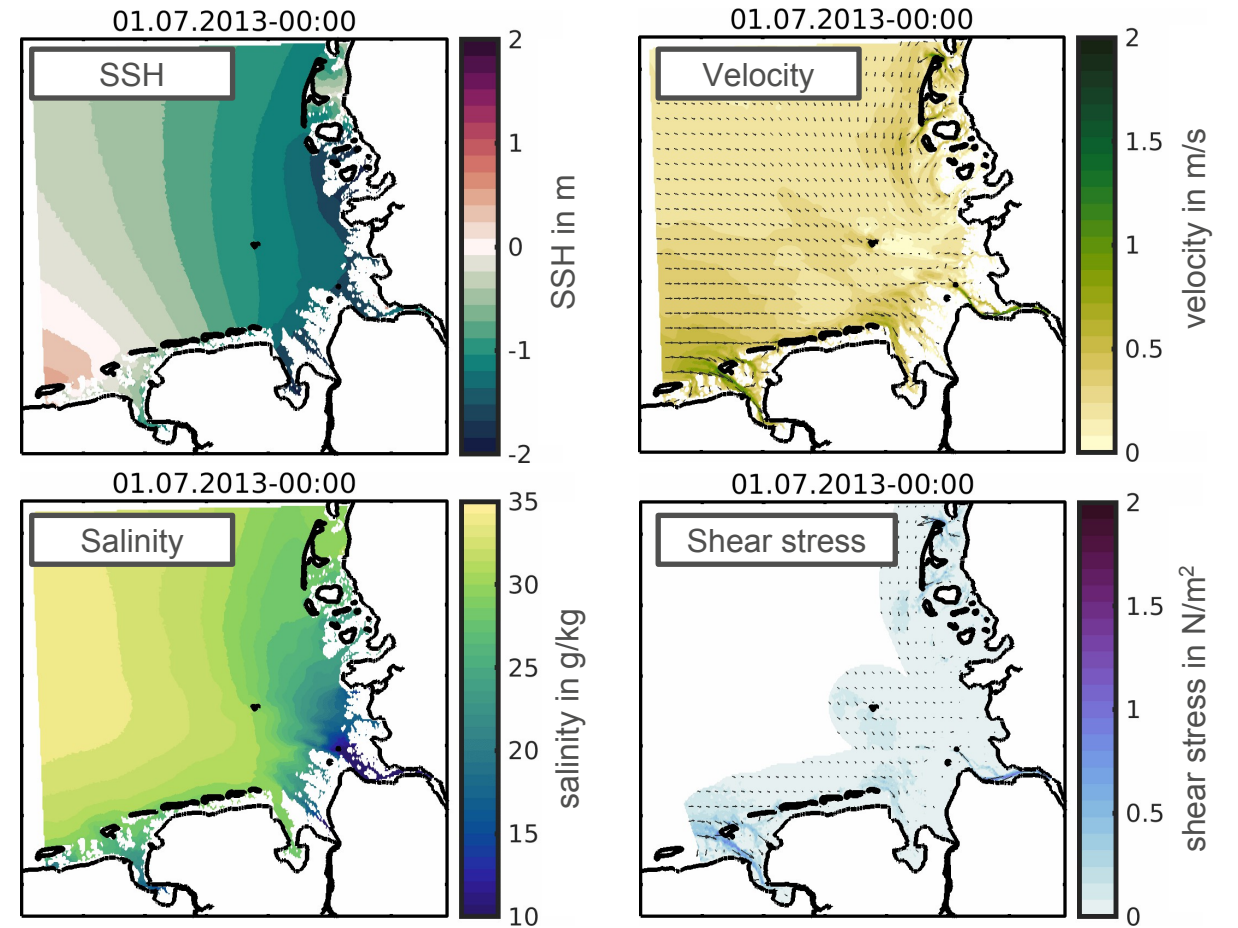
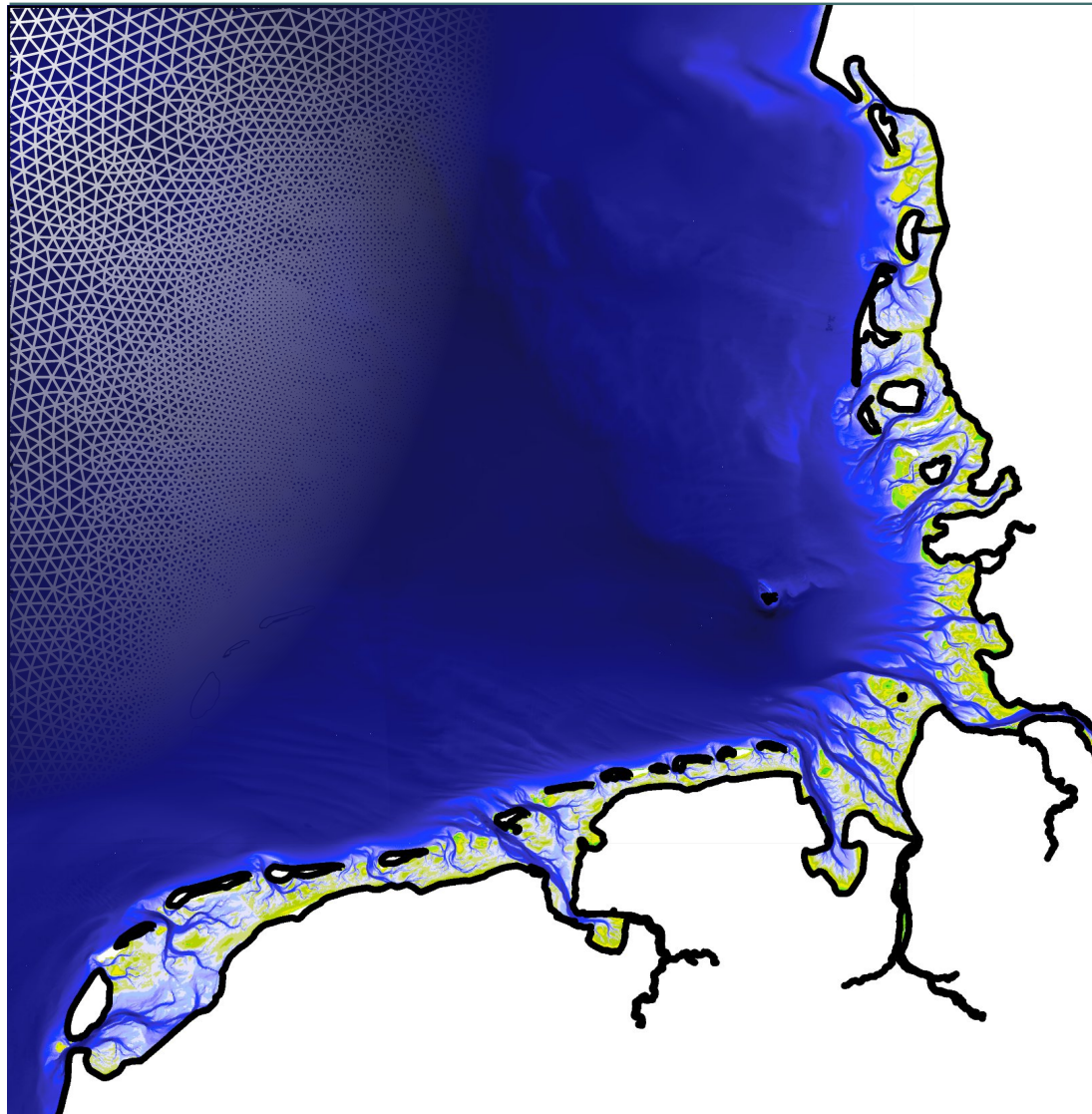


Use-Case: Cable Routing

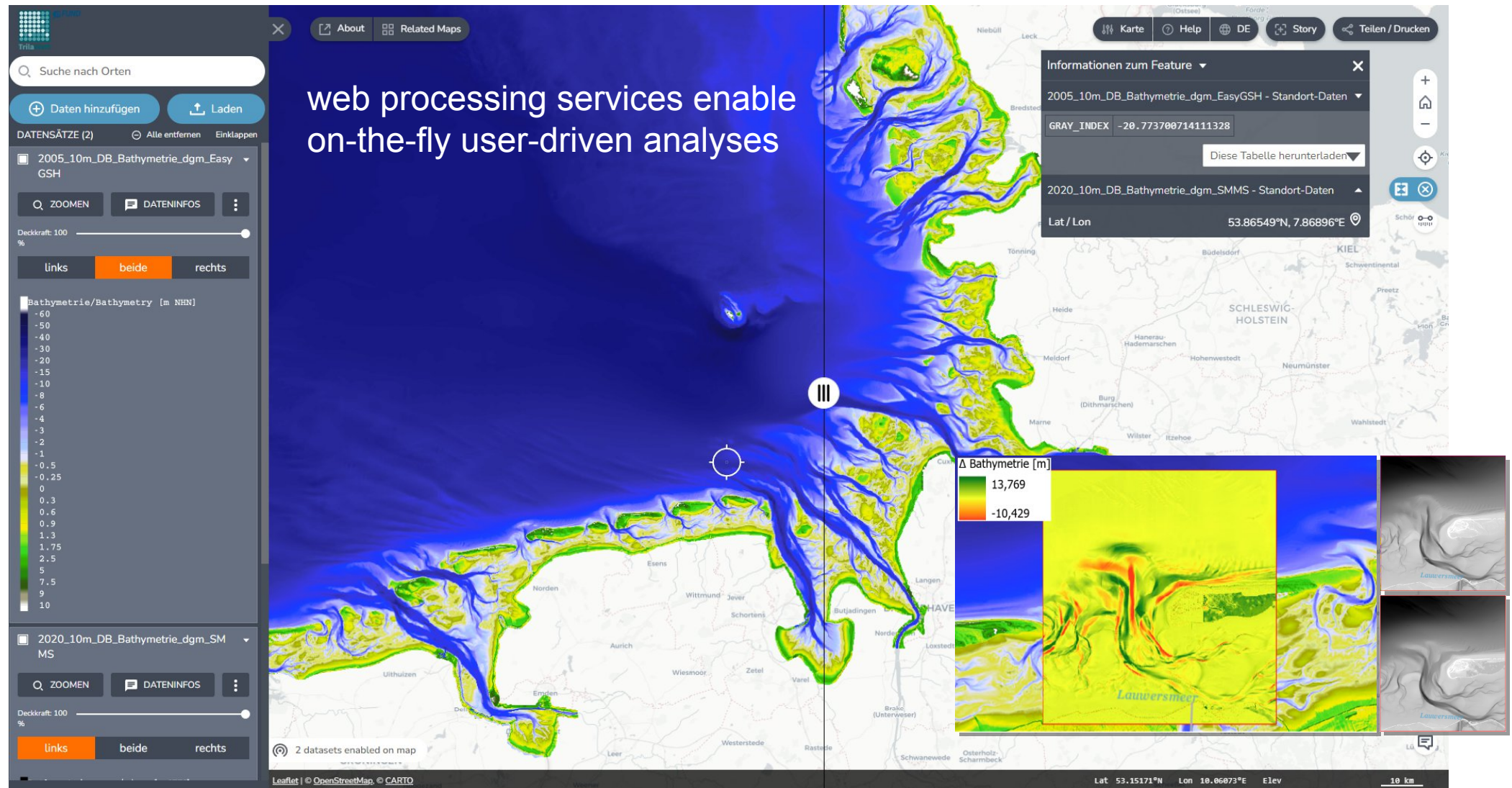
- What do we understand as cable routing?
 - Identifying corridors / pathways between two or more positions for cables, pipelines or similar
- Cable routing remains a challenge and will only increase in relevance!
 - Offshore (wind) energy?
 - Water?
 - Hydrogen?
- Why is it difficult to determine?
 - Ecological habitats
 - Anthropogenic influences
 - Natural morphodynamics




Numerical Modeling



2005, 2010, 2015 -2020





Bundesanstalt für Wasserbau

SUCHE KATALOGE

BAW-DATENREPOSITORY

KOMPETENZ FÜR DIE WASSERSTRASSEN

SUCHE

EasyGSH-DB: Themengebiet - Geomorphologie

Zeitbezug der Daten
01.07.1996 - 01.07.2016

Downloads (2)

- Downloadportal: Geomorphologie [HTML](#) [TIFF](#)
Die URL zur Downloadseite für die unter das Themengebiet Geomorphologie fallenden Daten von 1996-2016.
- Downloadwebsite: Geomorphology - English [HTML](#) [TIFF](#)
The URL leads to the geomorphology download on the website of the EasyGSH-DB project.

Querverweise (3)

- EasyGSH-DB: Bathymetrie (WCS)
Der Coveragedienst EasyGSH-DB: Bathymetrie (WCS), beinhaltet die jährlichen Bathymetrien der Deutsche Bucht für die Jahre von 1996-2016, für den Zeitraum von 1996-2016 das Maximale Z, das Minimale Z, den Mor-
- EasyGSH-DB: Bathymetrie (WFS)
Der Featuredienst EasyGSH-DB: Bathymetrie (WFS), beinhaltet die jährlichen Bathymetrien der Deutsche Bucht für einen Zeitraum von 1996-2016, die Isolinien (0.5m) von 1996-2016 und die Isolinien (10m) von 1996-2015.

[Alle Links](#)

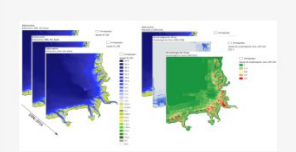
Zitat für diesen Datensatz

Sievers, J., Rubel, M., Milbradt, P. (2020): *EasyGSH-DB: Themengebiet - Geomorphologie* [Data set]. Bundesanstalt für Wasserbau. <https://doi.org/10.48437/02.2020.K2.7000.0001>

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Vorschau





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Karten
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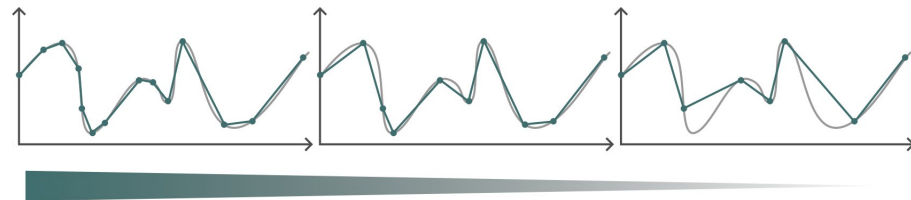


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HILFE KONTAKT INHALT IMPRESSUM DATENSCHUTZ BARRIEREFREIHEIT

Lessons learned and obstacles

- Regionally very variable data availability and temporal distribution.
- Data-based bathymetric modeling requires high density and high uniformity for optimal results.



- Good bathymetric models are imperative for good numerical results.
- Help us help you!

