

H2020 e-shape: Renewable Energy Showcase

Merging offshore wind products

What is e-shape?

H2020 project **e-shape** brings together Earth Observation (EO) resources in Europe to establish:

EuroGEO, Europe's contribution to the Group on Earth Observation (GEO)

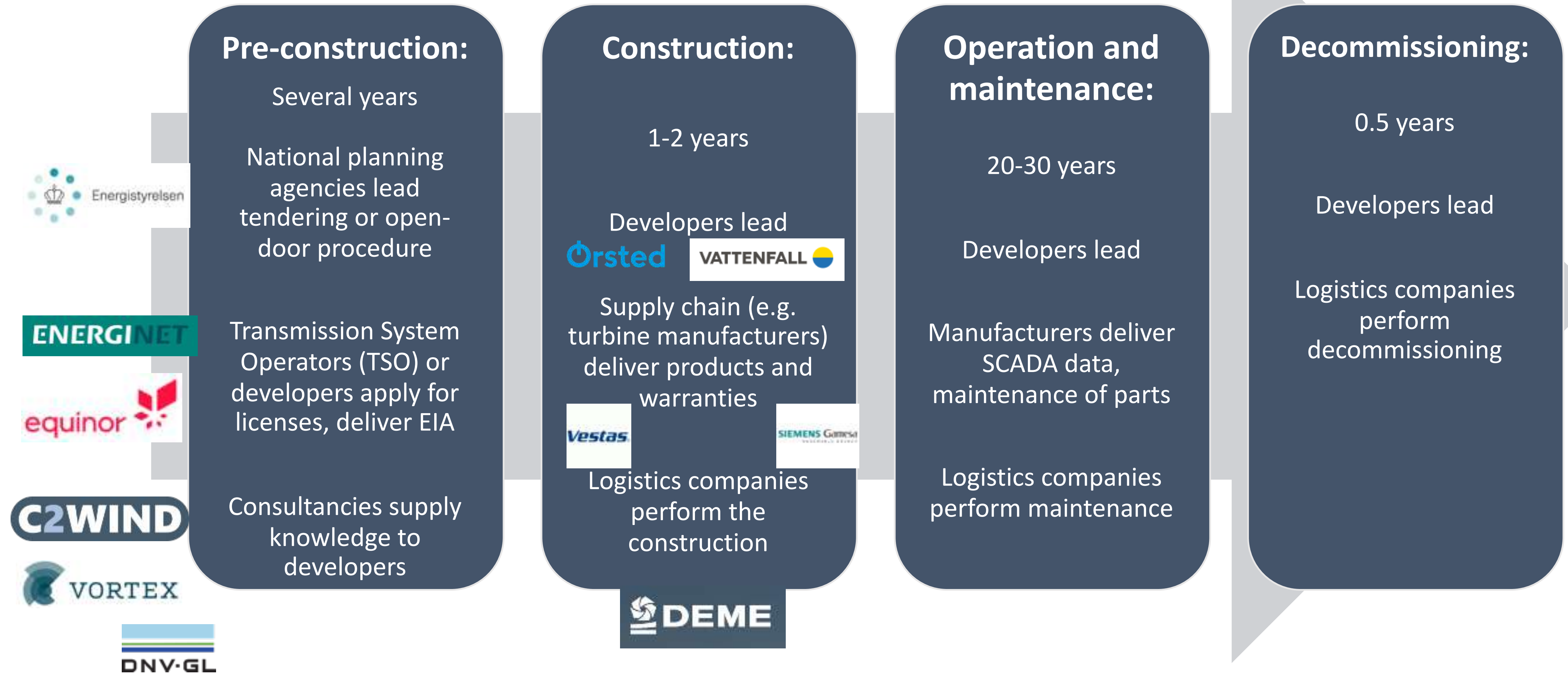
e-shape leverages **Copernicus (Europe's eyes on Earth)**, making use of existing European capacities and improving user uptake of data.



EuroGEO Showcases: Applications Powered by Europe

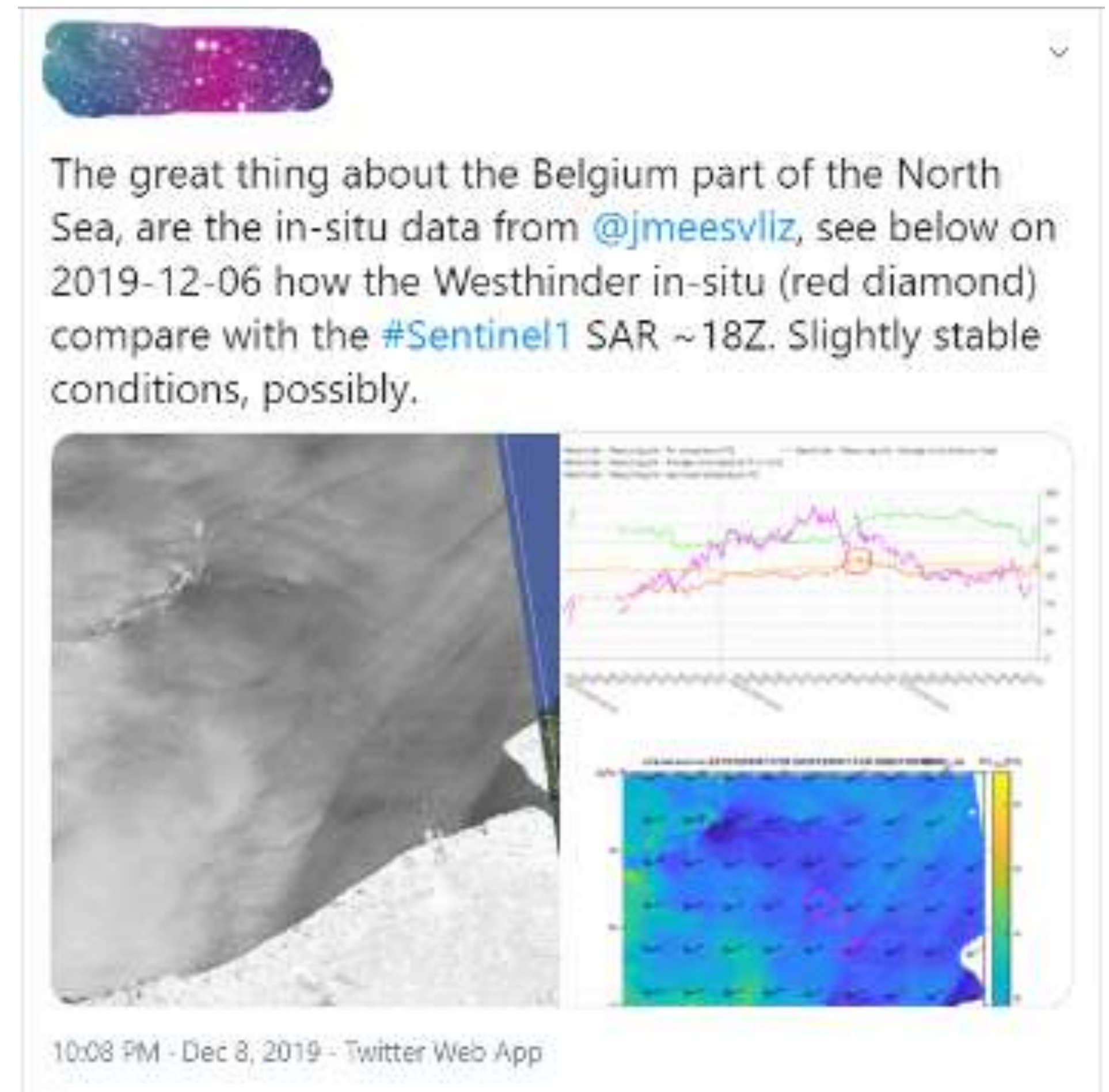


Wind farm project cycle



User involvement

- Prior experience of servicing the industry
- 4 users expressed support
- 3 users participated in individual co-design workshops



User requirements



- Coverage at wind energy hotspots outside Europe
- Supplementary information (temperature, etc)
- Documentation



- Individual SAR wind maps for model validation
- User selected periods
- Long time series
- Easy access/use & documentation



- Long time series
- Combined wind/wave product
- Bathymetry
- Documentation



Satellite winds at 10 m over the ocean

- Microwave radar technology
- Backscatter from small scale (~cm) waves
- Synthetic Aperture Radar (**SAR**)

- Scatterometer (**ASCAT**)



Sentinel-1's selfie from space. (ESA)

Source: ESA



Source: EUMETSAT

Existing DTU services: satellite wind fields

DTU Wind Energy
Department of Wind Energy

Satellite Winds

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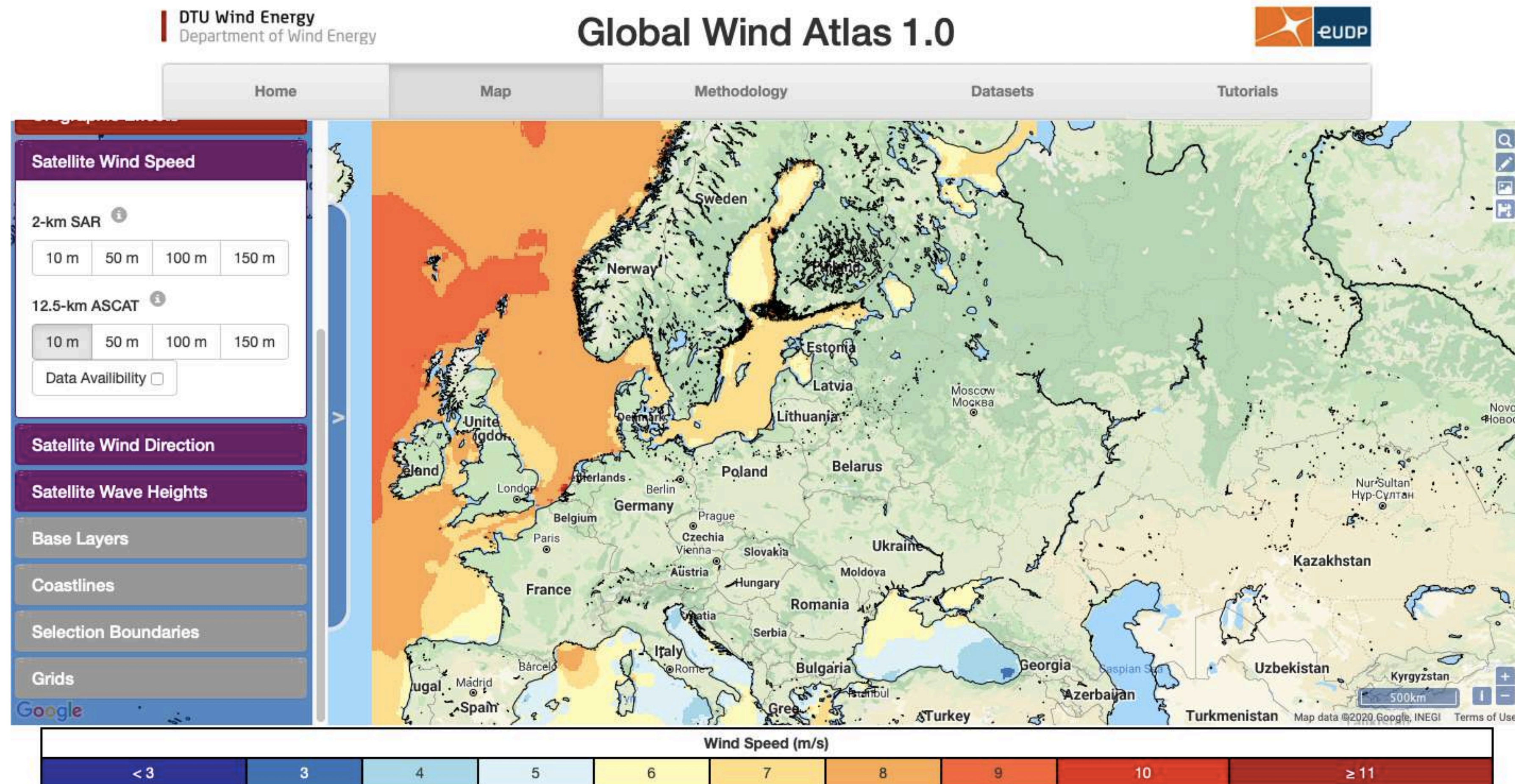
Satellite wind fields filter

Date range - from to

<https://satwinds.windenergy.dtu.dk/>

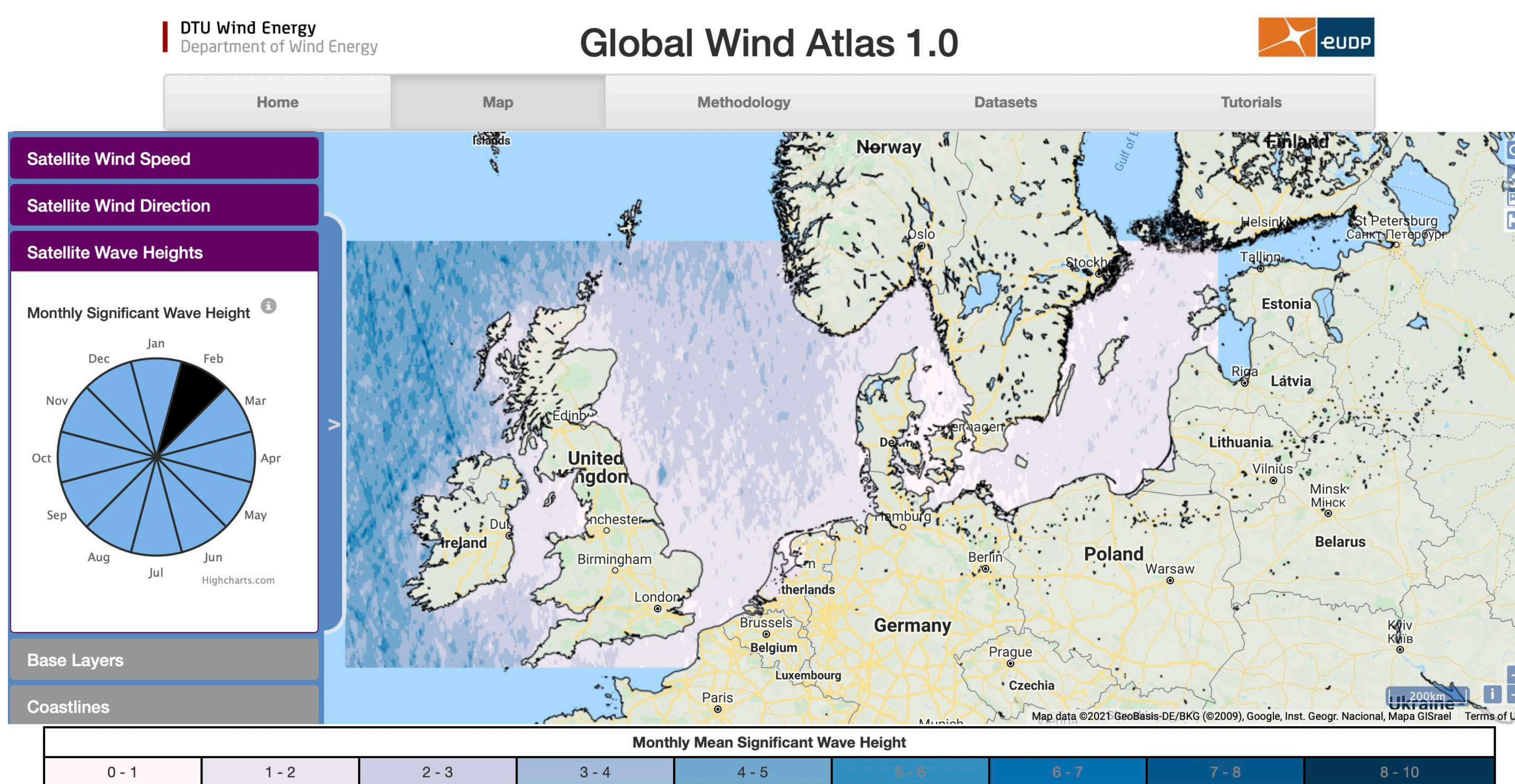
Existing DTU services: wind resources

- <http://science.globalwindatlas.info/science.html>



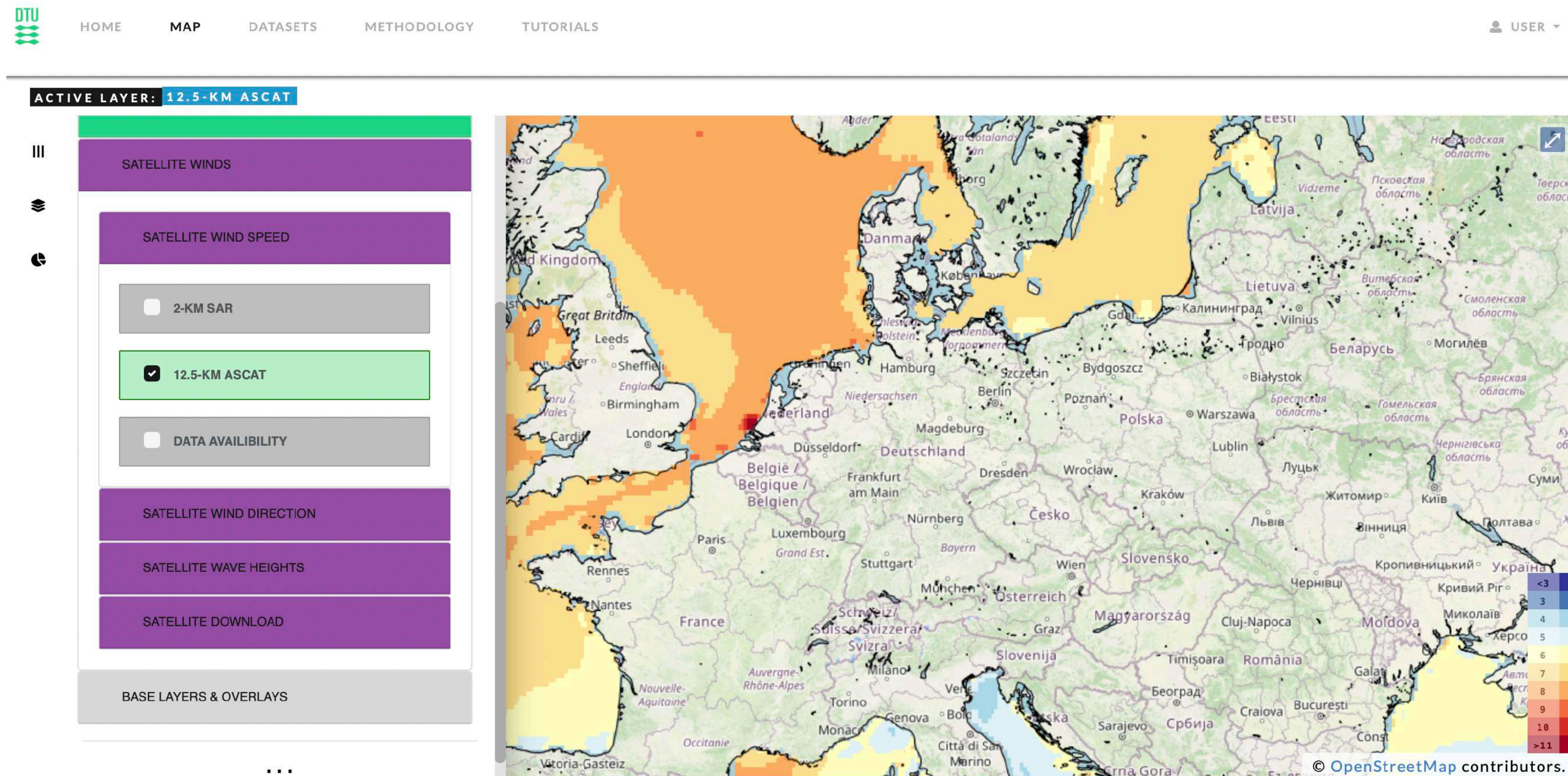
Demo DTU services: wave “climate”

- <http://science.globalwindatlas.info/science.html>



Merging services

- <https://science-dev.globalwindatlas.info/#/map>

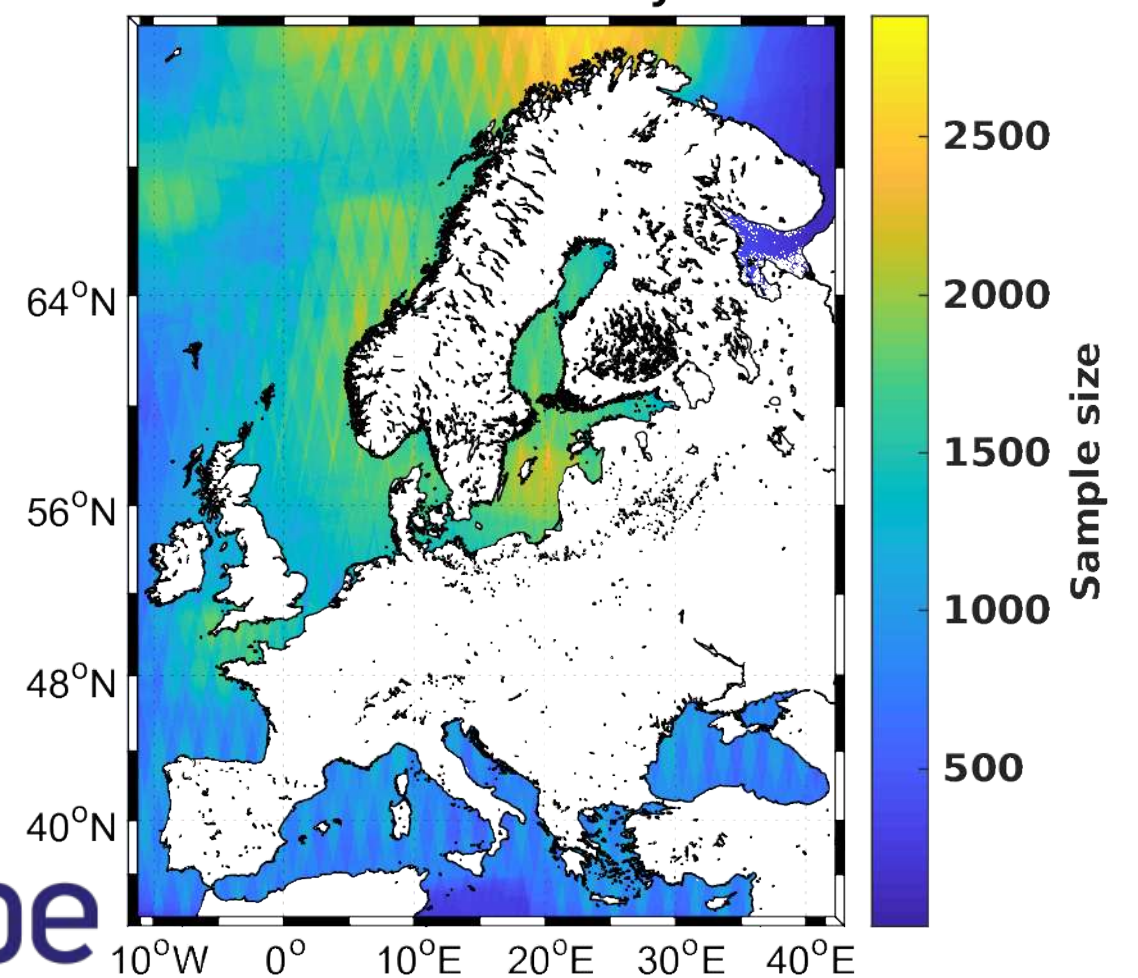
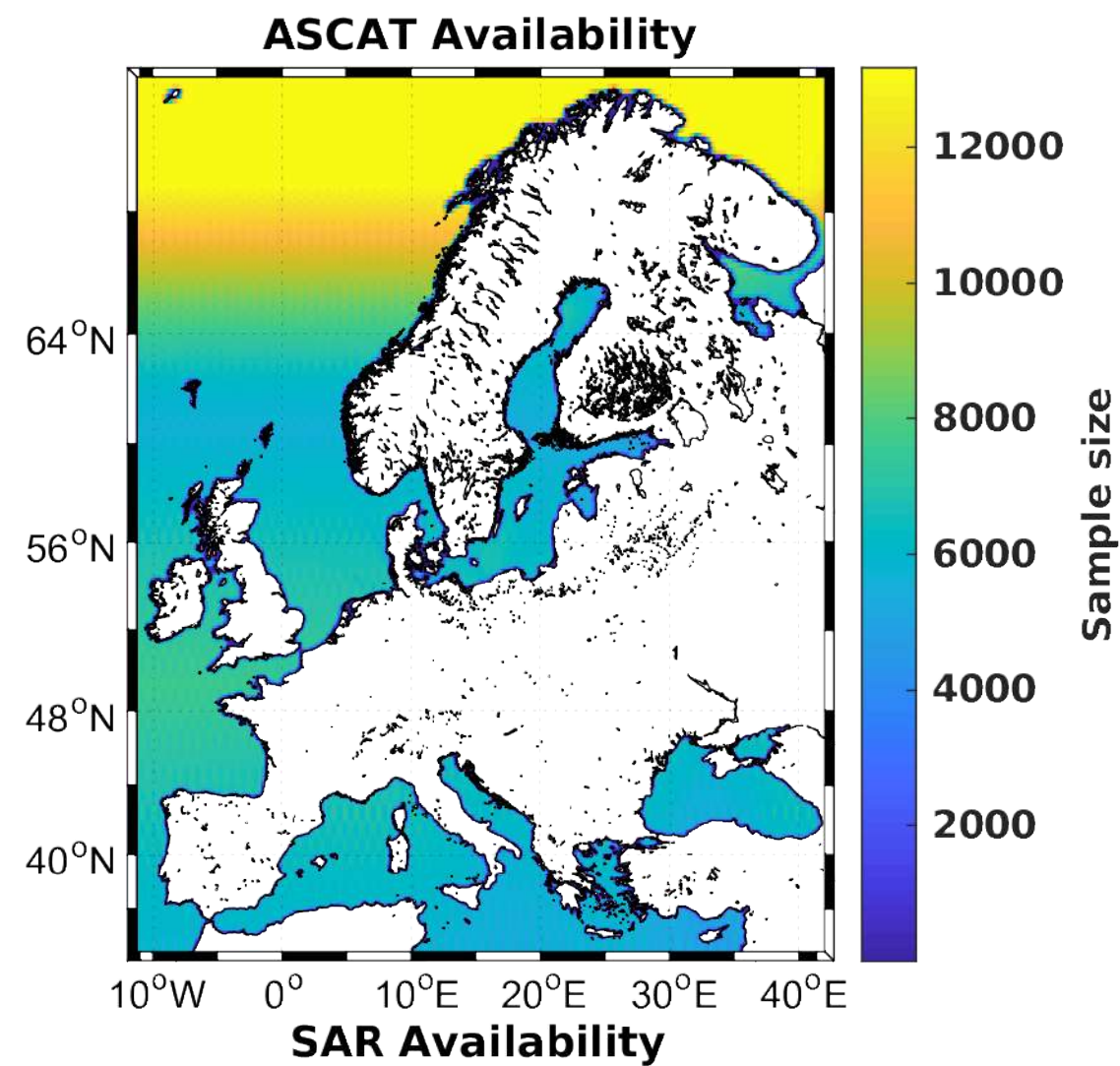


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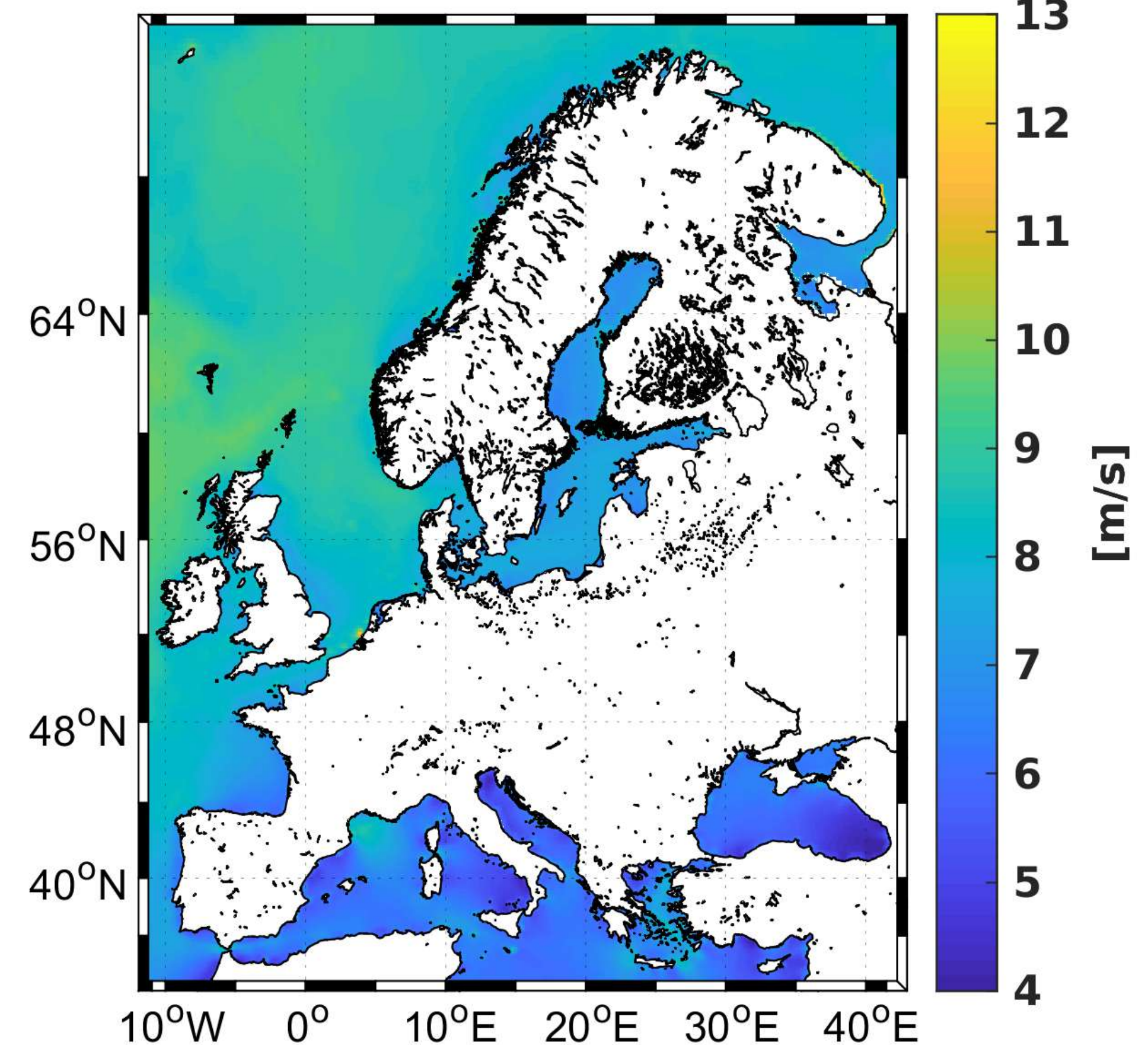
Merging Offshore Winds

- A new, unique and unified wind product from existing EO wind data.

- Combine advantages from different sensors
 - long-term and global coverage
 - high spatial resolution near coast lines



Mean Wind 10m SAR & ASCAT



DTU



Thank you for your attention