TEM111 Use case:

Offshore wind design applications of reanalysis data for metocean modelling and analysis

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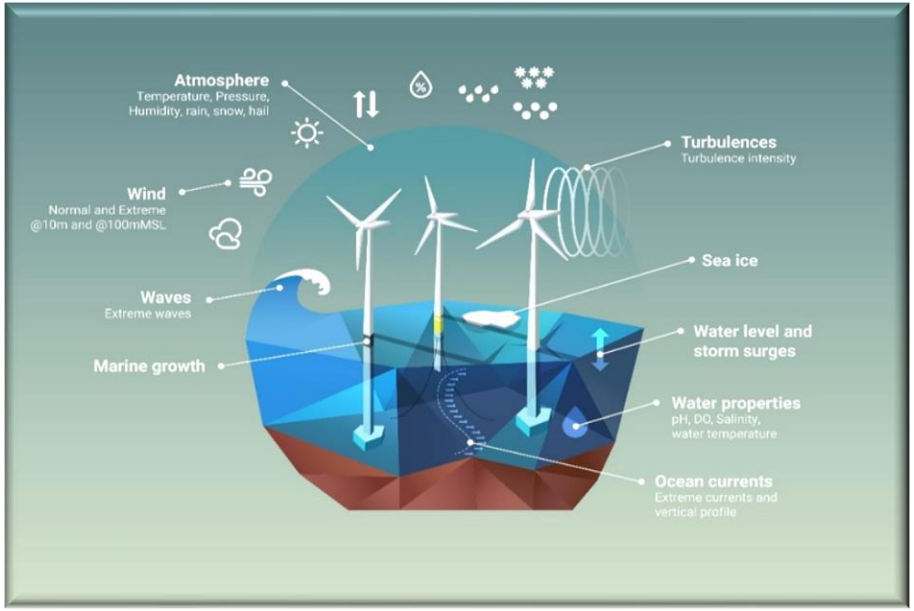
25 April 2024
www.metocean-on-demand.com

The Metocean landscape and reanalysis data



Mapping the design conditions for OWF and OSS based on calibrated and validated Hindcast time series

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CHALLENGE

Bring down the time and cost of clusters of offshore wind farms

Metocean data requirements

Accurate

Metocean Report
Assisted Report
Digital Service

Flexible

Reanalysis data, downscaling, validation, documentation

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https://www.metocean-on-demand.com/?coor=%5B12.704905%2C55.08295%5D

DHI Metocean Data Portal

ABOUT PRICING DATASETS FEATURES CONTACT

Go to Old Version | Get Started | Make a new point

Layers

- Point Names
- Geographical Grid
- Model Grid
  - Waves
  - Ocean
  - Atmosphere
- Shape Files
- Dataset Polygons
- Surface Maps

Europe_AT_CREA6

Validation | Analytics | Reports

Name	Longitude [°E]	Latitude [°N]	
P1	12.704905	55.08295	Submit

Waves
(total, wind-sea and swell)

Ocean
(Water Level, Current, etc.)

Atmosphere
(Wind, pressure, etc.)

Model Data | Metadata | Start Date | End Date

Europe_AT_CREA6 | 1995-01-01 → 2019-09-01

- Europe_AT_CREA6
- Global_AT_ERA5
- Global_AT_CFSR

Price [EUR]: 0,-

Add to Cart

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Longitude [°E], Latitude [°N]: 13.6064, 54.1053

https://www.metocean-on-demand.com/metadata/waterdata-dataset-Europe_CREA6_V2

DHI Metocean D

Layers

Point Names

Geographical Grid

Model Grid

Waves

Ocean

Atmosphere

Shape Files

Dataset Polygons

Local Model Area

Local Model Points

In Situ Point

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Search datasets

26, Europe, Met. Parameters (incl. 10m wind), COSMO Reanalysis 6km (CREA6), DWD

Title: Europe, Met. Parameters (incl. 10m wind), COSMO Reanalysis 6km (CREA6), DWD

Acronym: Europe_AT_CREA6

IsLoginRequired: Yes

Description: The COSMO-Model is a nonhydrostatic limited-area atmospheric prediction model. The high-resolution reanalysis system COSMO-REA6 has been developed based on the NWP model COSMO. The regional reanalysis system for Continental Europe matches the domain of the CORDEX EURO-11 specifications, albeit at a higher spatial resolution, i.e., 0.055° (6 km). It comprises the assimilation of observational data using the existing nudging scheme of COSMO complemented by snow, SST and soil moisture analysis modules and uses ERA-Interim data as lateral boundary conditions. A sub-area covering northern Europe is made available here. For further info and validation please refer to the links below.

General Coverage Variables

Title	Europe, Atmosphere, COSMO Re-Analysis 6km (CREA6), -, DWD
Geographical Coverage	Europe
Category (Variables)	Atmosphere
Source Name (Type)	COSMO Reanalysis 6km (CREA6)
Publisher (Origin)	DWD

Submit

End Date

2019-09-01

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https://www.metocean-on-demand.com/?coor=%5B12.988571%2C55.11004%5D

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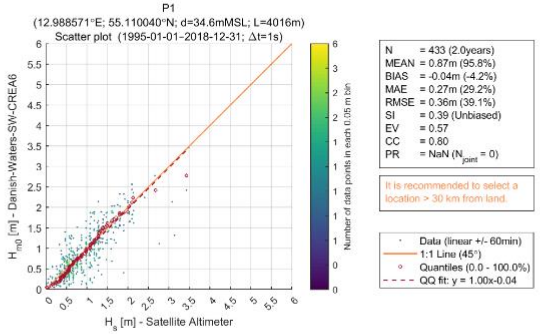

Validation | Analytics | Reports

Name	Longitude [°E]	Latitude [°N]	
P1	12.988571	55.11004	Submit

Waves
(total, wind-sea and swell)

Model Data | Metadata | Start Date | End Date

Danish_Waters_SW_CREA6 | 1995-01-01 → 2018-12-31

Get local model data from MIKE MS

Water depth [mMSL]	Grid cell size [m]	Price [EUR]
34.6	4015.6	0,-

Add to Cart

Ocean
(Water Level, Current, etc.)

Atmosphere
(Wind, pressure, etc.)

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Longitude [°E], Latitude [°N]: 13.8648, 54.778

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https://www.metocean-on-demand.com/?coor=%5B12.988571%2C55.11004%5D&SW=waterda...

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- Dataset Polygons
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- Local Model Points
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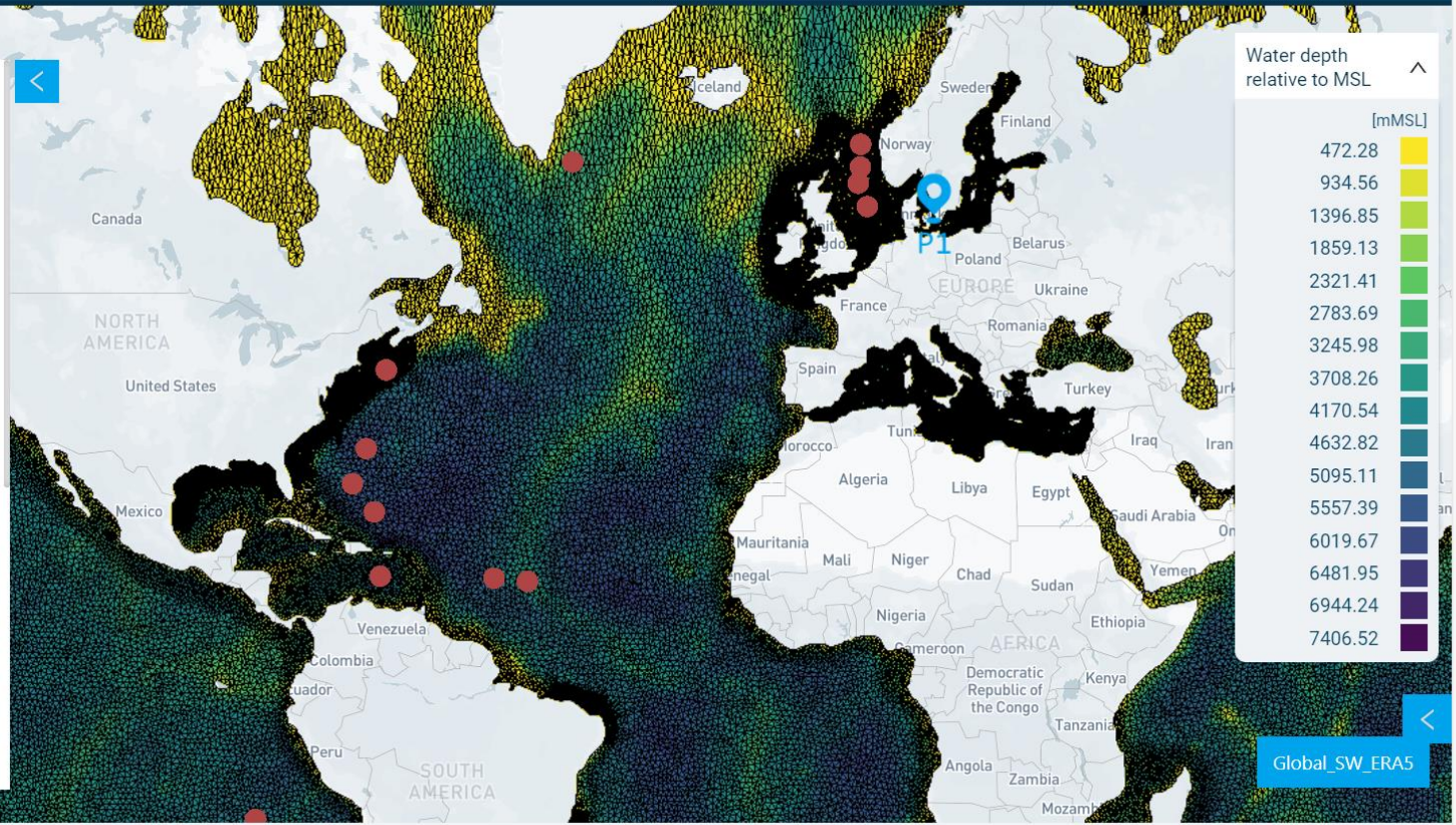

Water depth relative to MSL

[mMSL]

472.28
934.56
1396.85
1859.13
2321.41
2783.69
3245.98
3708.26
4170.54
4632.82
5095.11
5557.39
6019.67
6481.95
6944.24
7406.52

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Longitude [°E], Latitude [°N]: 85.1366, -15.5678

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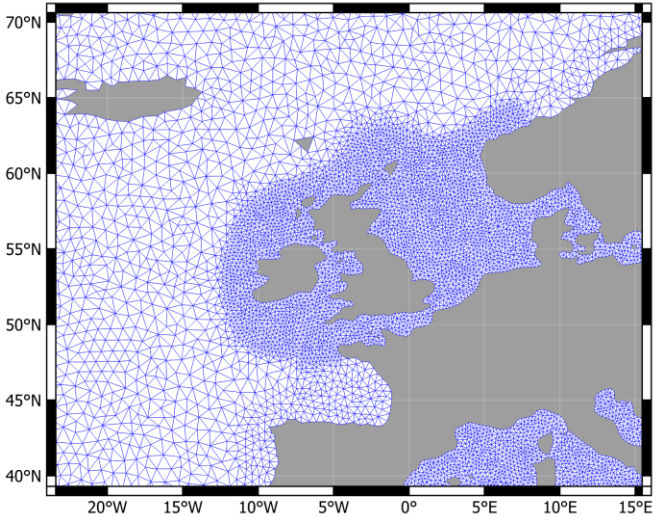
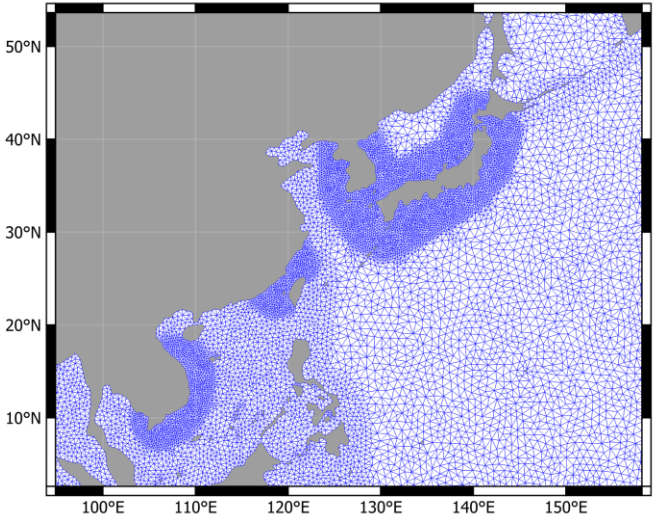
Global Wave Model (2024 update) – modified ERA5 based





- Improved performance for swell waves and extremes
- Relativily high spatial resolution (down to 15km)
- High 2D wave spectra resolution (36*36)

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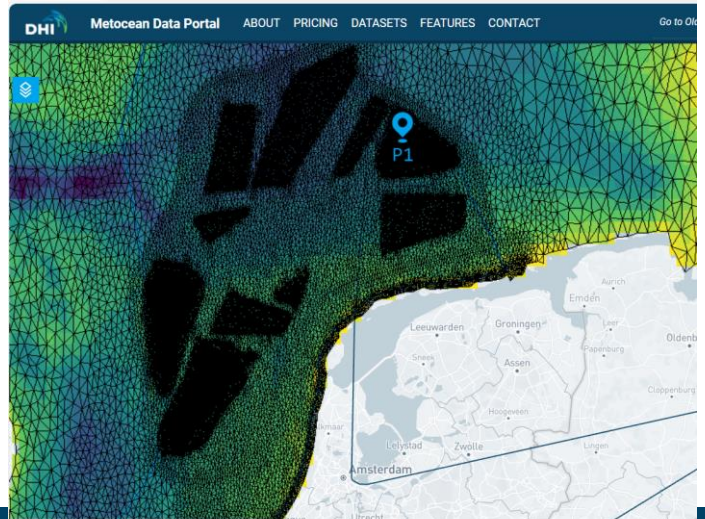
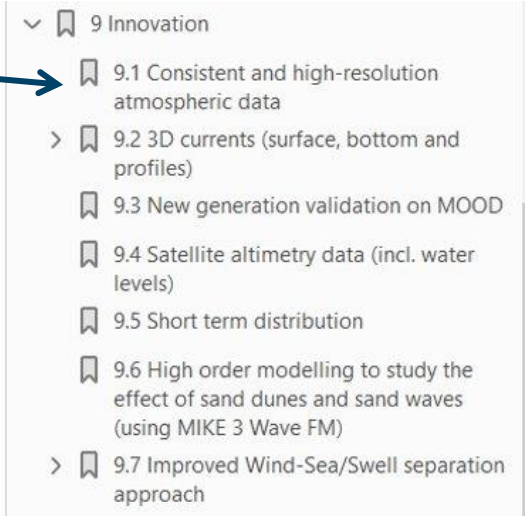
Wind Resource Assessment, Metocean Desk Study and digital database, for IJmuiden Ver, Nederwiek & Doordewind

- Ongoing project with the Dutch RVO
- Free public available data through www.metocean-on-demand.com
- Innovation items

1.5 km WRF





Reanalysis based fast downscaling: MIKE Metocean Simulator

A cloud-based wave modelling tool to quickly assess wave conditions in both nearshore and offshore environments.

Web interface provide assisted meshing and auto extraction of boundary conditions

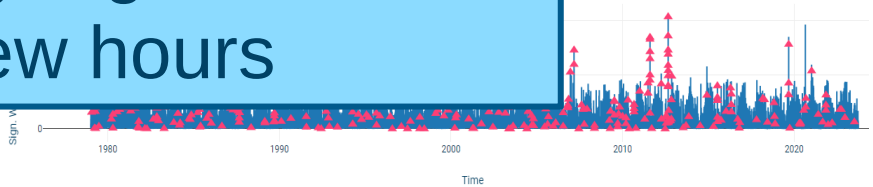
Metocean Simulator solving in the MIKE reconstructs a long term timeseries.

Follows the scientific basis defined by Camus et al (2013).

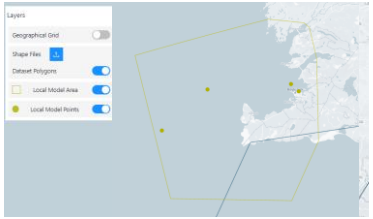
Publishes results to DHI MetOcean On Demand (MOOD)

40+ years of very high resolution data in few hours

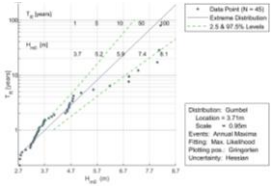
Assisted mesh from Web interface



Publised to MOOD



Analysis on MOOD



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Questions?

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