seanergy
15>17 JUIN 2022
LE HAVRE - NORMANDY, FRANCE

Poster n°7

Resourcecode: A high-resolution wave parameter dataset for the European Shelf and analysis toolbox

RESOURCECODE
MARINE DATA TOOLBOX

Ifremer EMEC THE EUROPEAN MARINE ENERGY CENTRE LTD CENTRALE NANTES THE UNIVERSITY of EDINBURGH OceanDataLab BLUEWISE MARINE INNOSEA An LOC Group company UCD DUBLIN

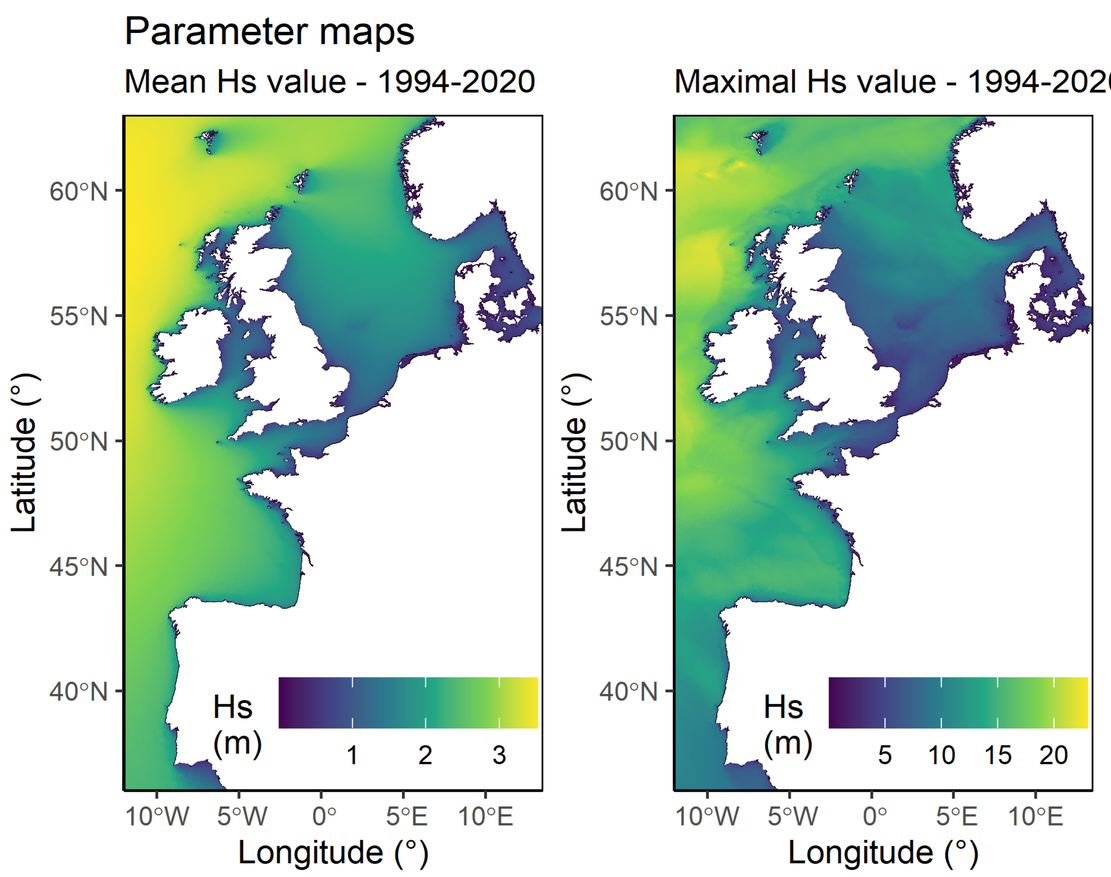
The **ResourceCODE** high resolution hindcast database was designed to be the reference dataset at the core of the *ResourceCODE Marine Data Toolbox* which provides developers with a set of standard functions for resource assessment and operations planning. This database allows the technologies developers to conduct the necessary assessments to **reduce uncertainty** in expected environmental conditions, and **de-risk investment** in future technology design.

Database configuration

27-Year Wave Hindcast Database	- **1994 - 2020** - **European Shelf from Gibraltar to Faroe islands**
Bathymetry and sediment	- EMODnet2016 (200m) and HOMONIM (100m) - OpenStreetMap coastlines
Wind	- ERA-5 hindcast (0.25°) - Bias-corrected for extremes
Current	- IFREMER Tidal Atlas (from 250m to 2km) - FES2014 native mesh.
Model configuration	- WAVEWATCH-III v7.08; - 36 directional bins (10°) and 36 frequencies; - **37 parameters and frequency spectra at 330`000 nodes**; - **Directional spectra at 24`000 locations.**

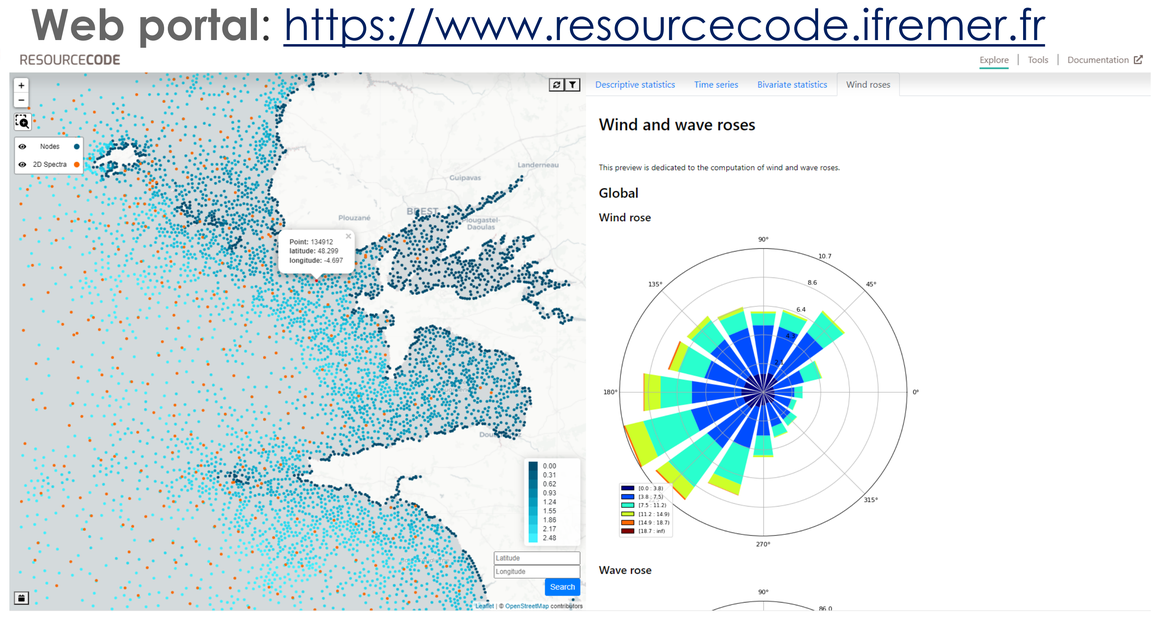
Python toolbox functionalities

Resource Assessment and environmental conditions	- Summary statistics; - **Scatter diagrams**; - Wind, wave or current roses
Marine Operations	- **Empirical weather windows** (Hs−Tp conditions) - Model based (only Hs)
Extreme values modelling	- Univariate (GPD/GEV) - Environmental contours.
Producible assessment	- PTO optimization; - Standard WEC included; - Easily extensible
Helpers	- Data access: nodes & spectral output grid, easy access to time series …) - Bathymetry, grain size… - Convert to/from U/V to Intensity/direction; - Compute parameters from 2D/1D spectrum;



Source: RESOURCECODE sea-state hindcast database

Web portal: https://www.resourcecode.ifremer.fr



References and links

• Accensi M., et al. (2021). ResourceCODE framework: A high-resolution wave parameter dataset for the European Shelf and analysis toolbox. Proceedings of the Fourteenth European Wave and Tidal Energy Conference.

• Web portal: https://www.resourcecode.ifremer.fr
• Toolbox: https://pypi.org/project/resourcecode
• **Contact: nicolas.raillard@ifremer.fr**