



## Production Centre

### IBI MFC



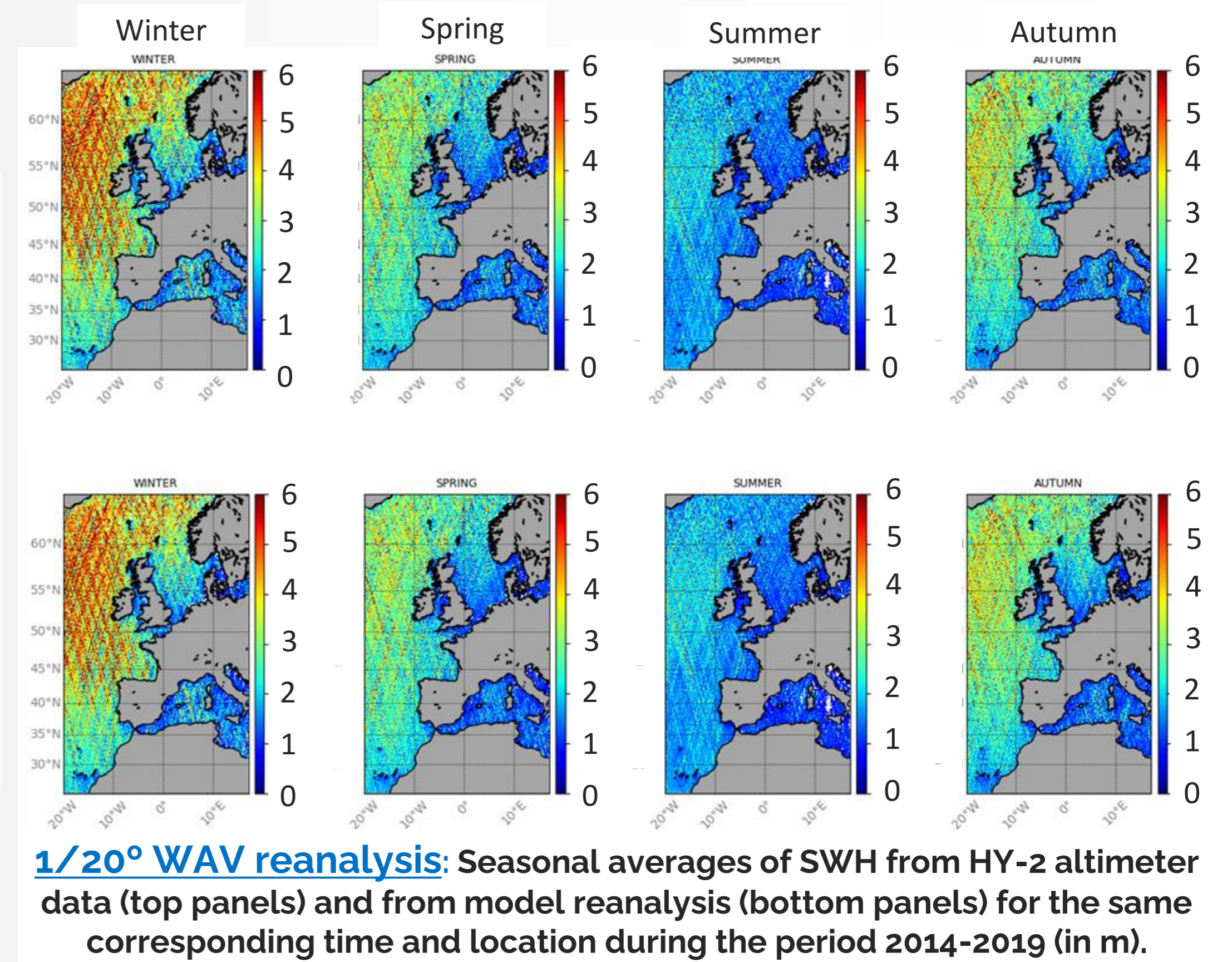
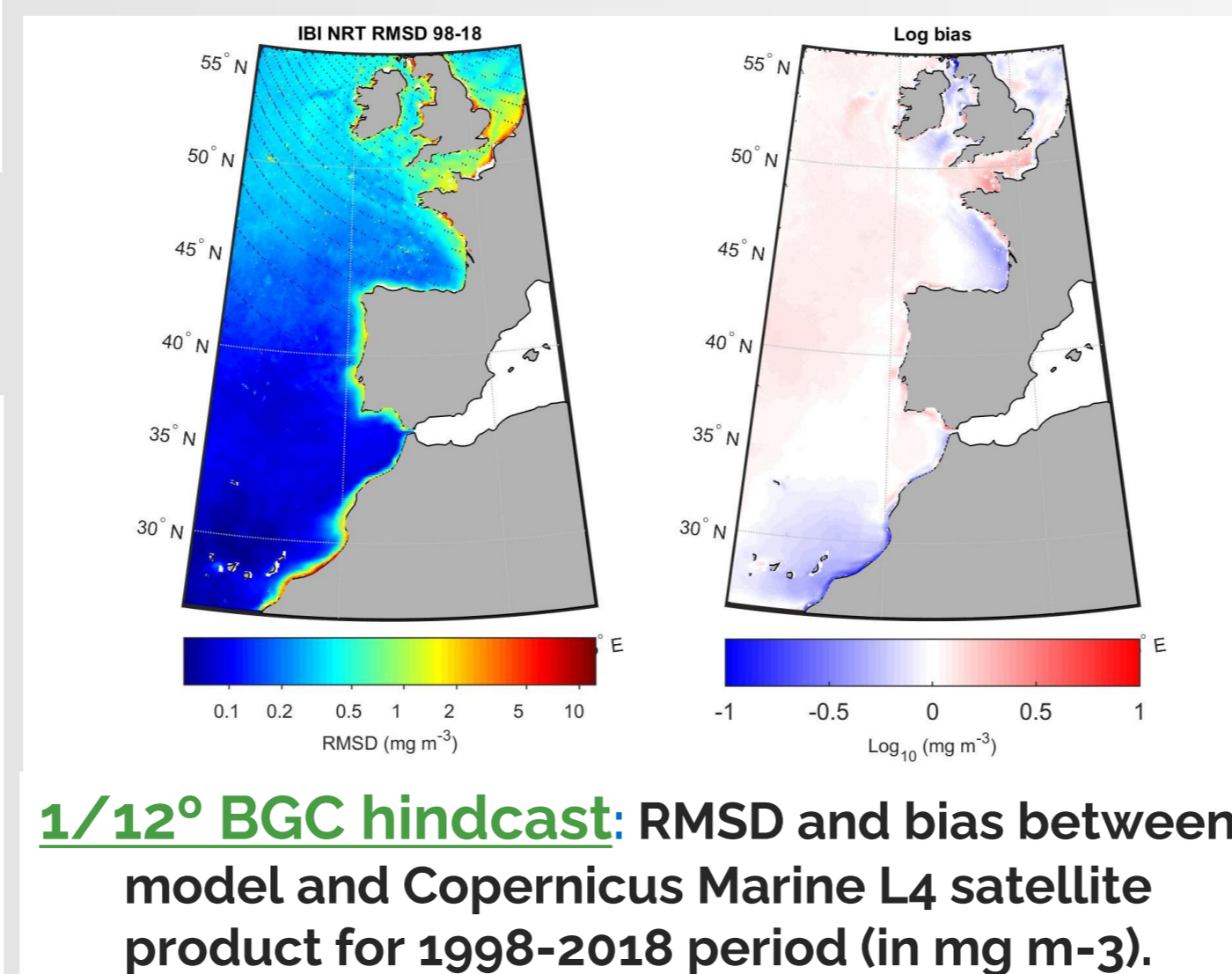
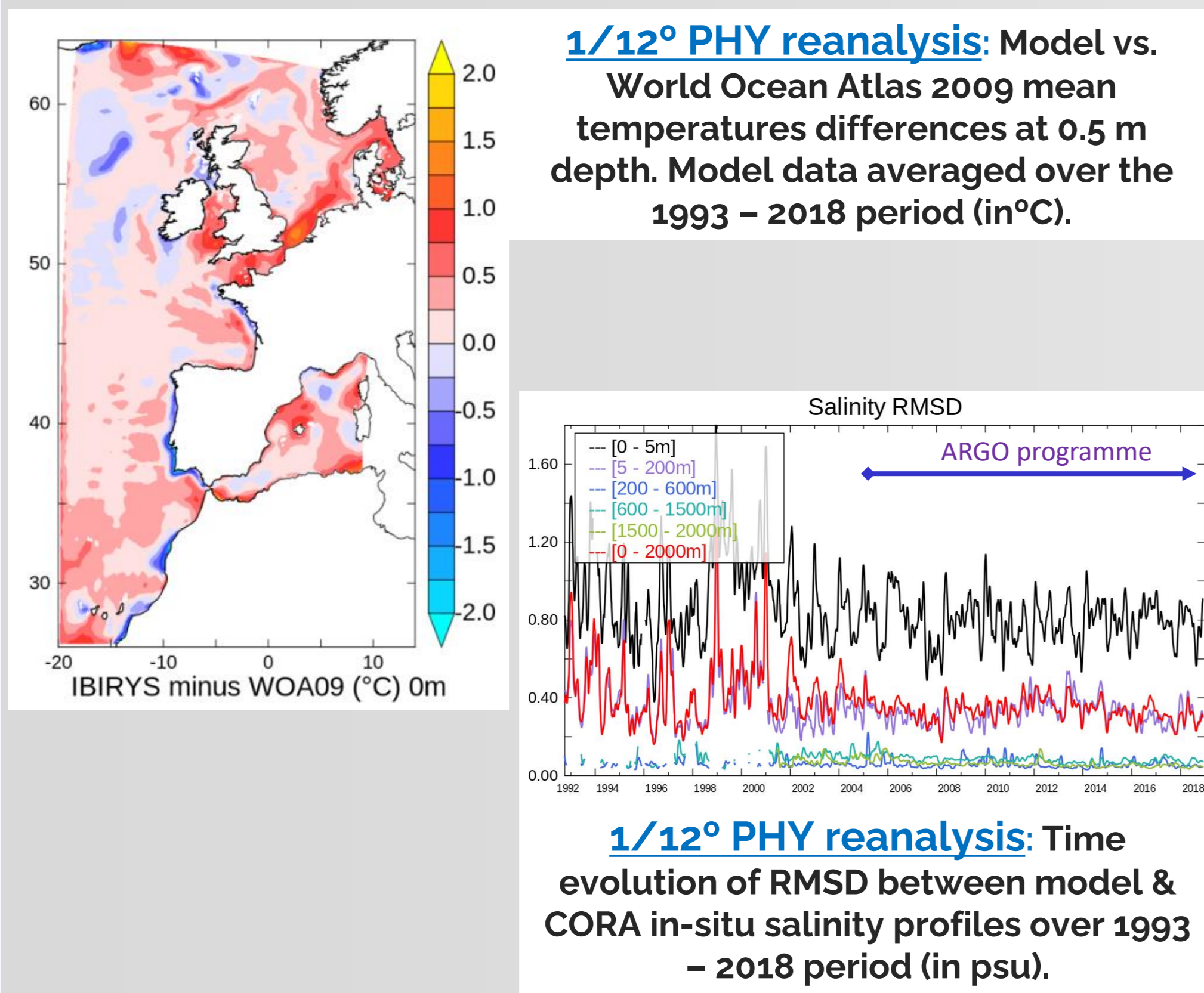
## Current and expected reanalyses and non-assimilative hindcasts products for the Iberia-Biscay-Ireland (IBI) region

### The production centre

- ✓ The **IBI Monitoring and Forecasting Centre** provides regional products for the Atlantic European façade.
- ✓ The catalogue includes short-term forecasts, analyses and **reanalyses/hindcasts** for the **blue (physics and waves)** and **green (biogeochemical)** ocean.
- ✓ **High-resolution models** & coupling between components are used.
- ✓ Observations are integrated through **Data Assimilation**.
- ✓ **Product Quality** is assessed through reliable and science-based procedures.

### Current ocean Physics & Waves reanalysis and Biogeochemistry hindcast

- ✓ A **1/12° 1993-2021 PHY reanalysis** performed with **NEMO3.6** model and **assimilation** of SST, SLA and T/S profiles data. It provides **hourly means** of SST, MLD, surface currents, barotropic velocities and SSH. **3D daily means** of T, S, zonal and meridional velocity. **2D daily mean** fields of SSH, MLD and sea bottom temperature; 1993-2016 **climatologies**.
- ✓ A **1/20° 1993-2021 WAV reanalysis** obtained with **MFWAM** model and SWH altimeter data **assimilation**. It delivers **hourly instantaneous fields** of wave Height, Period and Direction for total spectrum and fields of Wind Wave, Primary Swell Wave and Secondary Swell for partitioned wave spectra.
- ✓ A **1/12° 1993-2021 BGC non-assimilative hindcast** carried out with **PISCES3.6** model. It produces **3D daily mean** fields of chlorophyll, oxygen, iron, nitrate, ammonium, phosphate, silicate, net primary production, phytoplankton carbon, dissolved inorganic carbon and pH; and **2D daily means** of euphotic zone depth and surface partial pressure of carbon dioxide; 1993-2016 **climatologies**.



### Evolutions of multi-year products planned by the end of 2024

The main IBI MFC goal at the end of 2024 is to enhance the **IBI products homogeneity**, to be achieved by:

- ✓ Delivering all IBI products (NRT forecasts and MY reanalyses/hindcast) in a **common single grid @ 1/36° (~3km)**.
- ✓ Increasing significantly the resolution in the **PHY reanalysis (x3)**, **BGC hindcast (x3)**, and **WAV reanalysis (x2)**.
- ✓ Generating **1/36° Interim** products based on new MY systems to extend timeseries to almost the present time.

**New 1/36° WAV reanalysis**

*Launch in November 2023*

- Pre-qualification performed for the **2018-2021 period**.
- Qualified variables: significant wave height, mean wave period, mean wave direction, **maximum wave height** (new delivered variable, based on Janssen's parametrization)
- Updated QUID with validation of full timeseries available in Q1/2024.

SWH Metric	2018	2019	2020	2021
BIAS (m)	-0.07	-0.06	-0.04	-0.04
RMSD (m)	0.24	0.25	0.26	0.23
SI (%)	43%	41%	43%	41%
Corr (-)	0.88	0.89	0.90	0.89

**New 1/36° PHY reanalysis**

- ✓ Horizontal resolution of 1/36° and 50 vertical levels
- ✓ Updated ocean model based on NEMO3.6
- ✓ Open boundaries forced by global reanalysis GLORYS12
- ✓ Data assimilation: One analysis per day, updated Mean Dynamics Topography and variability modes

**New 1/36° BGC hindcast**

- ✓ Horizontal resolution of 1/36° and 50 vertical levels
- ✓ Updated ocean model based on PISCES
- ✓ Online coupling with physical model
- ✓ Open boundaries forced by global forecast model BIOMER4V2R1

### Consortium partners

