Marine Ecosystem Analysis and Prediction (MEAP) Task Team

Co-chairs: Stefano Ciavatta (MOi, FR), Marjorie Friedrichs (VIMS, USA)

Patron: Paul Di Giacomo (NOAA, USA)

Agenda

A new series of monthly meetings!

- 10 minutes intro (MEAP-TT co-chairs)
- 20-30 minutes science talk

  David Ford, UK Met Office, on:

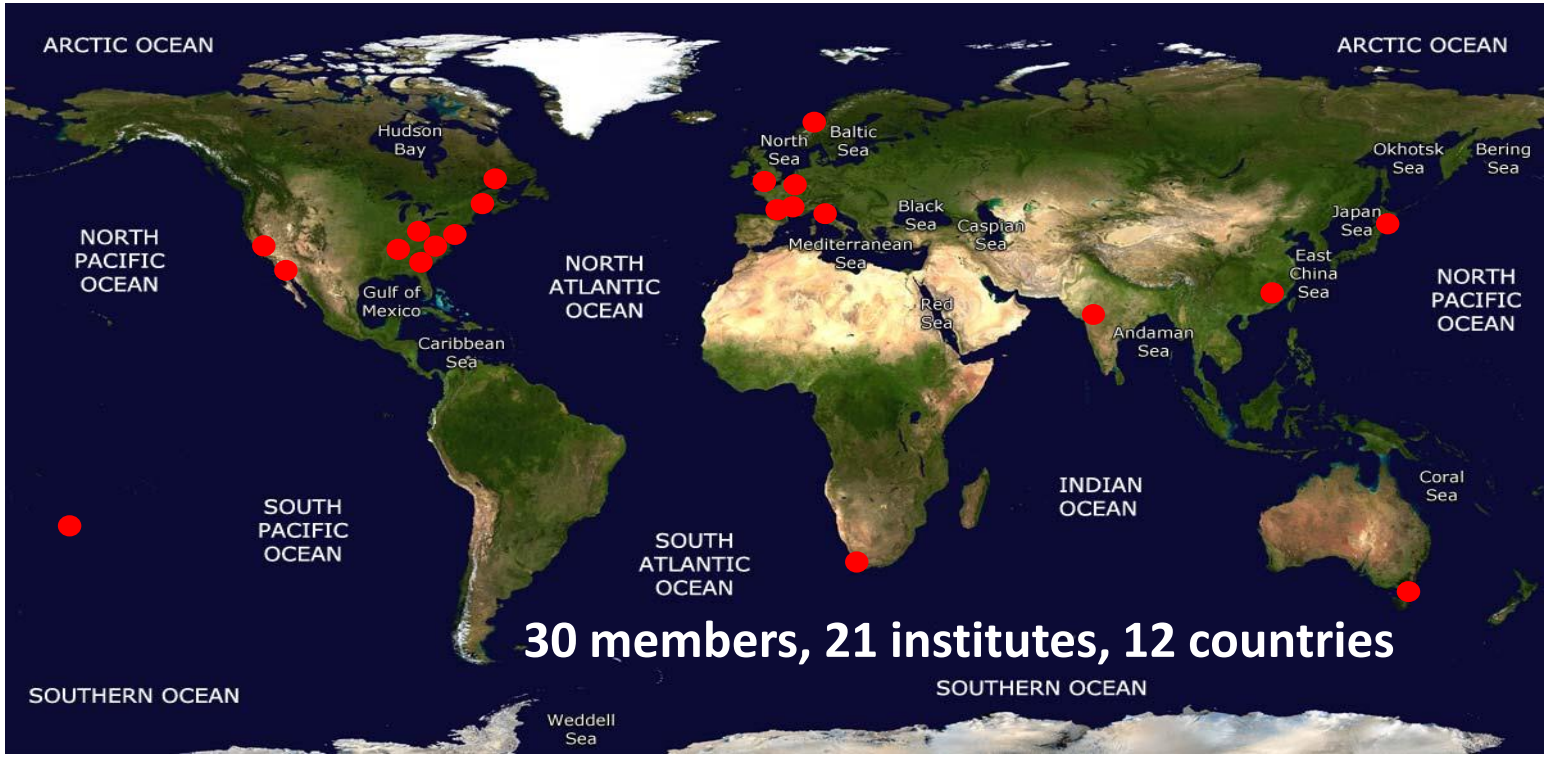
  “A solution for autonomous, adaptive monitoring of coastal ocean ecosystems: integrating ocean robots and operational forecasts”
- 20-30 minutes Q&A and discussion
- 0-10 minutes any other business

The Marine Ecosystem Analysis and Prediction Task-Team

OceanPredict
Advancing the science of ocean prediction

Mission: Advancing the science and tools for integration of biogeochemical and ecosystem models into operational systems.

"Operational":
- Hindcasts/reanalyses
- Short-term & seasonal forecasts
- Climate projections
- Scenarios



Applications

1) Carbon cycle research, carbon accounting
- Quantification of carbon fluxes
- Sensitivity of carbon fluxes to climate forcing
- National carbon accounting

2) Marine ecosystems health and productivity
- Fisheries management
- Conservation of endangered species
- Design of MPAs
- Marine health indicators (eutrophicat., acidificat., deoxygenat.)

Fennel et al., 2019, https://doi.org/10.3389/fmars.2019.00089

Recent MEAP-TT activities

- **Networking, sharing, discussions, contributions**

  - Set-up a Microsoft Team Group
  - Channels for sharing presentations, MEAP papers, other relevant papers and documents
  - Chats on news, scientific challenges, job opportunities

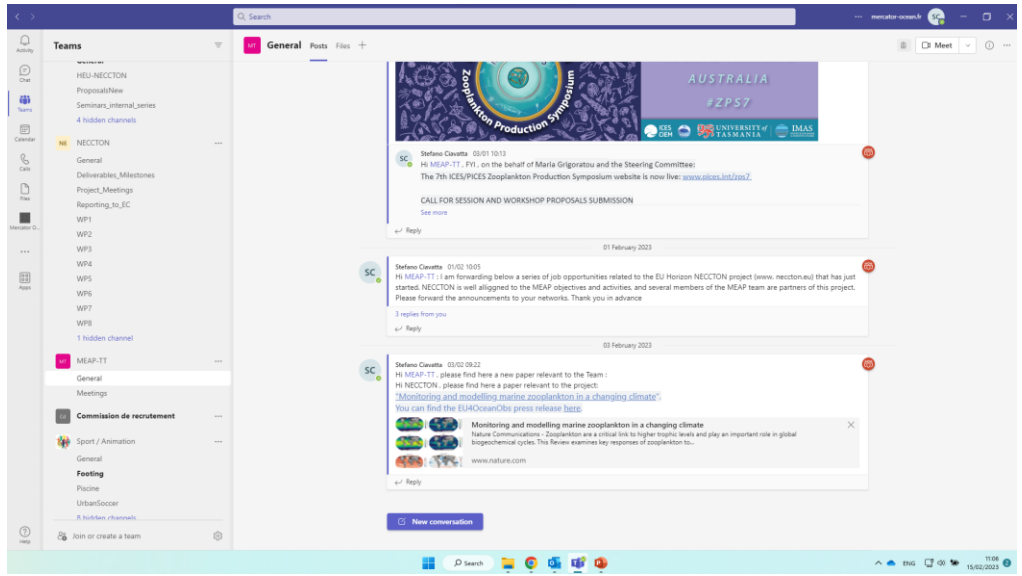
  - Monthly scientific meetings (1st Wednesday of the month 14 UTC) – to be launched starting March

  - Active MEAP collaborations in projects (e.g., SEAMLESS, NECCTON)

  - Active collaborations in dissemination activities (e.g. ETOOFS manual, IOCCP Annual meeting)

  - Contribution to UN Decade initiatives (e.g. ForeSea SC, SynObs SC, Marine Life 2030, GOOS co-design)

  - Contribution to Ocean Prediction DCC SC



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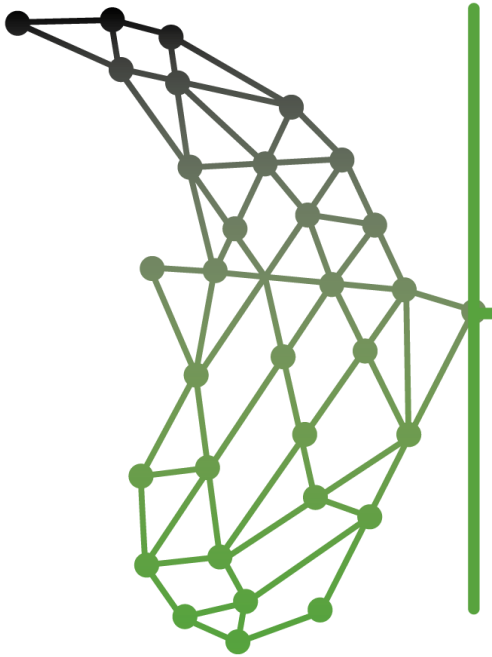


NECCTON

NEW COPERNICUS CAPABILITY FOR TROPHIC OCEAN NETWORKS

This project has received funding from Horizon Europe RIA under Grant Number 101081273

Key-facts

- Programme: EC's Horizon Europe
- Duration: 4 years project (Jan 2023-Dec 2026)
- Partners: 23 (21 beneficiaries, 2 UK associates)
- Budget: 10M Eur (8.5 M from EU; 1.5 M UK)
- PI: S Ciavatta (MOi); PM: J Heard (PML)
- Project Officer: Gisèle Van Bunnen (HADEA)

This project has received funding from Horizon Europe RIA under Grant Number 101081273

Vision and overall objective

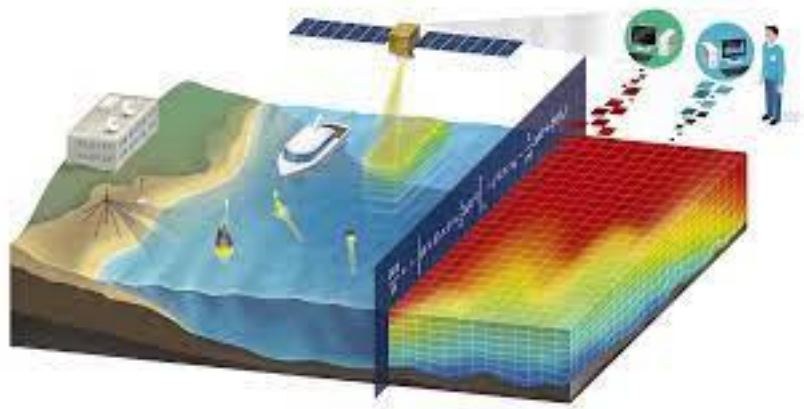
Vision: advancing ocean biodiversity conservation, supporting food-security and informing European policies through the next generation of marine ecosystem prediction systems

POLICIES & OCEAN GOVERNANCE & MITIGATION

Marine Conservation & Biodiversity

MARINE FOOD

Overall objective: to enable CMEMS to deliver products that inform marine biodiversity conservation and food resources management, by fusing innovative ocean ecosystem models and new data.



CMEMS **BEFORE** NECCTON

CMEMS **AFTER** NECCTON
(new and improved products)

NECCTON
NEW COPERNICUS CAPABILITY FOR TROPHIC OCEAN NETWORKS

MARINE POLLUTION

CLIMATE CHANGE PROJECTIONS

HIGHER TROPHIC LEVEL

POP

Hg

BIOGEOCHEMISTRY AND LOWER TROPHIC LEVEL

BENTHIC HABITAT

BIOGEOCHEMISTRY AND LOWER TROPHIC LEVEL

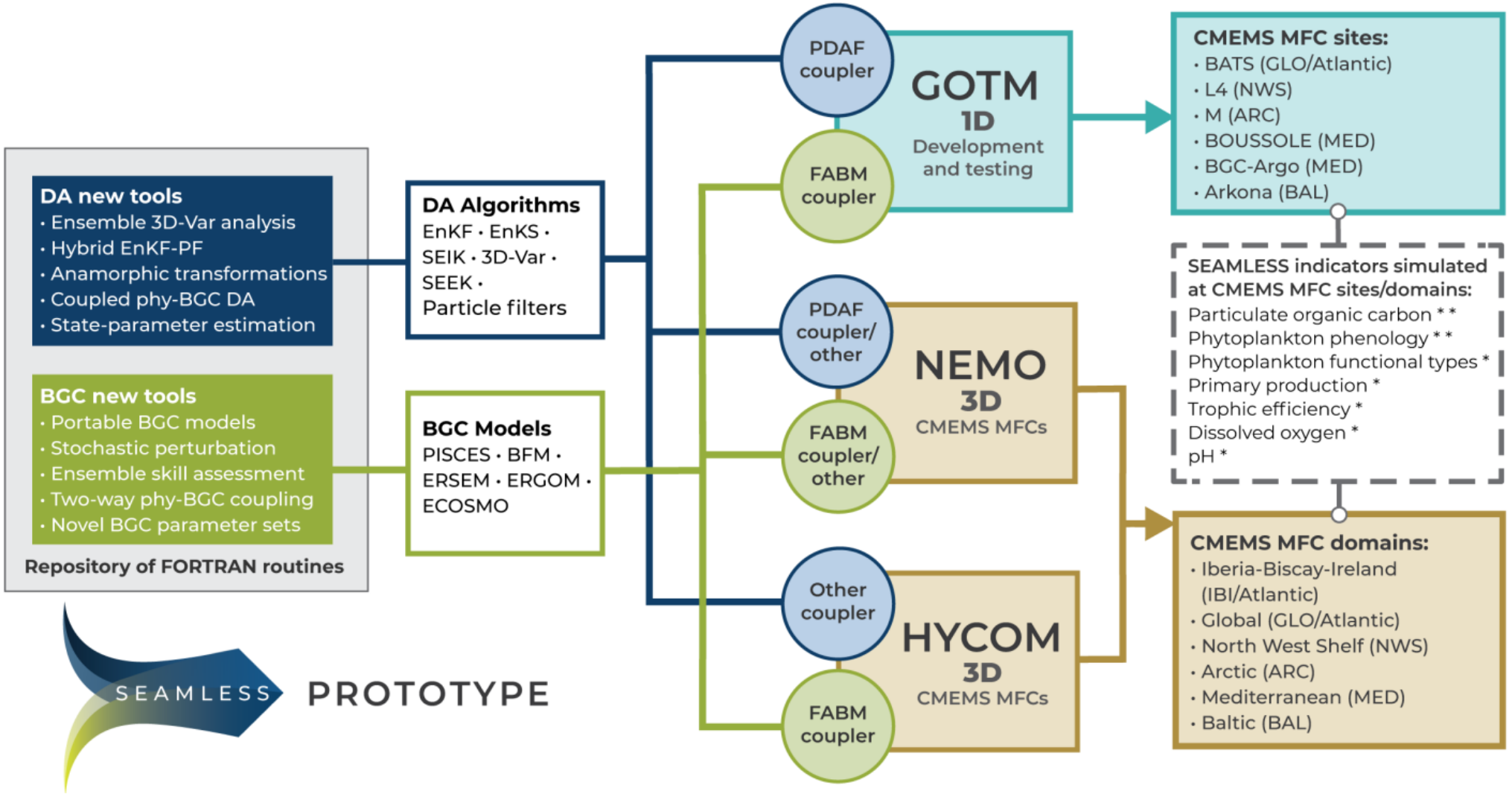
SERVICES BASED ON ECOSYSTEM DATA ASSIMILATION: ESSENTIAL SCIENCE AND SOLUTIONS (SEAMLESS)

Partners

Advisory board

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101004032.

SEAMLESS Prototype



Scientific/network/impact highlights of MEAP members

OceanPredict
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- **Scientific results and dissemination (joint papers and reports):**

  - Primer article "Ocean biogeochemical modelling" in Nature Reviews Methods Primers by Fennel et al., https://www.nature.com/articles/s43586-022-00154-2

  - Mignot *et al.* Decrease in air-sea CO_2 fluxes caused by persistent marine heatwaves. *Nat Commun* **13**, 4300 (2022). https://doi.org/10.1038/s41467-022-31983-0

  - “Evaluation of biogeochemical models performance and recommendation on observing system design using an unsupervised machine learning algorithm, BGC-Argo floats and assessment metrics”, Mignot et al., Biogeosciences, in press, https://doi.org/10.5194/bg-2021-2

  - Observability of the target indicators in the 3D CMEMS MFC systems (D3.4), Brasseur et al., Deliverable report of project H2020 SEAMLESS (grant 101004032.). doi: 10.5281/zenodo.7584865

  - "A solution for autonomous, adaptive monitoring of coastal ocean ecosystems: Integrating ocean robots and operational forecasts" in Front. Mar. Sci. by Ford et al., https://doi.org/10.3389/fmars.2022.1067174