

European Pavilion

# Digital Ocean

Nice | France  
2 - 13 JUNE 2025

## BGC-Argo and Biodiversity

9th June 2025



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marine biodiversity



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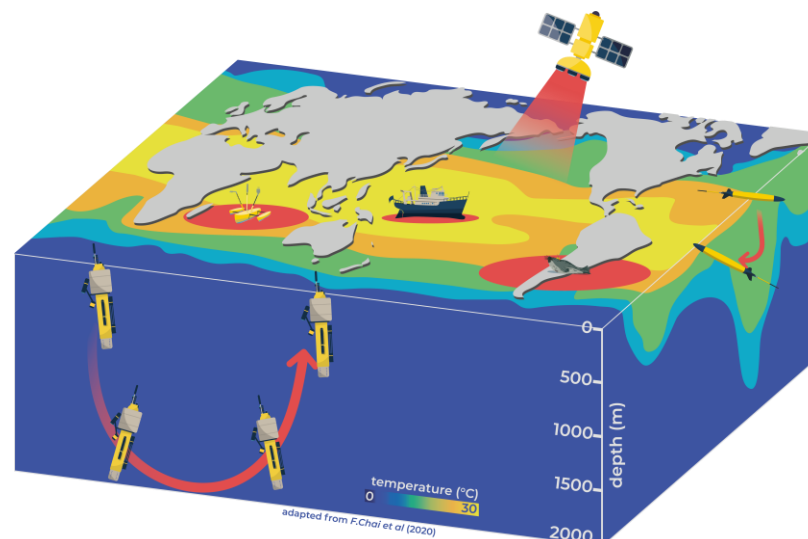
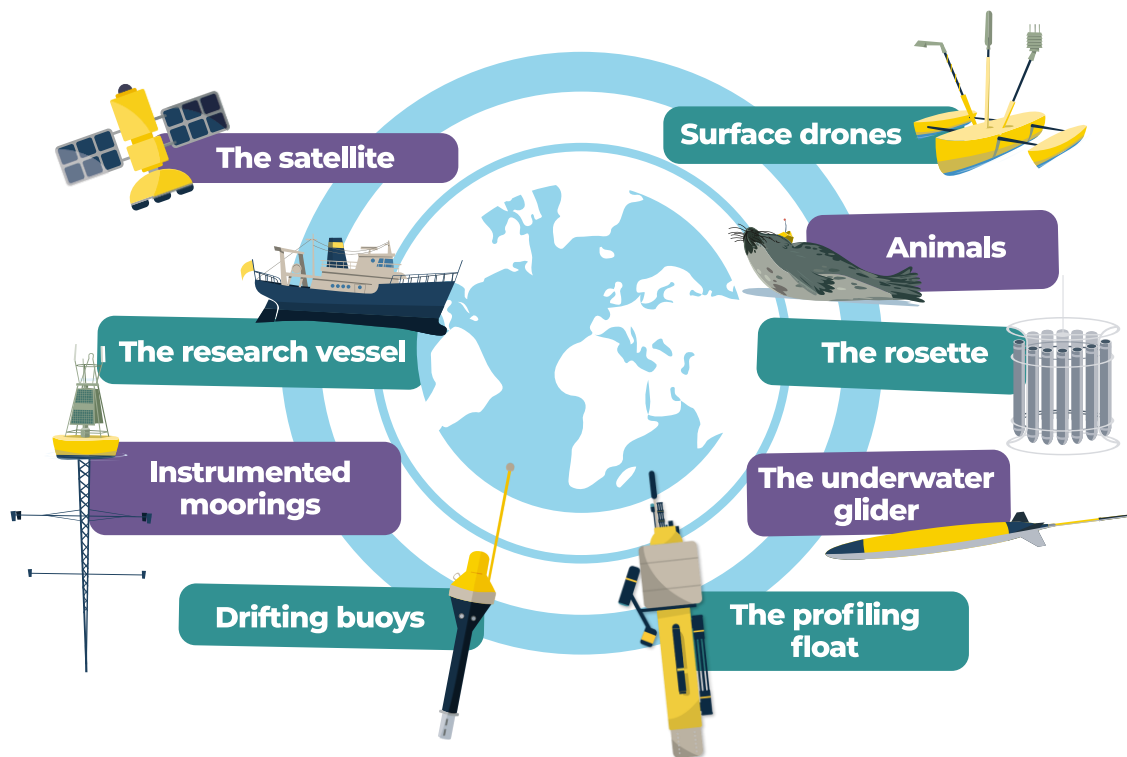
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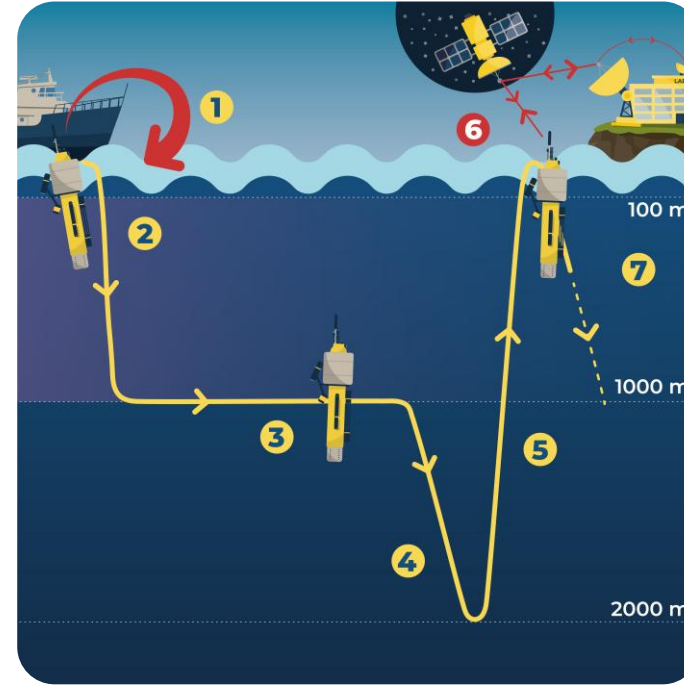


# Ocean Observation today

## multiple platforms and satellite

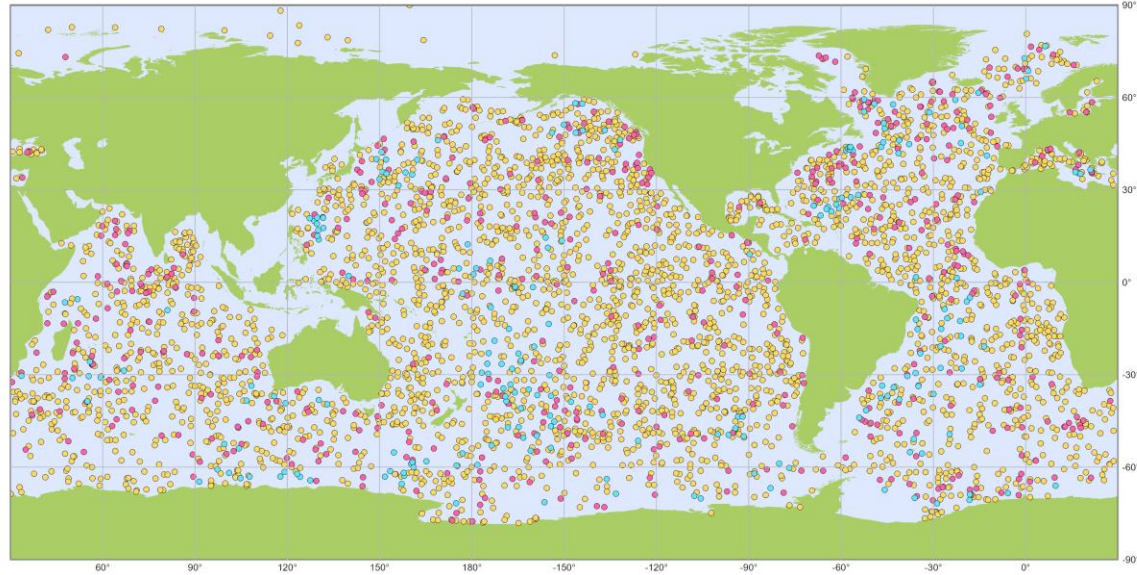


# What is an Argo float and does it cycle?





# From a float to a fleet : OneArgo and its three missions, including BGC-Argo



Argo



- Core (3358)
- Deep (219)
- BGC (557)

March 2025



Generated by ocean-ops.org, 2025-03-11  
Projection: Plate Carree (-150,0000)



## BGC-Argo mission

- O<sub>2</sub>
- NO<sub>3</sub>
- pH
- Particles bbp
- Chl<sub>a</sub>
- Downwelling irradiance

- Environmental variables driving ecosystem structure and bio-diversity
- Data are key for biogeochemical and ecosystems models
- Potential for 40,000 vertical profiles per year

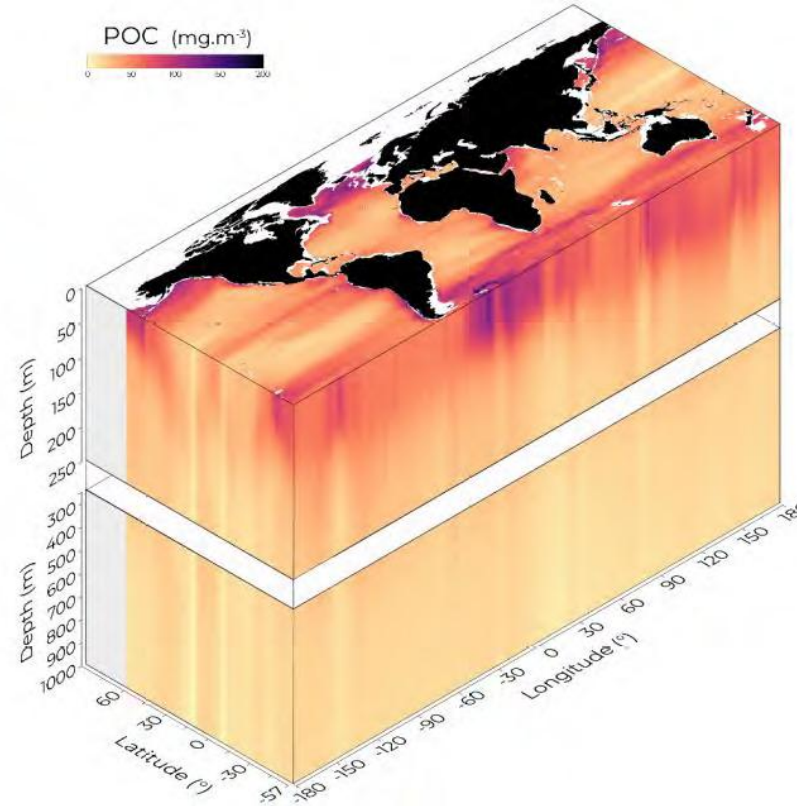
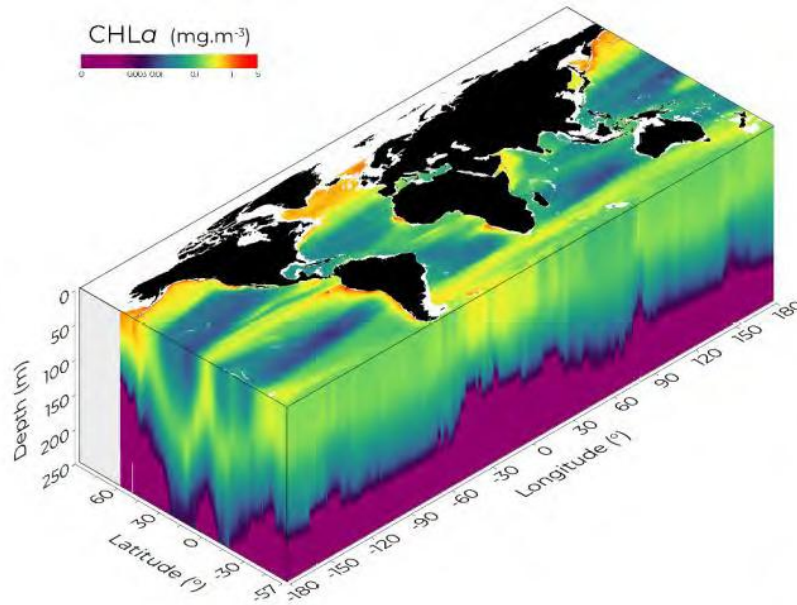


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# First 3D / 4D representation of key variables

*Satellite Ocean Color (surface) & BGC-Argo (vertical) with IA*



Copernicus  
Europe's eyes on Earth

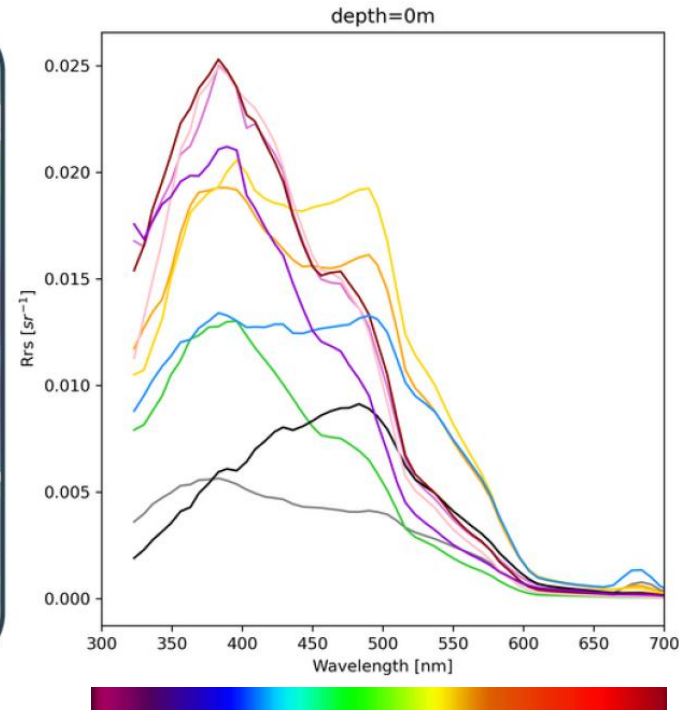
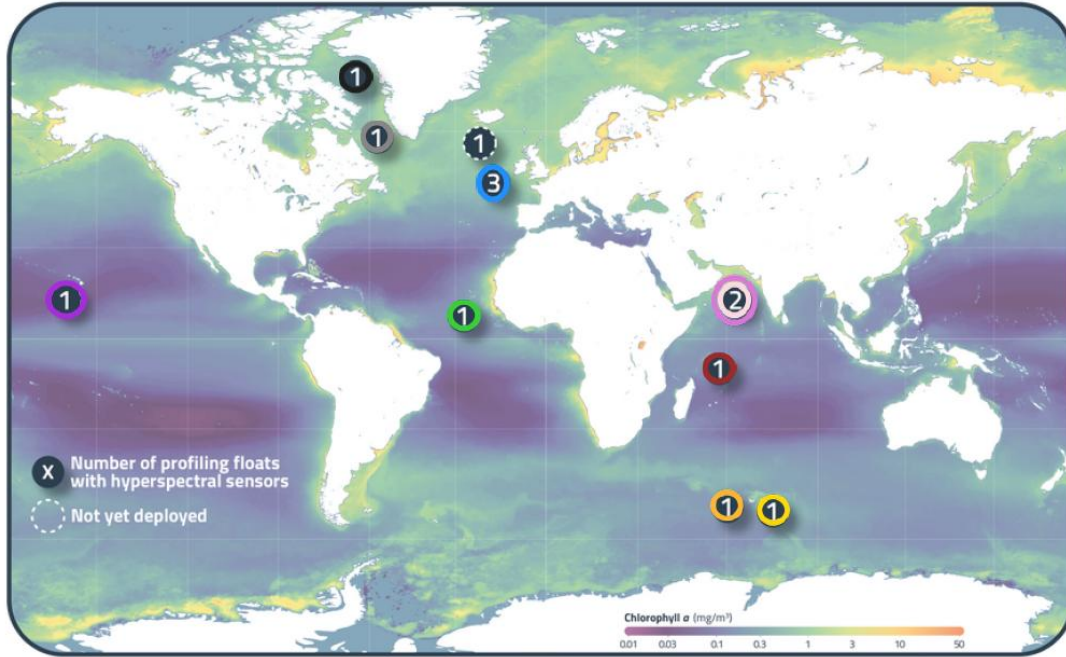
Copernicus  
Marine Service

- 3D/4D Light soon distributed
- In the pipe : phytoplankton functional type (through pigments)

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# First hyperspectral ocean color measurements from floats



- Link between satellite and in situ => upscaling
- Refining characterization of phytoplankton community composition
- ~20 floats equipped so far



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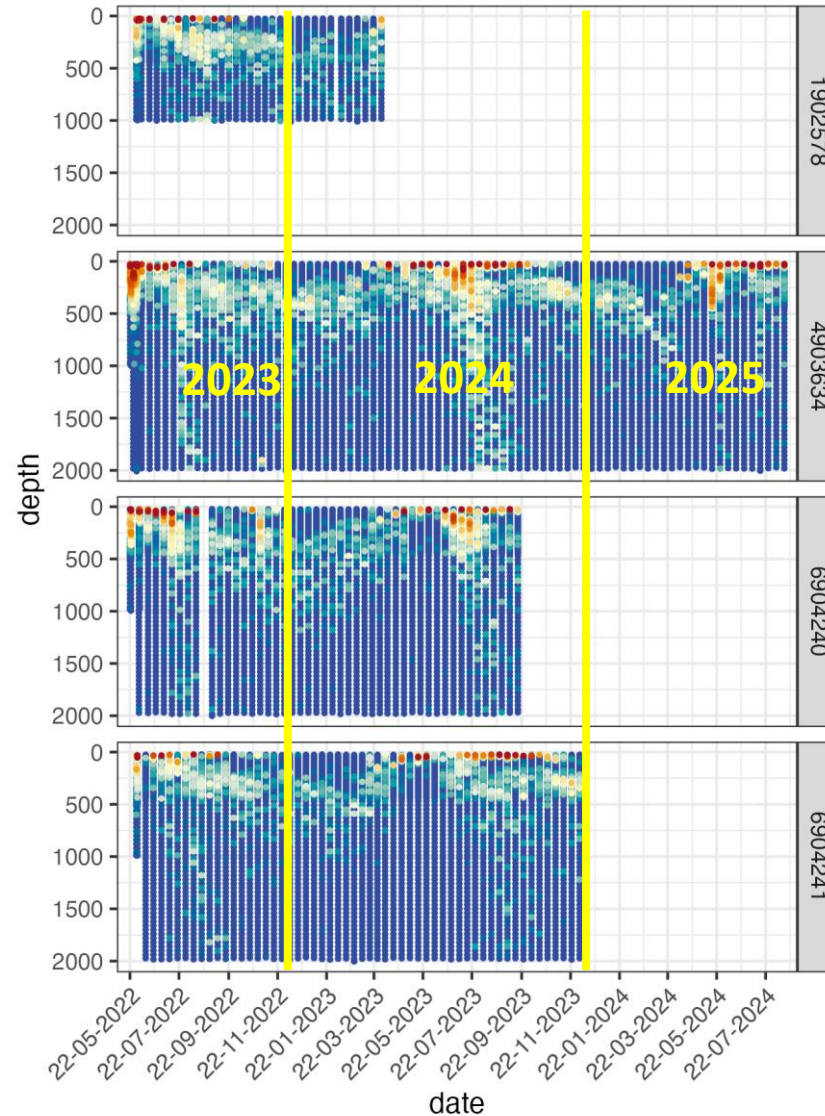




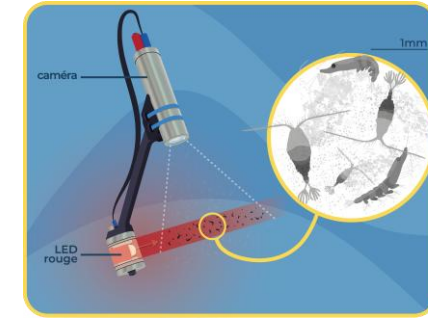
# First measurements of large particle and zooplankton



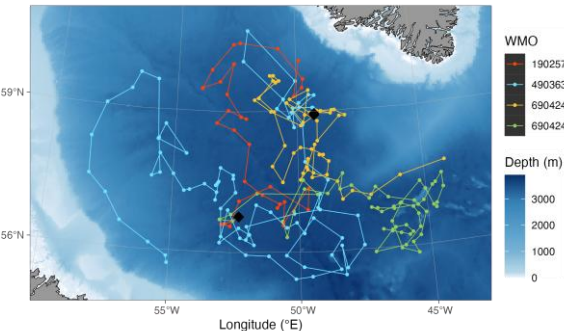
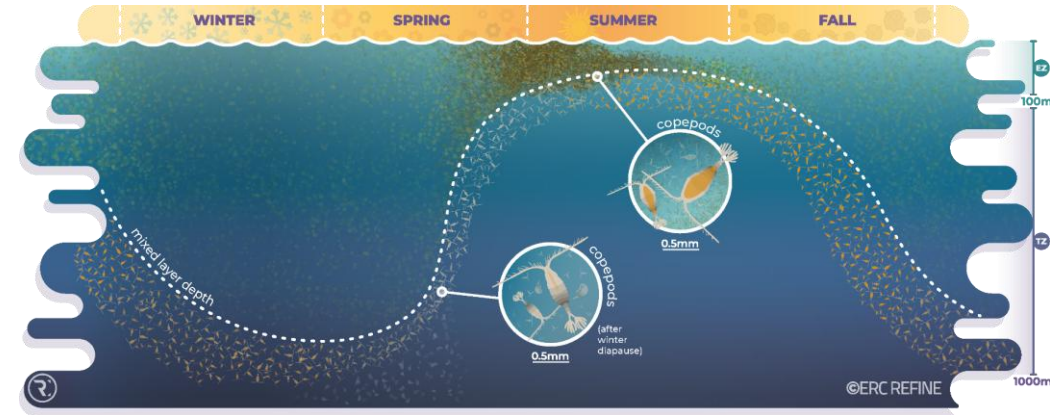
Seasonal migration of copepods (data)



UVP imager



Seasonal migration of copepods (schematic)



- ~30 floats equipped so far



## Take home messages

- BGC-Argo's expanding float network is now delivering global datasets on environmental variables key to marine biodiversity.
- New sensors (passive and active optics, passive and active acoustic, imaging) and the flexibility of the float platforms are making large-scale ecosystem and biodiversity monitoring possible.
- To ensure that these new R&D developments could fully contribute to the Argo system, sustained international support is essential for OneArgo and BGC-Argo to reach their long-term operational goals.

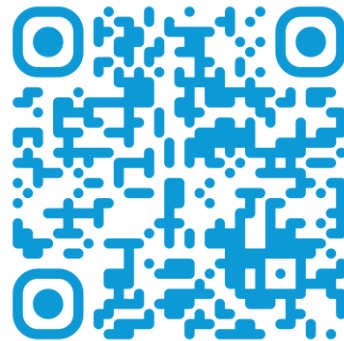


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## Advancing Ocean Monitoring and Knowledge for Societal Benefit: The Urgency to Expand Argo to OneArgo by 2030

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