

# Argo's future: a quest for sustainability

**Although the Argo program has become a necessity for ocean and climate monitoring, forecasting and study, it still lacks a sustainable funding system and a long-term commitment from governments.**

The Argo program has gone a long way since 1998, when a scientific team presented the idea of an international array of floats to take the pulse of our seas and our climate. “Argo has become the dominant data stream for many state estimates of the ocean and it plays a prominent role in forecasting systems,” notes Susan Wijffels, a senior scientist at the Woods Hole Oceanographic Institution and one of the co-founders of the Argo project. Today, the program has an ambitious new vision called OneArgo as part of the United Nations Decade of Ocean Science for Sustainable Development: replacing a portion of the 4000 Core Argo floats with 1200 Deep Argo and 1000 Biogeochemical (BGC) floats, and expanding Argo presence into the polar and marginal seas. But despite its success, the Argo project faces its share of challenges.

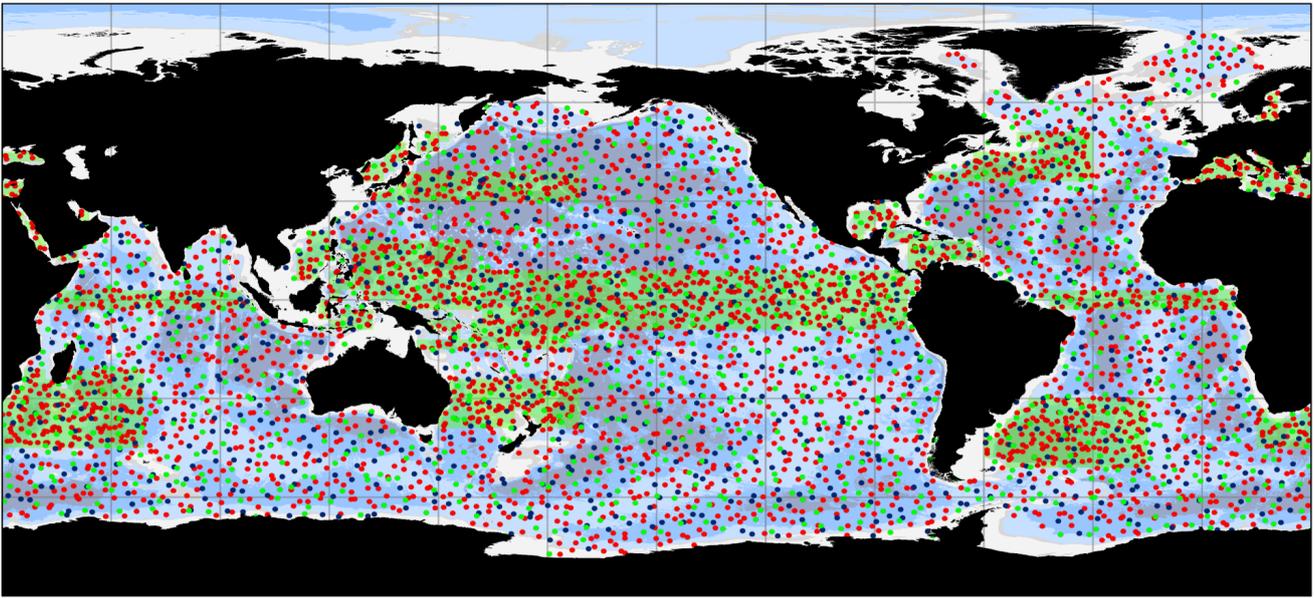
## What is Argo

Argo is an international program that collects information from inside the ocean using a fleet of robotic instruments that drift with the ocean currents and move up and down between the surface and a mid-water level. Each instrument (float) spends almost all its life below the surface.

The name Argo was chosen because the array of floats works in partnership with the Jason earth observing satellites that measure the shape of the ocean surface. (In Greek mythology, Jason sailed on his ship Argo in search of the golden fleece).



Deployment of an Argo float in the Arctic. © Nicolas Kolodziejczyk



Argo

Argo Distribution - OneArgo  
 Argo global, full-depth, multidisciplinary design: 4700 floats

- Core Floats, 2500
- Deep Floats, 1200
- BGC Floats, 1000

Target density doubled



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Central to OneArgo is that BGC Argo and Deep Argo contribute to the core data stream. © OceanOps

Some of them are immediate. “With the Covid-19 pandemic, we’re having big supply chain issues,” says Susan Wijffels, who is also part of Euro-Argo Scientific and Technical Advisory Group (STAG). “Argo equipment suppliers have been caught with chip shortage and shipping chaos, the latter also bringing mayhem to research vessels that deploy floats.” Consequently, some float deployments are getting late. Another issue: there are only a few sensor manufacturers in the world for Argo. This monopoly could hinder the progress of the BGC Argo floats that require even more sensors.

“We need to initiate a dialogue with private-sector sensor developers and encourage multiple sources of sensors to reduce cost and time of development”, says Susan Wijffels. On another matter, expanding the array in the marginal seas sometimes leads to political hurdles, especially around the exclusive economic zone (EEZ) of the countries that surround those marginal seas. For Susan Wijffels, “it’s a long-term diplomatic challenge to convince these nations that allowing Argo to operate within their EEZ is actually to their benefit.”

But the biggest obstacle on Argo’s path is the lack of sustainable funding. “We are in a difficult situation where we are trying to build capacity to operate these Deep and BGC new missions while getting flat or declining fundings,” explains Susan Wijffels. Even maintaining the existing Core Argo array with current fundings is problematic. With such financial stress weighing on the Argo members, it can be difficult for them to coordinate at the international levels and to overcome certain situations, such as when some areas lack floats.

In other places, floats have reached the end of their battery life and have not been replaced in recent years. As a result, there are gaps in the Argo global network, most noticeably in the Indian Ocean. “Because the program has been existing for 20 years, policy makers and even some members of the Argo community think that its long-term future is guaranteed,” notes Sylvie Pouliquen, co-founder and former director of Euro-Argo. “One of the reasons why we built Euro-Argo was to mobilize European governments’ commitment to the program and to bring our members’ voices to decision makers.” Today, with its Euro-Argo RISE (Research Infrastructure Sustainability and Enhancement) project, Euro-Argo aims at developing Europe’s contribution to the OneArgo phase.

Funding allocations are generally project-based and highly variable from one country to another. There's also a disparity between Europe and the USA, two of the biggest Argo contributors. In Europe, comes mainly from research grants whereas US teams rely more on operational fundings. "Although ocean observation is a common need, this scientific field has always faced precarious fundings in Europe", says Zoi Konstantinou, Policy Officer at the European Commission Directorate-General for Maritime Affairs and Fisheries (DG MARE). "The challenge is to convince the European Union (EU) members that this should be a standardized and shared responsibility, and that a continuous funding for this continuous need should be set, directly but also indirectly by collective funds. Based on European research projects, today's collective funds cannot be considered as sustainable."

The situation is similar at the international level. Maria Hood is head of the EU Office for G7 Future of the Seas and Oceans Initiative Coordination Centre at Mercator Ocean International. The G7 members and partners fund approximately 70% of the Global Ocean Observing System (GOOS), and this G7 initiative is an intergovernmental group working on enhancing financial support and implementation for GOOS.



Maria Hood is the EU coordinator of this Initiative and she collaborates with Euro-Argo to bring up European priorities on the international scene. "A lot of the work on Argo is done on the back of a handful of champions: individual scientists who work together, endlessly write proposals and get very short term – 4 or 5 years – funding," she regrets. "What happens when those champions retire or decide to change focus? Do we lose the array?" For Maria Hood, the Argo network of floats has become too important for its continuation to depend on a few champions. "It is time to transition Argo to operational funding and it is essential to build a bridge to the next generation of scientists", she concludes.



G7 Future of the Seas and Oceans Initiative Working Group meeting in Berlin in Nov 2022. One of its activities is working to support the implementation of a full-1000 biogeochemical float array by 2030.



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## Find out more

- [EU4OceanObs Ocean Observing Campaign | Part 1: Euro-Argo](#)
- Euro-Argo: [www.euro-argo.eu](http://www.euro-argo.eu)
- Deep Argo: [argo.ucsd.edu/expansion/deep-argo-mission](http://argo.ucsd.edu/expansion/deep-argo-mission)
- Biogeochemical Argo (BGC-Argo): [biogeochemical-argo.org](http://biogeochemical-argo.org)
- European Global Ocean Observing System (EuroGOOS): [eurogoos.eu](http://eurogoos.eu)
- Global Ocean Observing System (GOOS): [www.goosocean.org](http://www.goosocean.org)
- [Directorate-General for Maritime Affairs and Fisheries \(DG MARE\)](#)
- G7 Future of the Seas and Oceans Initiative: [www.g7fsoi.org](http://www.g7fsoi.org)
- International Argo Program: [argo.ucsd.edu](http://argo.ucsd.edu)

The article was produced by Anh-Hoa Truong, an independent scientific journalist/ INUA Prod in close collaboration with Lillian Diarra (Mercator Ocean International) and Marine Bollard (Euro-Argo). It is one of a series of 10 articles showcasing Euro-Argo and its unique contribution to the international Argo program and the global ocean observing system, and how it is transforming ocean research and our understanding of the ocean.

This article is part of the EU4OceanObs Ocean Observing Awareness Campaign | Part 1: Euro-Argo.  
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