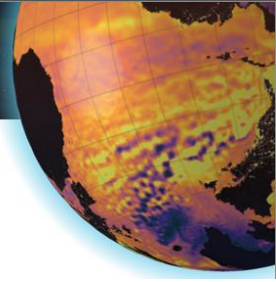




OneArgo – Evolving and extending Argo’s missions and data delivery. Achievements, status and outlook

At the OceanObs19 Conference, the OneArgo design was endorsed as an evolution and extension of the original Argo mission. Some key features of the OneArgo design include a quarter of the floats making temperature and salinity measurements to full ocean depth, and another quarter carrying a suite of BioGeoChemical (BGC) sensors. A further enhancement was greater sampling density in the tropical and western boundary current regions of the open ocean. Since OceanObs19, Argo has also developed a Polar Mission, to reach the marginal ice zones. BGC parameters that can be reliably measured on floats, and delivered as profiles in real-time for numerical models capable of assimilating them, include dissolved oxygen, nitrate and pH, and chlorophyll, backscatter and incoming solar radiation. Technical advances have enabled some general improvements in Argo sampling and data delivery: latency between measurements and data distribution is reduced, often to less than 12 hours; the quality of measurements distributed in real-time is improved (biases removed); for the latest generation of floats, half of the profiles have the shallowest measurement in the upper 2 metres of the ocean to better serve air-sea and mixed-layer requirements; Argo has taken steps to avoid fixed-time-of-day sampling that could introduce diurnal bias in upper ocean measurements. Through the UN Decade, Argo is engaged in co-design with complementary observing networks that extend into boundary and coastal regions. While there are competing requirements to optimise for different use cases, Argo seeks interactions on how to improve its new design. The expansion of the original Argo mission into the OneArgo design requires a substantial increase in resources. Pilot arrays (regional, fixed-duration) for the Deep and BGC Missions have been funded and deployed. These pilots enabled technical difficulties to be identified and overcome, and full capability demonstrated. The G7 Future of the Seas and Ocean Initiative has called for OneArgo to be implemented by 2030. The Argo community is now ready to work towards the implementation of OneArgo, but no Argo partner nation has yet allocated the required national resources. Even with only the pilots in place, Argo floats are already the majority source of subsurface data for the BGC parameters that Argo measures. OneArgo will not become reality unless increased resources are allocated. Data users can assist by demonstrating the impact OneArgo will have on science and services, and by advocating for its value to both users and supporting agencies.



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