Argo

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Argo: a uniform global array of consistently missioned profiling floats

- 10 day
- 1000 dbar parking depth
- 2000 dbar sampling depth for temperature and salinity
- Long-term and sustained

A compelling global design with broad utility for science and operational forecasting
How GOMO has supported Argo

- US Argo would not exist without NOAA/GOMO’s strong support.
- It has been the **primary funder** since 2001 for **Core** activities
- Supports **capacity building** for new **OneArgo missions** when the budget allows
- **Deep Argo** would not be so advanced without GOMO support
- Supports the **US Global Data Assembly Centre** (USGODAE)
- Supports the global **File Checker** run at the GDACs - ensure uniform parseable files
- **Full time** program manager (2001-present)
- Supports **strong US leadership of international Argo**: co-chairs of the Argo Steering Team and Argo Data Management Teams
GOMO’s roles and scope of effort

- Program manager has an **active role** in international Steering Team and Data Management meetings (no other country has this)
- Program manager assist with maintaining and expanding **EEZ access** (for BGC variables) and manages notifications for the 2000 active US floats.
- First **Knauss Fellow** for Argo (2022)
- Consistently has Argo in **budgetary requests** for Congress
- Active role in **workshops and outreach/communication activities**
- Allows and encourages **technical development** - keeps US program at the forefront of float/sensor technology
Impacts

- Previous global ocean survey of 8000 profiles took ~**10 years** and utilized most of the global class research vessel effort/ Argo delivers a global survey **every month** of 10,000 profiles
- The **winter oceans** have been characterized for the first time in many regions

Argo has **revolutionized global ocean science**: more than one paper per day relies on our data
Impacts

Argo is the primary ocean dataset used to track ocean physical change and its role in sea level rise for climate assessments.

Argo underpins global ocean state estimates and prediction systems models, seasonal climate forecasting systems (e.g. El Nino), and more recently is starting to support hurricane prediction systems.
Achievements

- Maintained 50% of the global Core array despite flat funding and reduced deployment rates
- US float lifetimes continue to improve
- Supported the development of Deep Argo and the deployment of the largest Deep Argo pilot arrays
- Built capacity in NOAA and other partner laboratories for the BGC Mission
- Supported the testing and piloting of a second CTD for Argo: RBRArgo CTD
- Faster data delivery to support storm forecasting
- IEEE Innovation Award 2022 (pictured above)
- Citable data paper for the first 2M profiles
- Development and publication of a new global, full depth and multidisciplinary design: OneArgo
A vision for Argo beyond 2020

One array
Global in extent -
full depth -
multidisciplinary
Education and Outreach

SERead: regionally relevant ocean science curricula for Pacific Island schools using Argo data

- School visits and talks
- Over 150 PhD theses since 2017
- Numerous med

Adopt A Float

- New project coming! Based on a similar successful idea from the Southern Ocean Carbon and Climate Observations and Modeling (SOCCOM) project
- Beginning with AOML and PMEL labs

M. Scanderbeg shows off the demo deep Argo float and Lego Argo float models at the Birch Aquarium
Future plans and opportunities

- It is unlikely that increasing float lifetimes can continue to compensate for reduced deployment rates. Core Argo support needs a **re-baseline** else the global array will degrade.
- Expand **core Argo** to the **OneArgo** array with support from national and international partners.
- Aim to increase **tropical band** sampling as required by TPOS2020.
- Build the **Southern Ocean** coverage in the sea ice zone as required by SOOS.
- Invest in pilots in the **Arctic** and for **hurricane prediction**.
How Argo will advance the ocean observing enterprise

- Argo remains at the **forefront of** developments in **data management**, and global reach for subsurface observations.
- Argo data is FAIR, **democratizing** community access to **subsurface ocean data** without needing special equipment or research vessels.
- Core Argo has and will continue to have **very strong synergies** with several **satellite missions**: surface topography, ocean salinity, sea surface temperature.
- If provided with the required resources, Argo will enhance **tropical ocean** sampling to enhance ENSO prediction and research, and fill major gaps in subsurface monitoring of the rapidly changing **polar oceans**.
- OneArgo will revolutionize our understanding of the dynamics of the **deep ocean** and of the interactions between **physics, chemistry and plankton** in the global ocean. Realize synergies with **ocean colour satellites**.
- Argo will continue to collaborate with suppliers **test, characterize and improve sensors** for subsurface ocean sampling such as CTDs, oxygen, pH, nitrate and optical sensors. This will benefit many other networks.
- The program will aim to continue to collaborate **with the reanalysis and forecast community** to continue to drive up the utility, use and impact of its data in their services and products.
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