

JAMSTEC are now developing the new PARC websites with:

- a few new functions as well as providing information about Argo data of core, BGC, and deep floats in the Pacific;
- coordination of development to achieve One Argo, serving as a place for information exchange about QCs and troubles of floats between countries, and so on;
- JAMSTEC is aiming to release the new version of PARC websites in 2021.



# Argo Regional Centres

## Challenges and potential evolution

Initially presented to  
Argo Data Management Team #21

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White headed slides: background which will be briefly reviewed

Blue headed slides: focus for presentation/discussion

- Current ARC responsibilities
- Which ARCs exist and who contributes?
- Current state ARC responsibilities
- Key challenges
- Improving coordination, particularly:
  - **Fostering intra-ARC partnerships**
  - **Developing inter-ARC collaborations**
- Improved outcomes?
- Clearer governance



## Current ARC responsibilities - as per the AST website (<http://www.argo.ucsd.edu/ARC.html>)

### The essential activities of Argo Regional Centers

- Perform **regional analysis** of all the Argo data in the region to assess its internal consistency as well as its consistency with recent shipboard CTD data.
- Provide **feedback to PIs** about the results of the regional analysis and possible outliers.
- Facilitate development of a **Reference Data Base** for delayed mode quality control. This includes assembling the most recent CTD data in their region.
- Prepare and distribute **Argo data products** on a regular basis. The main data product will be a consistent Argo delayed mode dataset for their region, but other products might include weekly analyses of temperature, salinity and currents calculated from floats. Documentation of these products will also be provided.

### The optional activities of Argo Regional Centers

- Coordinating Argo **float deployments** for the region, including information on ships of opportunity and research vessels and guidance on regional float deployment.
- Develop **new quality control tests** for their region if appropriate. It may be expected that new procedures will be developed to check data quality and can be implemented earlier in the data system.
- Provide **delayed mode quality control** to national programs in their region **without such capabilities**.
- Compare Argo data with model output and with assimilated fields to **understand why specific data are rejected by assimilations** (e.g. model inconsistencies, systematic data errors).
- Provide **documentation** of the procedures being done at the ARC.



## Which ARCs exist and who contributes?

Current:

- Atlantic ARC (Ifremer and various others)
- Indian ARC (INCOIS)
- MedArgo ARC inc. Black Sea (main: OGS, LOV, HCMR, SOCIB, IO-BAS)
- Pacific ARC (JAMSTEC, IPRC, CSIRO)
- Southern Ocean ARC (BODC, BSH, CSIRO, SOCCOM)

Future:

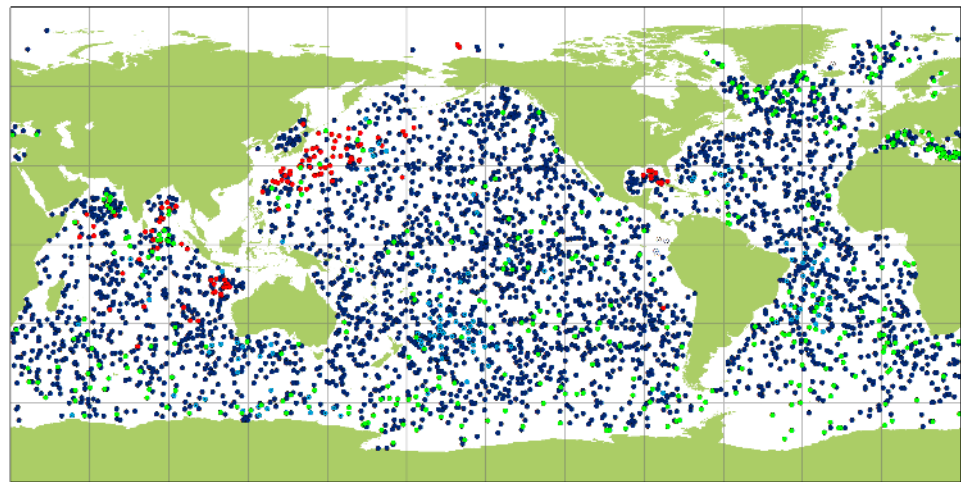
- Maybe Nordic/Arctic ARC?

- Over population of floats in some ocean basins
- Under population of floats in other ocean basins
- Risk of exacerbating problem with core/BGC/deep deployments
- Ensuring sufficient multi-variable reference data available
- Coordination with other bodies – AtlantOS, SOOS, other GOOS regional alliances, etc.
- There appears to be insufficient capability (scale and/or expertise?) to meet ARC responsibilities consistently
- Governance and development of ARCs somewhat *ad hoc*?



# Achieving integrated array

- System design across core/deep/BGC globally
- Proactive coordinated development of national deployment plans

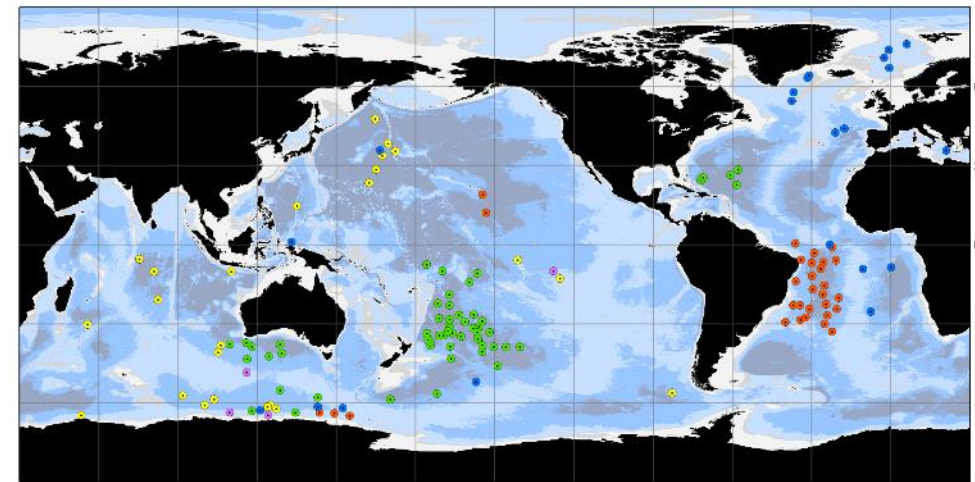


Argo Networks May 2020

• Core (3342) • Equivalent (175) • BioGeoChemical (387) • Deep (134) • non-Argo (6)



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Argo Deep Float Models May 2020

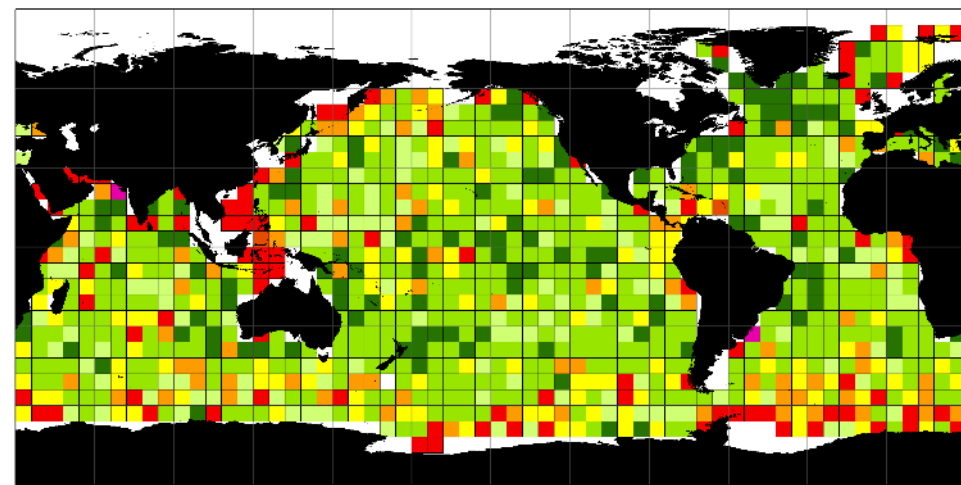
Latest location of operational floats (data distributed within the last 30 days),

• SOLO\_D\_MRV (30) • APEX\_D (24) • ARVOR\_D (21) • NINJA\_D (4) • SOLO\_D (55)

ETOPO2  
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 -2000 / -1000  
 -1000 / 0



Generated by [www.jcommaps.org](http://www.jcommaps.org), 01/08/2020



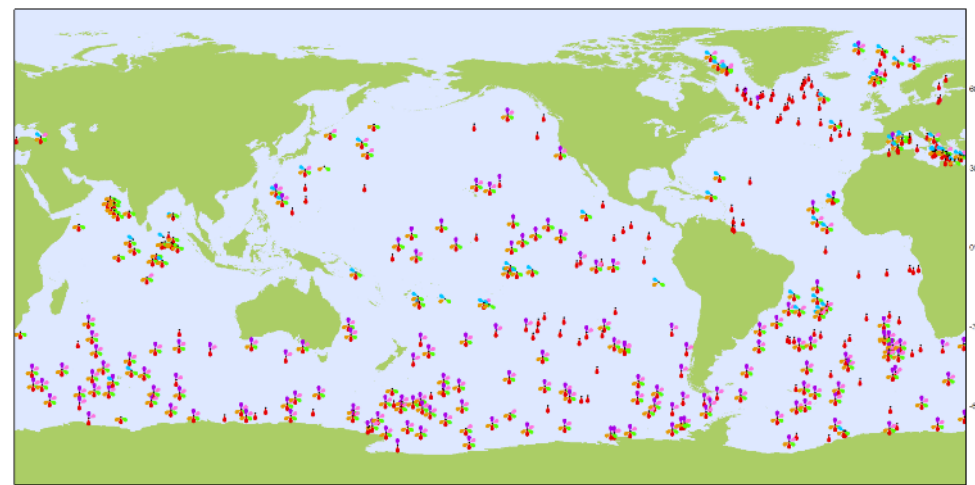
Argo Density - simple May 2020

Profiling floats density, 6° x 6°, normalized on Argo Global design

• 0 (94) • 25-50% (79) • 50-75% (128) • 75-100% (138) • 100-200% (437) • 200-500% (128) • >500% (2)



Generated by [www.jcommaps.org](http://www.jcommaps.org), 01/08/2020



Biogeochemical Argo Sensor Types May 2020

Latest location of operational floats (data distributed within the last 30 days)

• Operational Floats (387) • Suspended particles (221) • Nitrate (174) • Downwelling irradiance (58) • Chlorophyll a (221) • pH (168) • Oxygen (373)



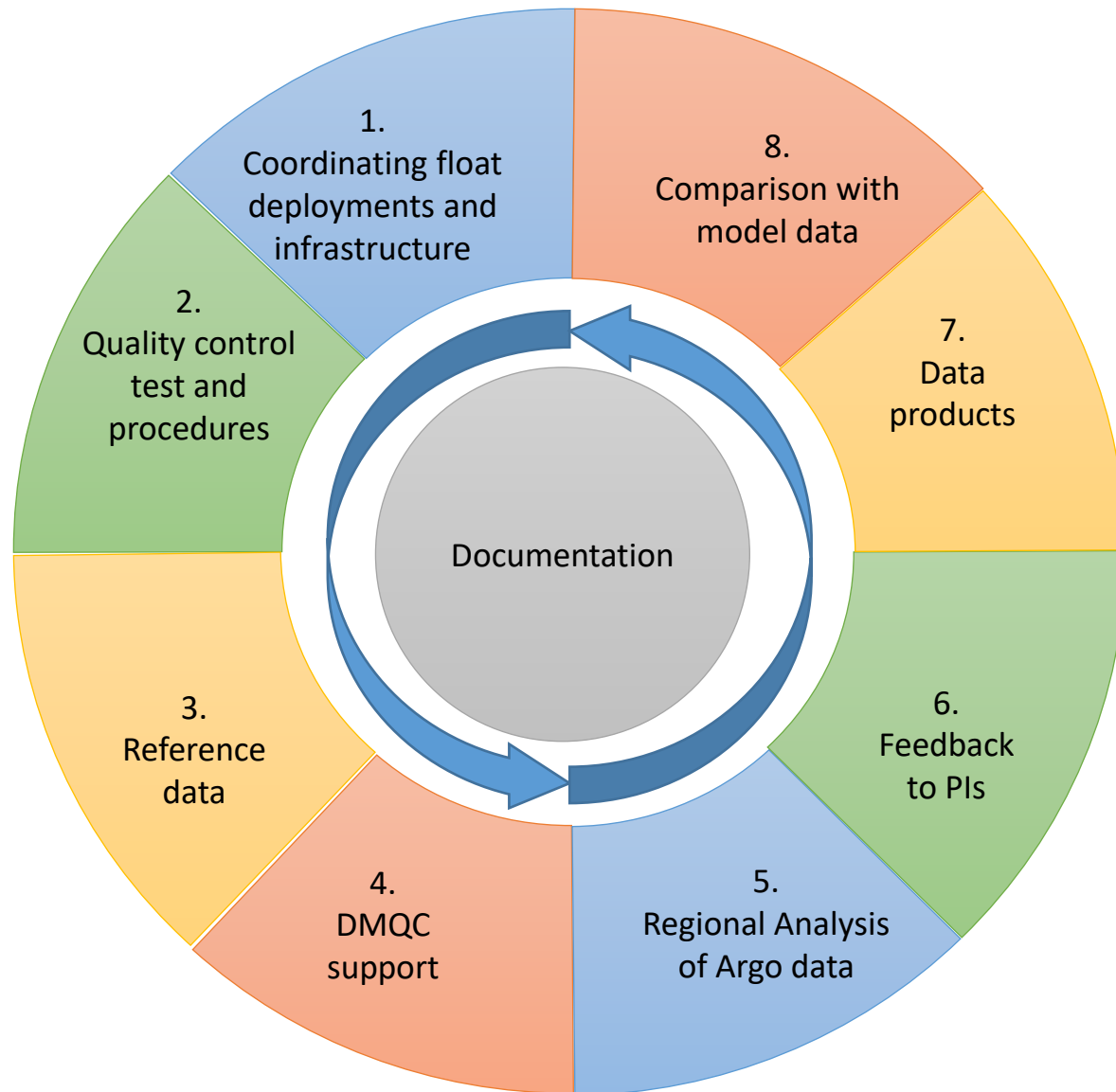
Generated by [www.jcommaps.org](http://www.jcommaps.org), 01/08/2020

- ARCs need more capacity:
  - Is it that there aren't enough people engaged in relevant ARC activities?
  - Or are existing efforts not being coordinated through ARCs effectively?
- **Fostering intra-ARC partnerships** – need to understand:
  - which institutes are contributing to the work of ARCs
  - what each institute is contributing to ARC responsibilities
- **Developing inter-ARC collaborations** – ARCs to work more closely together, particularly key for SOARC
- Work closely with Ocean OPS on planning and deployments
- Work closely with reference database collators



## Additional Slide - ARC “Value Chain”

#	Focus	Description as per ARC responsibilities
1	Documentation	Provide documentation of the procedures being done at the ARC.
2	Coordinating float deployments and supporting infrastructure	Coordinating Argo float deployments for the region, including information on ships of opportunity and research vessels and guidance on regional float deployment.
3	Quality control tests and procedures	Develop new quality control tests for their region if appropriate. It may be expected that new procedures will be developed to check data quality and can be implemented earlier in the data system.
4	Reference data	Facilitate development of a Reference Data Base for delayed mode quality control. This includes assembling the most recent CTD data in their region.
5	DMQC support	Provide delayed mode quality control to national programs in their region without such capabilities.
6	Regional analysis of Argo data	Perform regional analysis of all the Argo data in the region to assess its internal consistency as well as its consistency with recent shipboard CTD data.
7	Feedback to PIs	Provide feedback to PIs about the results of the regional analysis and possible outliers.
8	Data products	Prepare and distribute Argo data products on a regular basis. The main data product will be a consistent Argo delayed mode dataset for their region, but other products might include weekly analyses of temperature, salinity and currents calculated from floats. Documentation of these products will also be provided.
9	Comparison with model data	Compare Argo data with model output and with assimilated fields to understand why specific data are rejected by assimilations (e.g. model inconsistencies, systematic data errors).



Broad ideas:

- Evolve role of ARCs to go beyond data management role
  - ADMT-facing elements/representation
  - AST-facing elements/representation
- View future as key role in observing system design and optimisation
- Review who contributes and how, bringing in people or groups already active in relevant areas



## Improved outcomes?

- Sustainment and coordination of the increasingly complex array
- Prepare ourselves to manage deep and BGC QC into the future?
- Better position ourselves with e.g. GOOS bodies
- Stimulate future collaborations on research
- Increase chance of future funding of collaborative science



# Discussion

Are the challenges real?

Do the proposed areas for development make sense?

What next?