

US BGC-Argo Data Management Update

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**8th BGC Argo Meeting, ADMT 20
October 13-18, 2019**

Laboratoire d'Océanographie de Villefranche-sur-Mer



SOCCOM
Southern Ocean Carbon and Climate Observations and Modeling



US BGC float data transfer workflow

UW

- Satellite data telemetry
- RT production of intermediate msg files for AOML
- DM for core data (T & S)
- UW historical oxygen floats

AOML

- RT production of tech, meta, core traj and core R files
- Other historical oxygen floats



AOML



GDAC's



MBARI

- Scientific Processing of SOCCOM and pre-SOCCOM BGC float data (total 224 floats)
- RT production of BR-files
- 'A' and 'D' mode adjustments

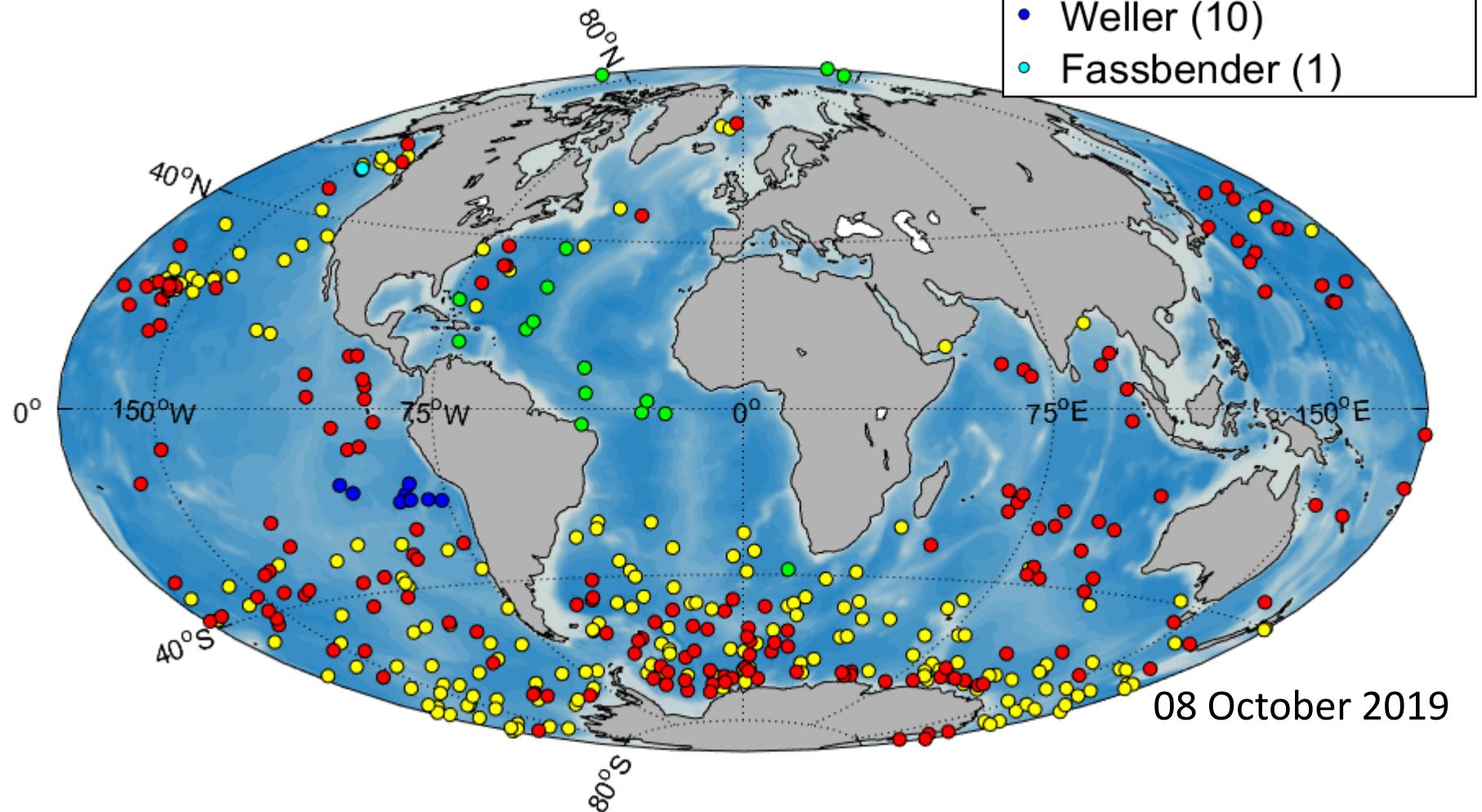
BGC Argo QC and file transfer frequency

MBARI → GDAC

QC adjustments performed at least quarterly

- DOXY, NITRATE & PH_IN_SITU_TOTAL
 - SAGE-O2 and SAGE MATLAB GUIs
 - Cycles with visual assessment = D-mode
 - Adjustments propagated to incoming cycles in real-time = A-mode
-
- Transfer process runs 2x/day
 - Float 'refresh' occurs every 5th float cycle
(all cycles reprocessed to pick-up any new QC)

U.S BGC Argo floats by P.I.



418 Total & 146 Active in 2019

AOML BGC Argo Floats

27 floats deployed since ADMT19

- **25 SOCCOM**
- **2 UW – Hawaii deployments**

Total = 418

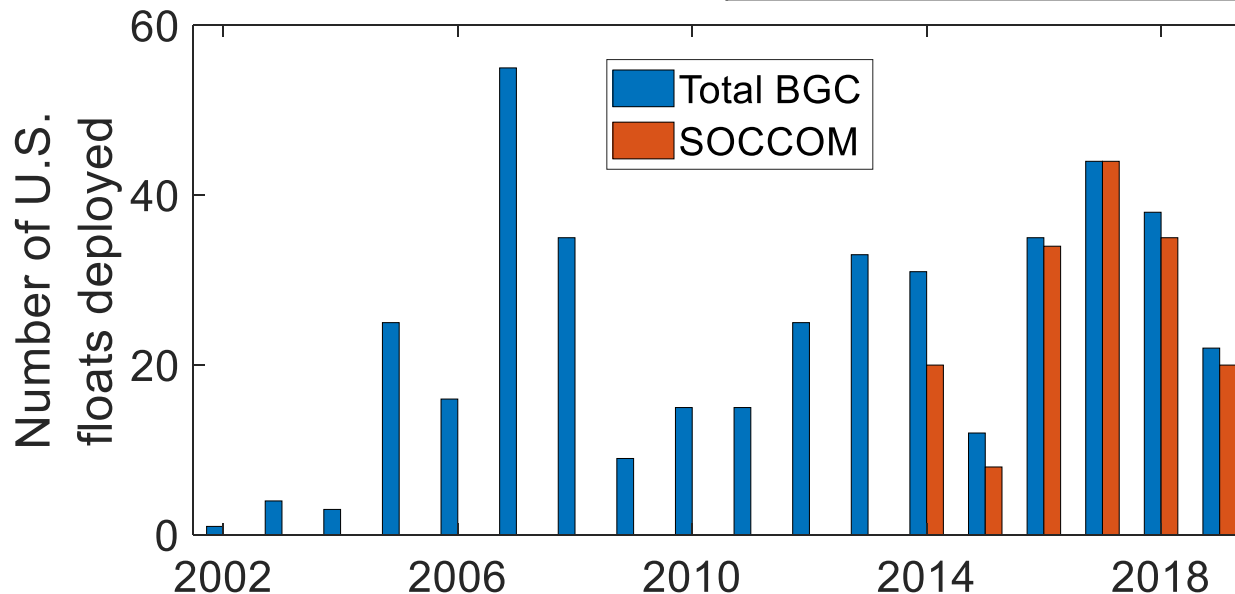
146 Active in 2019

360 APEX

26 NAVIS

31 SOLO-1

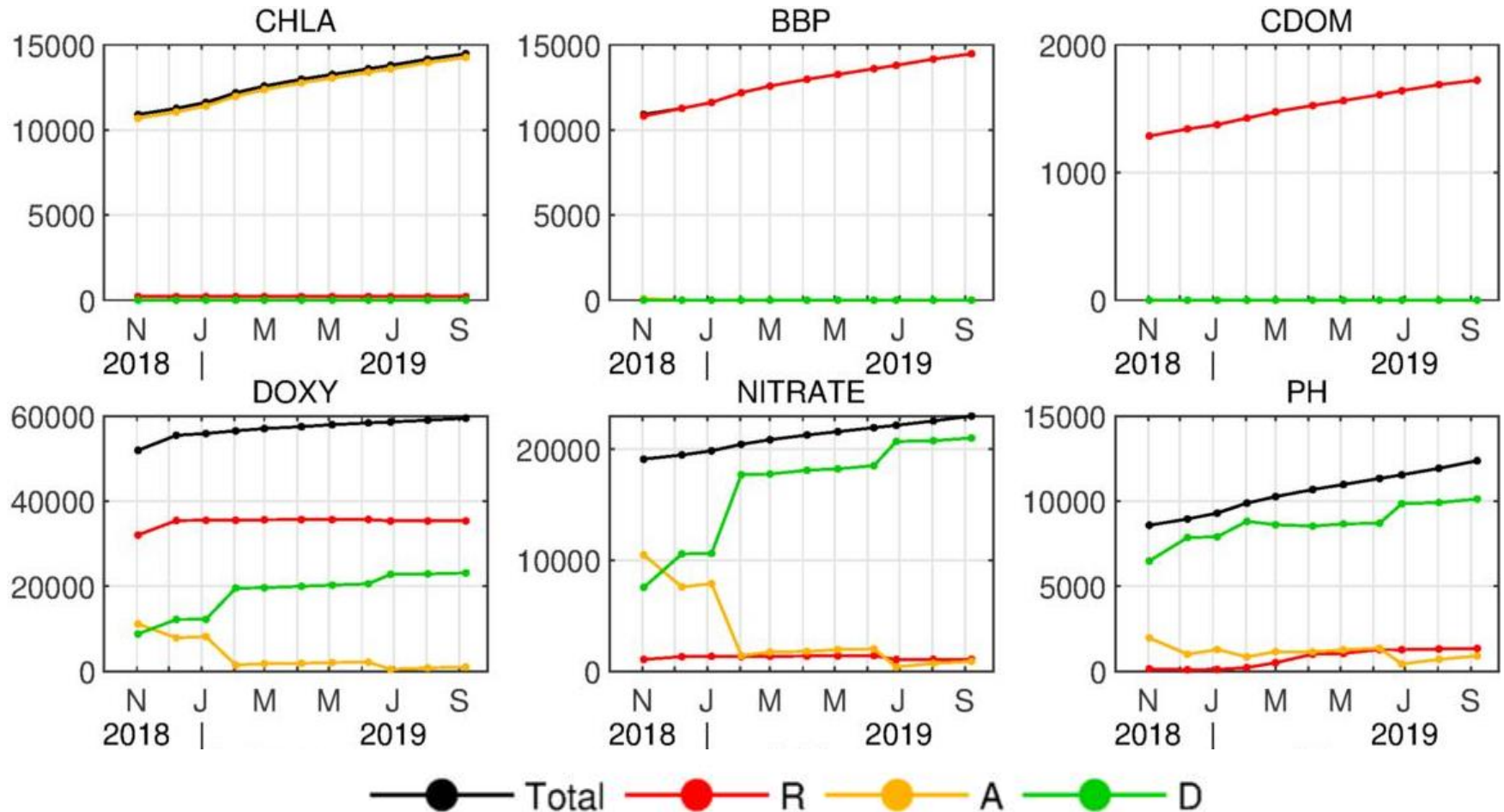
PARAMETER	N FLOATS
DOXY	418
NITRATE	205
PH_IN_SITU_TOTAL	160
CHLA	167
BBP700	167
CDOM	25
DOWN_IRRADIANCE	0
UP_RADIANCE	0



R/A/D profile mode evolution

AOML

DOXY is the low hanging fruit!

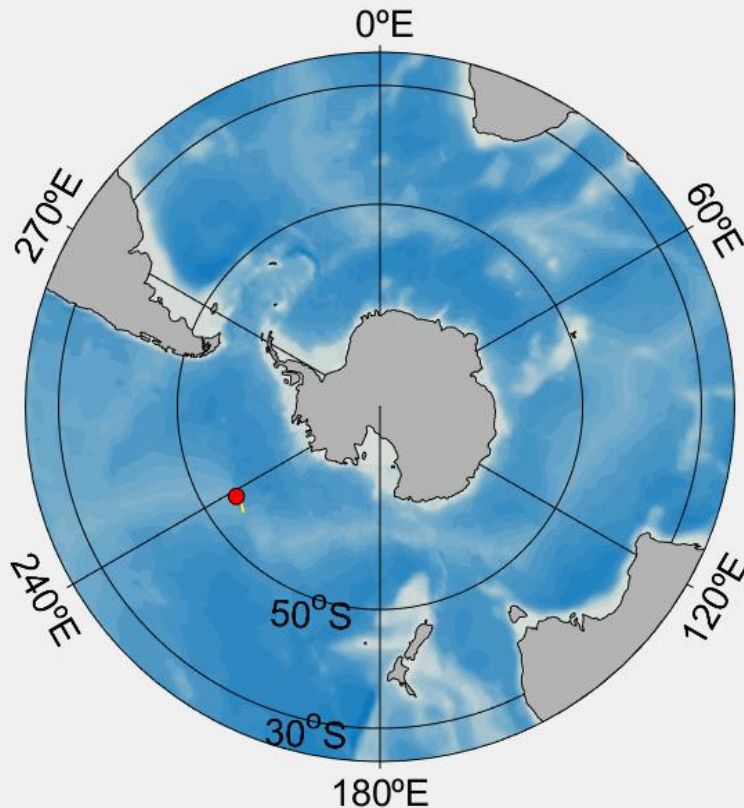




SOCCOM

Southern Ocean Carbon and Climate Observations and Modeling

2014 2015 2016 2017 2018 2019 2020



159 floats deployed
138 operational
21 non-op

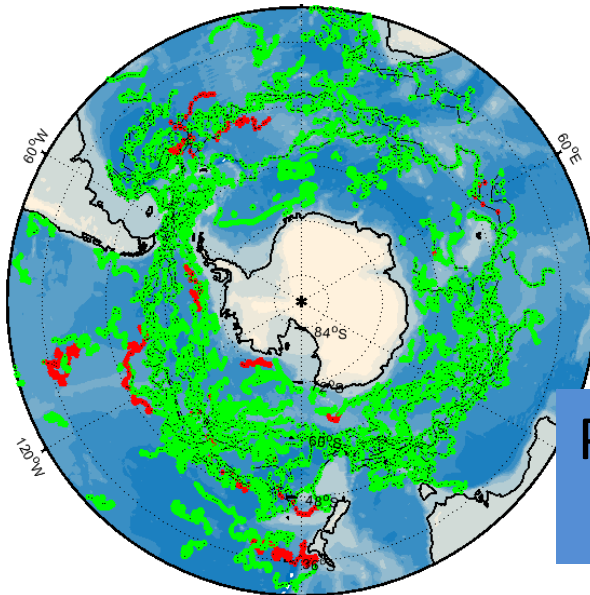
135 APEX
24 NAVIS

**34 to be deployed
soon!**

SOCCOM SENSOR HEALTH MAPS

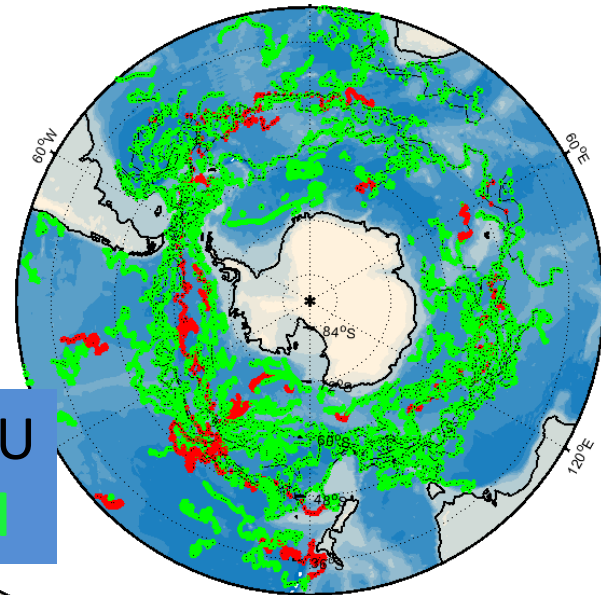
● GOOD

● BAD

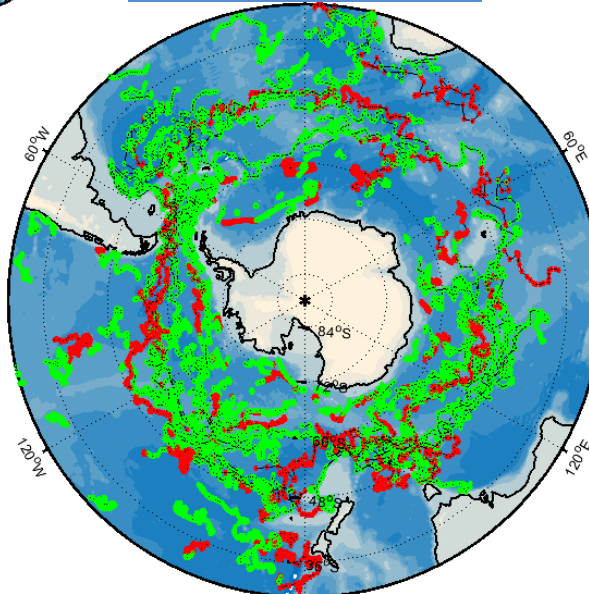


DOXY
98% good

PH_IN_SITU
54% good



NITRATE
89% good



What's been happening in 2019?

- BGC-Argo Guide published (Bittig et al. 2019)
<https://doi.org/10.3389/fmars.2019.00502>
- MBARI Matlab code freely available :
https://github.com/SOCCOM-BGCArgo/ARGO_PROCESSING
- Starting to perform global audits on BGC parameters
- Tanya working with AOML to improve meta files
- Minor modification to O₂ solubility calc ($\sim 0.5 \mu\text{mol /kg}$).
Now consistent with Argo O₂ cookbook vs SCOR WG 142
- Tanya Testing DOXY time response correction on SOCCOM fleet – implement soon?
- SAGEO₂ & SAGE reference data updated (CANYON-B & WOA2018)

Exciting news!

NOAA funding several BGC Argo floats arrays:

- Equatorial Pacific –TPOS (Steve Riser)
- California Current (Gregg Johnson)
- North Atlantic (Susan Wijffels)

SOCOM program extended by NSF (to 2024)

- 5 more years
- 150 more floats in the Southern Ocean

Really exciting news!

NSF Mid-Scale Research Infrastructure proposal
selected for reverse site visit at NSF Nov 7/8

Mid-scale RI-2 Consortium:
Biogeochemical-Argo: A global robotic network to
observe changing ocean chemistry and biology



Mid-scale RI-2 Consortium: Biogeochemical-Argo: A global robotic network to observe changing ocean chemistry and biology

500 floats & \$52,900,000 over 5 years

- APEX, NAVIS, SOLO-II/S2A
- O_2 , NO_3 , pH, bio-optics.



5 institution consortium PI team:



Ken Johnson
MBARI
PI



Lynne Talley
SIO
Co-PI



Steve Riser
Univ. of Wash.
Co-PI



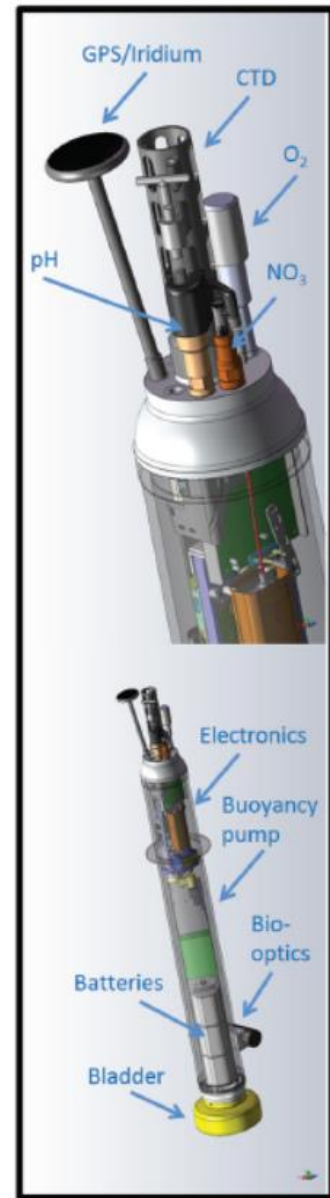
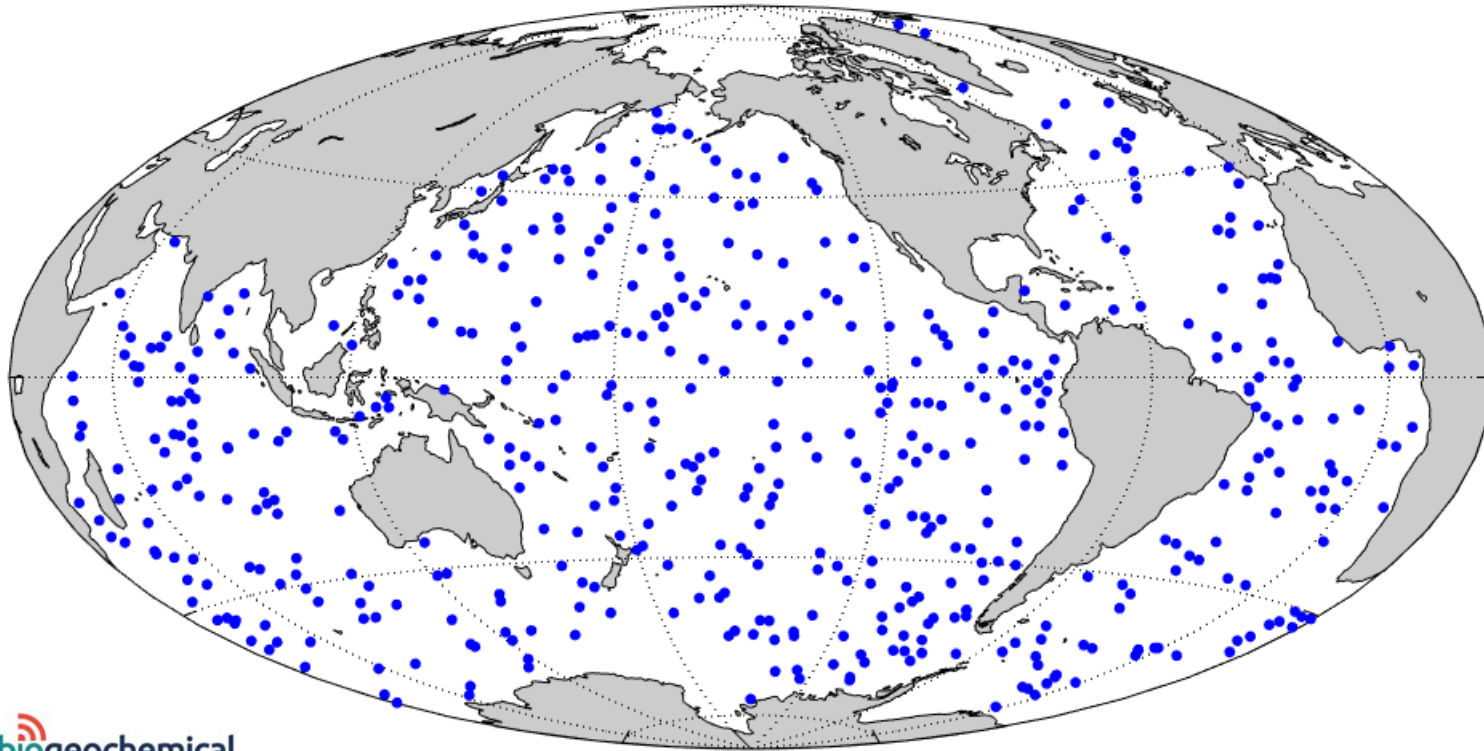
Susan Wijffels
WHOI
Co-PI



Jorge Sarmiento
Princeton Univ.
Co-PI

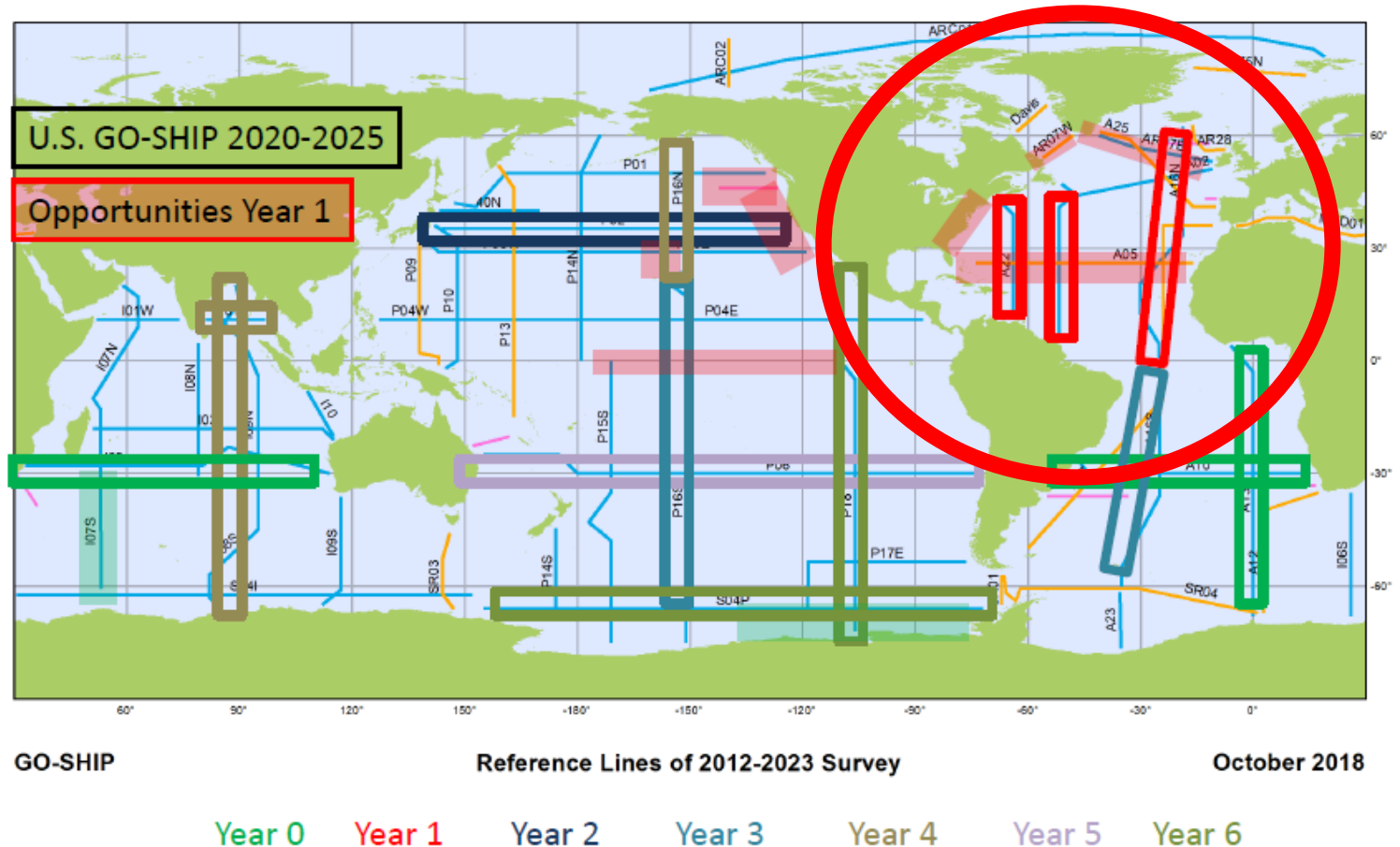
Project Overview

- 500 BGC profiling floats deployed globally
 - Full data processing
 - No science funding



Float deployments opportunities via US GO-SHIP cruises

Yr 1: No. Atlantic emphasis likely
given US GO-SHIP planning



Questions?