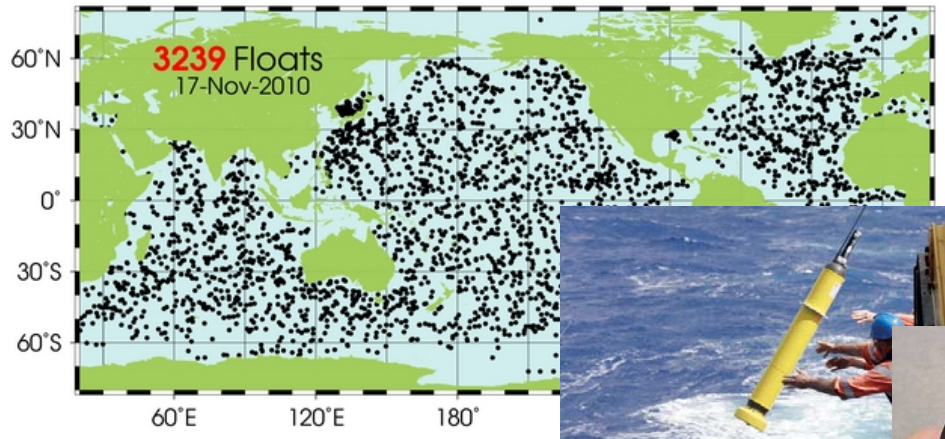
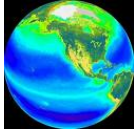
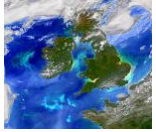
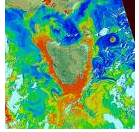
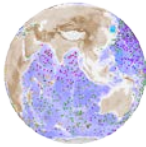
2nd Bio-Argo Workshop





Beside O2, the biogeochemical community has identified the first variables ready to be implemented on Argo

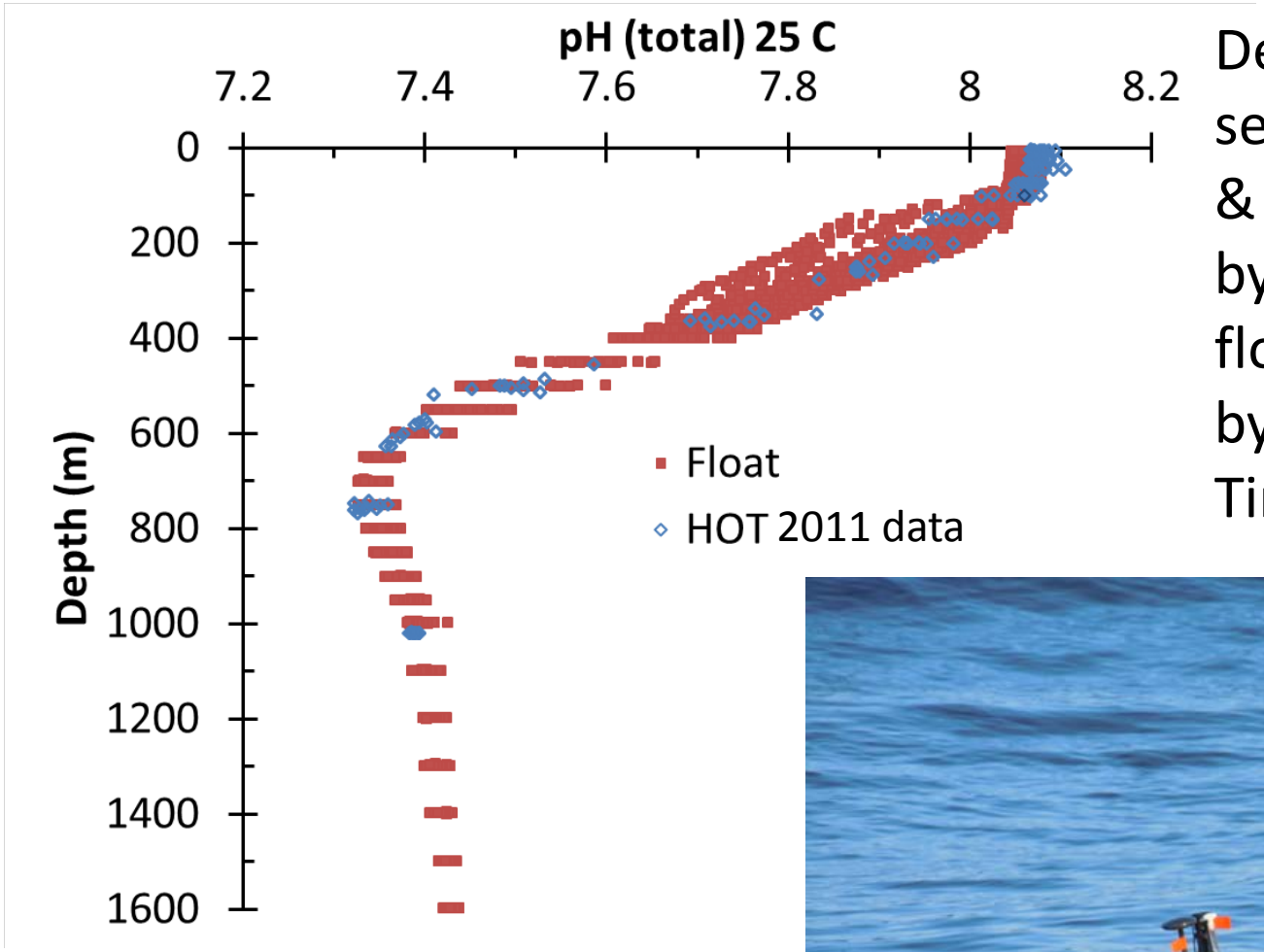
- Oxygen: exchange with atmosphere, marine photosynthesis and respiration.

- Nitrate : New production (build up of organic material) ; remineralization; biogeochemical modeling

- Chlorophylle a : Proxy of phytoplankton biomass, photosynthesis

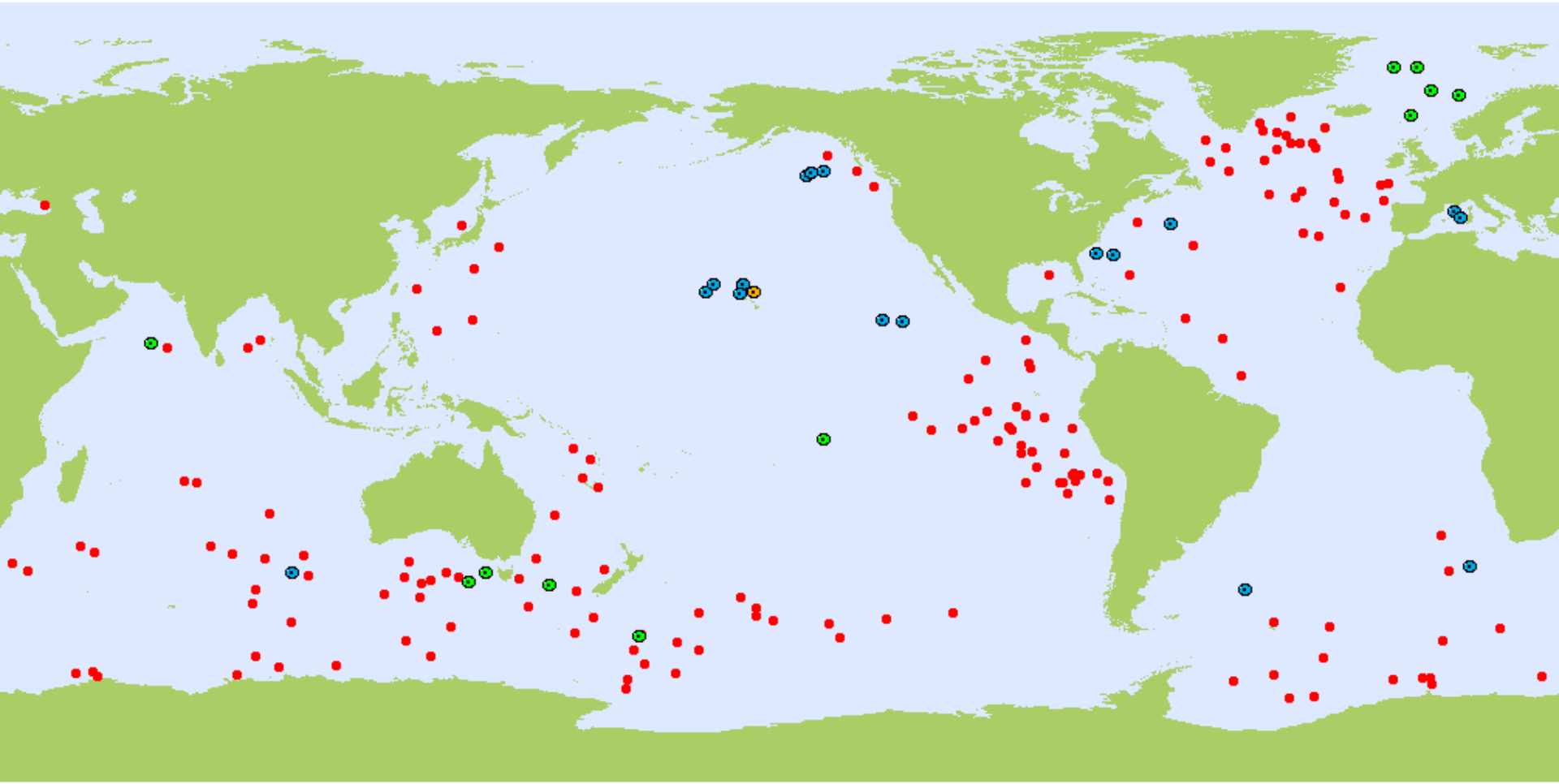
- Particulate scattering : Stock of particulate matter (detrital and living). Proxy of Particulate Carbon (POC) and Suspended Particulate Matter (SPM)

Selection of these variables through an international consensus : IOCCG Working group"Bio-optical sensors on Argo floats Argo", OceanObs09



Deep-Sea DuraFET pH sensor built at MBARI & Honeywell, tested by SIO, integrated to float by UW, deployed by HOT (Hawaii Ocean Time-series)

42 vertical profiles over 140 days. All data on FLOATVIZ web site in real time.



BIO Argo

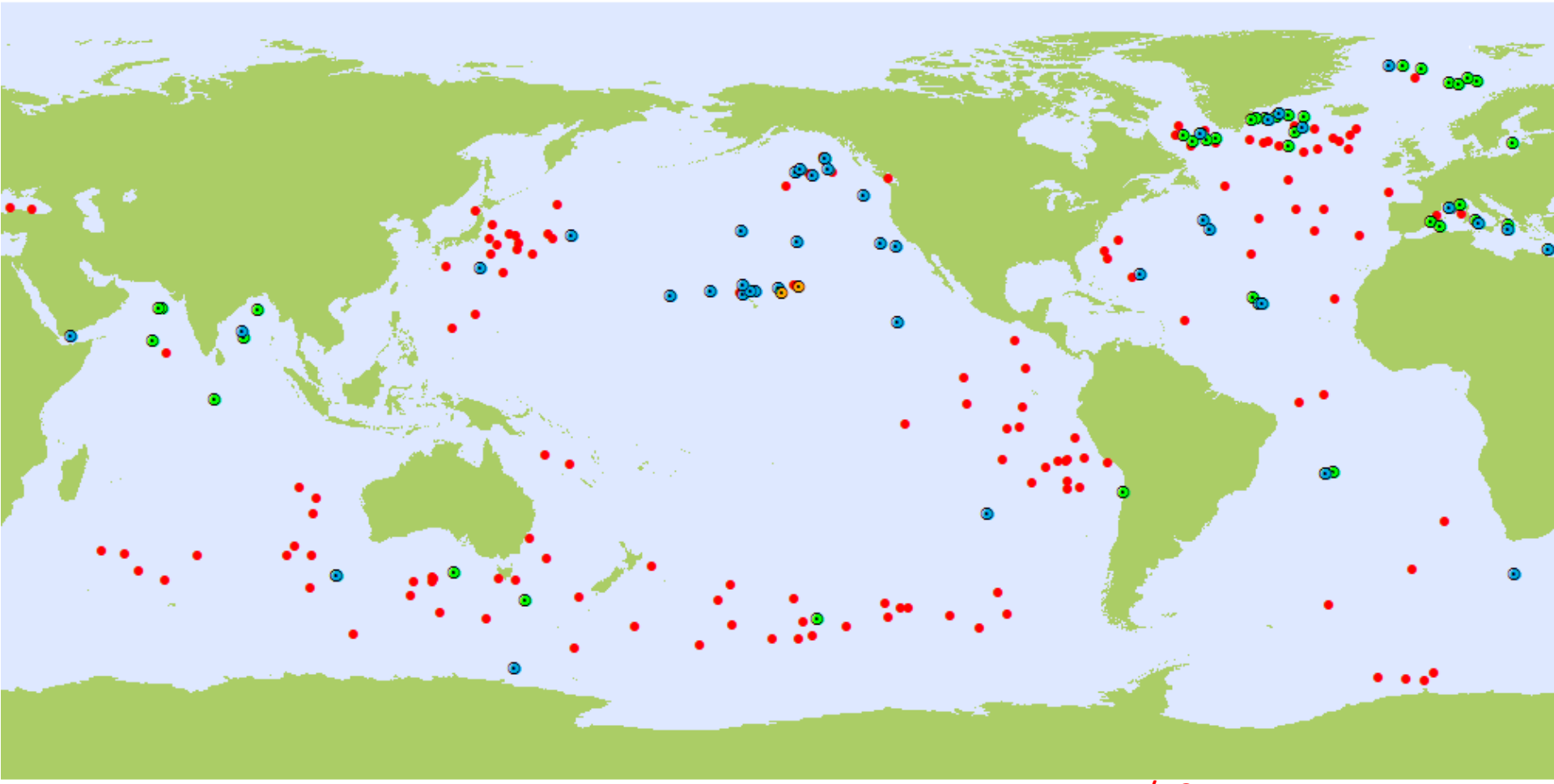
Dissolved Oxygen (190)

Bio-optics (12)

Nitrate (18)

pH (1)

July 2012



Bio-Argo (221)

Dissolved Oxygen (208)/190

Nitrate (41)/18

Bio-optics (49)/12

pH (2)/1

September 2013

(presently known) activities/future plans for BGD/Bio-Argo

CENTER FOR SOUTHERN OCEAN BIOGEOCHEMICAL OBSERVATIONS AND MODELING

Proposal: PI J. Sarmiento: 200 biogeochemical floats

C|SOBOM

SEARCH C-SOBOM | WHO WE ARE | PROGRAMS | KNOWLEDGE TRANSFER | NSF SITE VISIT | RESOURCES | MEMBERS

Programs

- Theme 1: Observations
- Theme 2: Modeling
- Theme 3: Education/Diversity/Outreach

PROGRAMS

Theme 1: Observations

To develop a new observing system for carbon, nutrients, and oxygen that will complement and expand on the existing observing system for heat and freshwater, the observations team will deploy a large array (150-200) of profiling floats (shown at right) with biogeochemical sensors throughout the Southern Ocean. This robotic float observing system will be complemented by shipboard measurements, instrument and sensor development, and data analysis, including state estimation in conjunction with the modeling program. Deployment opportunities have already been identified through discussions with international partners.

Principal responsibility for development and deployment of the observing system will be in the hands of the Scripps Institution of Oceanography (Theme 1 Lead Lynne Talley), in partnership with the University of Washington (Co-Lead Steve Riser) and Monterey Bay Aquarium Research Institute (Associate Director Ken Johnson (in photo with cap)), who together will design and build the floats and participate in analysis of the data.

(presently known) activities/future plans for BGD/Bio-Argo

- India (INCOIS, M. Ravichadran): 50 floats (10 per year) over the next 5 years: bb (POC), Chla, O2, NO3(?). Arabian Sea, Indian sector of the Austral Ocean
- Japan (Jamstec, Univ. Tokyo, Fishery Research agency): 3 floats: Chla, O2
  - ✓ Argo plans (including BGC) for the next 10 years in discussion.
- South-Africa (CSIR, Sandy Thomalla): 3 floats: bb, Chla, O2, transmissiometry. Atlantic Sector of the Austral Ocean
- Australia (Univ. Tasmania). 3 floats: bb, Chla, O2. Southern Ocean Time Serie; xx floats (collaboration with INCOIS India)

(presently known) activities/future plans for BGD/Bio-Argo

- Italia (OGS, P.M. Poulain): 7 floats : bb, Chla, O2, CDOM, radiometry NO3 (2 floats). Mediterranean Sea
- Bulgaria (USOF, -E-AIMS program): 2 floats: bb, Chla, O2, CDOM, radiometry. Black Sea
- UK (University of Plymouth-Giorgio D'Allomo-E-AIMS program): 2 floats: bb, Chla, O2, CDOM, radiometry. North Atlantic sub-tropical Gyre. 10 floats (recently accepted)
- Norway (Institute of Marine Research-Mork Kjell Arne-E-AIMS program): 2 floats: bb, Chla, O2, CDOM, radiometry. Norway Sea

(presently known) activities/future plans for BGD/Bio-Argo

- Canada (Univ. Laval, Marcel Babin) : 26 floats : bb, Chla, O2, CDOM, radiometry, NO3. Arctic (starting in 2014 over two years)
- France (LOV, NAOS & remOcean projects, Fabrizio D'ortenzio & Hervé Claustre): Chla, bb, O2, CDOM, radiometry, (NO3)
  - ✓ 6 floats: North and South Atlantic sub-tropical gyres.
  - ✓ 14 floats: Mediterranean Sea
  - ✓ 21 floats: North Atlantic sub-polar gyre (Labrador, Irminger, Iceland)
  - ✓ 14 floats waiting for deployment Indian Ocean (from sub-topical to Antarctic, collaboration with India)
- France (Argo-France + CNES): 4-5 floats per year distributed to the national community through an open call (3 new labs recently applied)

Session 085 - Towards a Global Ocean Biogeochemical Observing System Based on Profiling Floats and Gliders

CLAUSTRE Hervé , CNRS & UPMC, LOV claustre@obs-vlfr.fr
JOHNSON Kenneth , MBARI johnson@mbari.org

~ ***30 abstracts recieved***

Tutorial - TOWARD A GLOBAL OCEAN BIOGEOCHEMICAL OBSERVING SYSTEM BASED ON PROFILING FLOATS

Johnson, K. S., MBARI, USA, johnson@mbari.org
Claustre, H., CNRS & UPMC, LOV , France, claustre@obs-vlfr.fr
Sarmiento, J. L., Princeton University, USA, jls@princeton.edu

WG 142 Quality Control Procedures for Oxygen and Other Biogeochemical Sensors on Floats and Gliders

Arne Körtzinger (Germany)
Ken Johnson (USA)

Why are we here?

- Bio-Argo technology is emerging from its infancy.
- Several regional Bio-Argo programs are launched.
- Bio-Argo “science” will increasingly become prominent
  - Exploration; filling the gap in unexplored spatio-temporal domains / scales;
  - Regional budgets established with less uncertainties
  - Extraction of long term properties (climatic trends)
  - coupled GCM biogeochemistry models fed with “sufficient” data => assimilation of biogeochemical data
  - …..

Why are we here?

- To undertake this promising new science in the best way, we need to **anticipate** the data management in order :

  (1) not to be overwhelmed by too much data

  (2) to collectively and synergistically take the best profit of this new type of data

An efficient data management which guarantees a large use of high-quality biogeochemical data is a key step to maximize our chances of making Bio-Argo a real success.

Action	what	who	ADMT contact	Date	Status
1	Write the minute of the meeting	Hervé, Catherine	Sylvie	1 month	D
2	Contact seadata net for variable names (and close the action 45 of ADMT)	Catherine, Justin		2 weeks	WBP
3	Write the document "Processing Argo Chla data at the DAC level" (e.g. similar document produced by V. Thierry et al. for Argo-O2)	Catherine	Justin, Thierry	6 months	WBP
4	Write the Chla QC document	Catherine	Christine		WBP
5	Database harmonization: producing reference materiel => interaction with manufacturers	Tom & Antoine	Claudia		NS
6	Propose a Quenching test for Chla	Xiaogang & Clare			WBP
7	Propose a depth correction for Chla	Antoine, Haili, Xiaogang			WBP
8	Propose a spike test	Xiaogang, Hervé, Sandy			WBP
9	Write the document "Processing Argo backscattering data at the DAC level" (e.g. similar document produced by V. Thierry et al. for Argo-O2)	Emmanuel, Catherine	Justin, Thierry	6 months	WBP
10	Writing the backscattering QC document	Emmanuel, Catherine	Christine	6 months	OG
11	Write the document "Processing Argo NO3 data at the DAC level" (e.g. similar document produced by V. Thierry et al. for Argo-O2)	Ken, Catherine	Brian, Thierry		OG
12	NO3: review the RT test for Argo identify the useful, define new ones	Ken, Fabrizio		0-6 months	OG
13	Writing the NO3 QC document	Ken, Catherine		6-12 months	OG
14	Evaluation of the need for two Chlas: e.g. operational, blended synthetic Chla vs science Chla (AST action?)	Fabrizio, Hervé, Tom, Emmanuel, Sandy	to be discussed at AST	3 months	NS
15	Interact with IOCCG / maintain the link with spatial agency (e.g. yearly summary of Bio-Argo progress on their web site) (AST Action)	Hervé	Sylvie	1 month	D

Thanks…..