



BGC-Argo & 3rd Deep-Argo Meeting

27 September – 1 October 2021 (13:00 to 16:00 UTC)

Virtual meeting

Agenda – Final version

Welcome and introduction **5** **Virginie Thierry, Hervé Claustre**

Session 1 - Monday 27/09/2021 - BGC-Argo: Best practices 3h

Part 1 (Chair: Emanuele Organelli, Moderator: Hervé Claustre)

- Context of the meeting **H. Bittig 10'**
- Float technology and new sensors **40'**
 - ◆ SOLO II BGC **10'** **S. Purkey**
 - ◆ NKE BGC CTS4, CTS5-USEA, Jumbo float: **10'** **E. Leymarie**
 - ◆ Sensors: OPUS (NO₃), RAMSES (radiometry), UVP (particle size + zooplankton) **10'**
E. Leymarie + H. Bittig
 - ◆ Discussion **10'**
- Sensors and float and preparation **30'**
 - ◆ Preparation and programming **15'** **A. Poteau**
 - Fleet analysis of sampling resolution in the current BGC array - Is there a "standard"?
 - Procedure for test of sensors and float
 - Provor CTS5 GUI
 - ◆ Pre-deployment procedure **10'** **N. Poffa**
 - ◆ Discussion **5'**

Part 2 (Chair: Ingrid Angel Benavides, Moderator: Henry Bittig)

- Float at Sea: **25'**
 - ◆ Float monitoring:
 - Euro-Argo fleetmonitoring and data selection web interfaces **10'** **R. Cancouët**
 - Shipboard operations: ancillary data to provide metrological verification of sensors **5'** **A. Poteau**
 - ◆ Recovery activities **5'** **N. Poffa**
 - ◆ Ice strategy **5'** **I. Angel Benavides**
 - ◆ Discussion **5'**
- Data management: **55'**
 - ◆ BGC-Argo data visualization interface **10'** **H. Claustre / A. Poteau**
 - ◆ Metadata and NVS **10'** **V. Paba**
 - ◆ RT and DM QC **10'** **C. Schmechtig / G. Dall'Olmo**

- RT updates
- DM updates
- ◆ GDAC overview 10' T. Carval
- ◆ Discussion 15'

Session 2 - Tuesday 28/09/2021 – Deep Argo: Scientific motivation, results and requirements 3h

Introduction and objectives of the deep part of workshop 5' Virginie Thierry

Part 1 (Chair: Tamaryn Morris, Moderator: Damien Desbruyeres)

- Status of the Deep Argo array 10' Nathalie Zilberman
- Scientific highlights 1h
 - ◆ Estimation of regional deep temperature trends from Deep Argo and historical hydrographic data 10' Greg Johnson
 - ◆ Deep Argo observation and state estimation for deep ocean 10' Shigeki Hosoda and Satoshi Osafune
 - ◆ From a pilot study to a Deep-Argo in the subpolar gyre of the North Atlantic ocean and beyond 10' Virginie Thierry
 - ◆ Deep Argo reveals bottom water properties and pathways in the Australian-Antarctic Basin 10' Annie Foppert
 - ◆ Revisiting the 2003-2018 deep-ocean warming through multi-platform analysis of the global energy budget. 10' Andrea Storto
- Break 10'

Part 2 (Chair: Virginie Thierry, Moderator: Gilles Reverdin)

- Requirements from users 1h
 - ◆ From the Sea level perspective 10' William Llovel
 - ◆ Deep Argo: Climate change and GOOS requirements 10' Karina von Schuckman
 - ◆ How is ocean circulation being studied using Deep Float data 10' Brian King
 - ◆ User Requirements for Deep Argo: modelling community and operational oceanography 10' Peter Oke
 - ◆ General Bathymetric Chart of the Oceans (GEBCO) 10' Mathias Jonas
- Discussion on the compatibility between the current Deep-Argo mission and the requirements expressed by the users 30' (Discussion Leader: Greg Johnson)

Session 3 - Wednesday 29/09/2021 - Interactions: BGC/Deep Argo and cross networks 3h

Introduction of the session '5 Brian King

Part 1 (Chair: Catherine Schmechtig; Moderator: Hervé Claustre)

→Implementing O2 sensor on Deep-Argo 1h40

- ◆ Scientific motivation and users need (sampling, accuracy) (biological community, water mass identification). 10' Laurent Coppola
- ◆ Scientific results
 - ISOW spreading and mixing as revealed by deep-Argo floats with O2 sensor launched in the Charlie Gibbs Fracture Zone. 10' Virginie Racape
 - Multiplatform investigations of oxygen in the subpolar North Atlantic 10' David Nicholson
- ◆ Sensors readiness (performance versus needed accuracy from the users) and QC
 - Aanderaa and SBE63 20' Henry Bittig
 - SBE83 10' Steve Riser and Seabird
 - AROD-FT(RINKO) 10' Hiroshi Uchida / Kanako Sato and Hua LI (JFE)
- ◆ Discussion 30' (Discussion Lead: Brian King)

→Break 10'

Part 2 (Chair: Kamila Walicka, Moderator: Peter Oke)

→Cross networks interactions (presentation of the program, 2 slides on what they can do for and expect from Deep Argo, 2 slides on what they can do for and expect from BGC Argo) 1h15

- ◆ EOVS shared by various platforms: T, S, O2 (Deep) and Chla, bbp, pH, O2, UVP (BGC) (including data management) 15' Hervé Claustre, Virginie Thierry
- ◆ DOOS presentation 10' Lisa Levin
- ◆ OceanGlider presentation 10' Pierre Testor
- ◆ GO-SHIP presentation 10' Yvonne Firing
- ◆ OceanSITES presentation 10' Raquel Somavilla
- ◆ Discussion on the way forward 20' (Discussion Lead: George Petihakis)

Session 4 - Thursday 30/09/2021 - BGC-Argo: interaction with users - modeling and ocean color communities 3h

Introduction of the session '5 Hervé Claustre

Part 1 (Chair: Giorgio Dall'Olmo ; Moderator: Hervé Claustre)

→Ocean Color 1h30 (E. Organelli, A. Mangin)

- ◆ From multi- to hyper-spectral radiometry on BGC-Argo floats 15' E. Organelli
- ◆ How BGC-Argo contributes to the cal/val of present and future satellites 15' E. Boss
- ◆ BGC-Argo floats for satellite sensors and product validation 15' A. Mangin
- ◆ Synergies between OC and BGC-Argo for a 3D ocean 15' R. Sauzède
- ◆ Discussion 30'

Part 2 (Chair: Joan Llort, Moderator: Laurent Memery)

→BGC-modelers/assimilators (J. Lamouroux, G. Cossarini, A. Samuelsen) 1h30

- ◆ Review of questions, request/needs, from CMEMS working groups: BGC Data Assimilation + Product quality (BGC-Argo)
 - Two examples of BGC Argo use within models
 - Integration of BGC Argo data in modeling : Biological Carbon Pump, with an emphasis on the meso pelagic layer 5' L. Memery
 - Bridging the gaps between particulate backscattering measurements and modeled particulate organic carbon in the ocean 5' M. Gali
 - BGC-Argo: Overview of present use, needs and future outlook for BGC data assimilation 15' Julien Lamouroux and Annette Samuelsen
 - Discuss the usefulness of new BGCArgo-based products
 - Nutrients CANYON based products 5' R. Sauzède
 - Discussion 15'
 - Status on bio-optical modules integration in BGC models (invited speaker: J. Skakala 15')
 - Discussion 30'
- General discussion on the items above as well as ideas on how to improve interaction between modelers/assimilators/OC/ BGC-Argo communities

Session 5 - Friday 01/10/2021 – Deep Argo: Implementation plan

Introduction of the session 5' Nathalie Zilberman

Part 1 (Chair: Virginie Thierry; Moderator: Breck Owens) 1h

- Floats technology: performances (including actual and expected longevity), issues, and future plans 25'
 - ◆ Deep-SOLO 5' Nathalie Zilberman
 - ◆ Deep-APEX 5' Brian King, Shigeki Hosoda
 - ◆ Deep-NINJA 5' Taiyo Kobayashi
 - ◆ Deep-ARVOR 5' Xavier André
 - ◆ HM4000 5' Zhaoui Chen
- Performances and issues of CTD sensors (accuracy and stability) 15'
 - ◆ SBE61 presentation 5' Nathalie Zilberman, Dave Murphy, Phil Sutton
 - ◆ SBE41 presentation 5' Taiyo Kobayashi
 - ◆ 3-head float experiment results 5' Virginie Thierry
 - ◆ RBR presentation 5' Brian King and Mat Dever
- Discussion 20'
- Break 10'

Part 2 (Chair: Kamila Walicka; Moderator: Brian King) 1h

- DMQC strategy (progress on CPcor, addition of oxygen to existing temperature/salinity/pressure data)
 - ◆ Presentation of the current strategy 5' Cécile Cabanes
 - ◆ Feedback from DM operator about CPcor, long term stability and reference data (5' per group)
 - Feedback from Ifremer 5' Cécile Cabanes

- QC Status and long term stability of Japanese Deep Floats 5' Kanako Sato
- Feedback from UW 5' Annie Wong
- Feedback from OGS 5' Antonella Gallo
- ◆ Existing status and future evolution of reference dataset 5' Sarah Purkey
- ◆ Discussion 20' (**Discussion Leader: Annie Wong**)

→ Deep-Argo implementation paper to publish in Frontiers in 2022 (discussion about publication). **Nathalie/ Brian/ Virginie**