BGC-Argo & 3rd Deep-Argo Meeting

27 September – 1 October 2021
Virtual meeting

Agenda - draft

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 programmation **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
- ➔ 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

Part 1 (Chair: Tamaryn Morris, Moderator: Damien Desbruyeres)
- ➔ Introduction and objectives of the workshop 5' Virginie Thierry
- ➔ Design and status of the Deep Argo array, national plan and funding status 10' Nathalie Zilberman
- ➔ Scientific highlights 1h
  - ◆ Estimation of regional deep temperature trends from Deep Argo and historical hydrographic transect data 10' Greg Johnson
  - ◆ Science motivations and results from the Deep Argo observation and 4D-VAR data assimilation (ESTOC).10 ' Shigeki Hosoda and Satoshi Osafune
  - ◆ Science results from the Deep Argo array in the subpolar gyre of the North Atlantic. 10' Virginie Thierry
  - ◆ Science results from the Deep Argo array in the Australian Antarctic Basin 10' Annie Foppert
  - ◆ Revisiting the 2003-2018 deep-ocean warming through multi-platform weak-constraint analysis of the global energy budget. 10' Andrea Storto
- ➔ **Break** 10'

Part 2 (Chair: Virginie Thierry, Moderator: Gilles Reverdin)
- ➔ Requirements from users 1h
  - ◆ How to reveal the present deep ocean circulation with Deep-Argo 10' Brian King
  - ◆ Climate change, what does Deep argo have to do in order to contribute to GOOS and what are the requirements 10' Karina von Schuckman
  - ◆ Sea level 10' William Llovel
  - ◆ Modelling community and operational oceanography 10' Peter Oke
  - ◆ Bottom topography 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

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
    - ◆ EOV 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
    - ◆ Ocean-sites 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

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 to 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

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
  - ◆ RBR presentation 5' Brian King and Mat Dever
  - ◆ SBE41 presentation 5' Taiyo Kobayashi
- ➔ Discussion 20'
- ➔ **Break** 10'

Part 2 (Chair: Kamila Walicka; Moderator: Brian King)
- ➔ DMQC strategy (progress on CPcor, addition of oxygen to existing temperature/salinity/pressure data) 1h
  - ◆ Presentation of the current strategy 5' Cécile Cabanes
  - ◆ 3-head float experiment results 5' Virginie Thierry
  - ◆ Feedback from DM operator about CPcor, long term stability and reference data (5' per group)
    - ● Feedback from Ifremer 5' Cécile Cabanes
    - ● Feedback from Jamstec 5' Kanako Sato
    - ● Feedback from UW 5' Annie Wong
  - ◆ Existing status and future evolution of reference dataset 5' Sarah Purkey
  - ◆ Discussion **(Discussion Leader: Annie Wong)**

- ➔ Deep-Argo implementation paper to publish in Frontiers in 2022 (discussion about publication). 5' **Nathalie/ Brian/ Virginie**