EURO**ARGO**

EUROPEAN RESEARCH
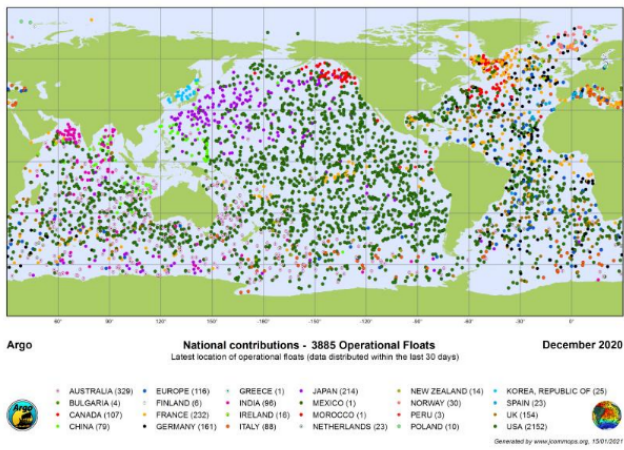INFRASTRUCTURE CONSORTIUM
FOR OBSERVING THE OCEAN

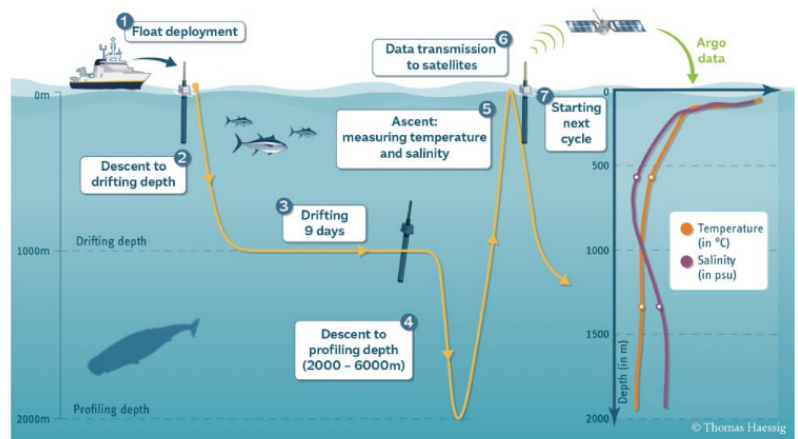INTAROS RIs Dialogue meeting – 4 Feb. 2021

WHAT IS ARGO?

Argo is the first global real-time in situ observing network in the history of oceanography.

- Argo represents a fleet of about 4000 autonomous profiling floats, deployed all over the world ocean, making measurements up to depths of 6000m.

- They carry sensors to report profiles of ocean properties (temperature, salinity and possibly up to 6 biogeochemical parameters).
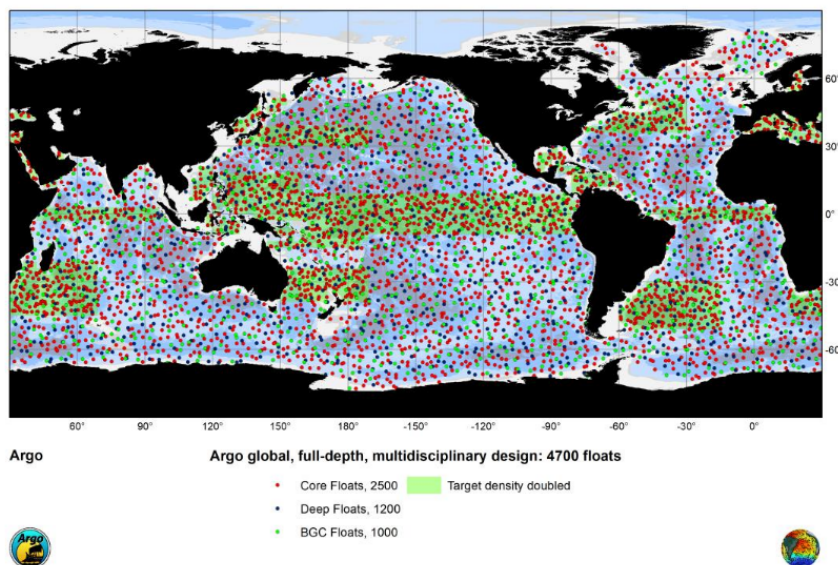
TEN DAYS CYCLING OF AN ARGO FLOAT

Argo — National contributions - 3885 Operational Floats — Latest location of operational floats (data distributed within the last 30 days) — December 2020

AUSTRALIA (329), BULGARIA (4), CANADA (107), CHINA (79), EUROPE (116), FINLAND (6), FRANCE (232), GERMANY (161), GREECE (1), INDIA (96), IRELAND (16), ITALY (88), JAPAN (214), MEXICO (1), MOROCCO (1), NETHERLANDS (23), NEW ZEALAND (14), NORWAY (30), PERU (3), POLAND (10), KOREA, REPUBLIC OF (25), SPAIN (23), UK (154), USA (2152)

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# The « *Global, full depth and multidisciplinary Argo* » design

New design endorsed by the Argo Steering Team in 2020

- Initial design (late 90's) achieved in 2007:
  - 3000 active floats, measuring T/S from surface to 2000m, 60°S - 60°N

- New design:
  - *Global*: includes ice covered areas
  - *Full Depth*: Deep Argo
  - *Multidisciplinary*: Biogeochemical Argo

Argo

Argo global, full-depth, multidisciplinary design: 4700 floats

- Core Floats, 2500 — Target density doubled
- Deep Floats, 1200
- BGC Floats, 1000

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Argo in the Arctic: Real Time data

- Argo (green dots) essential data for **operational users** providing data at depth

- Will be the major source of BGC data in the next decade

- Complementary to ITP/Moorings/Research cruises
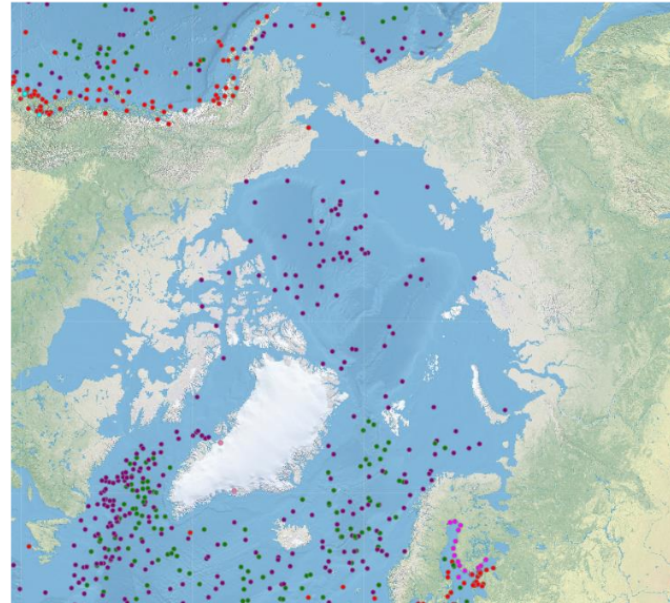
CMEMS/EMODNet Latest 30 days

Argo in green Drifter in purple

Argo in the Arctic: technological developments

- Complementary to other Observing systems in partially iced covered areas
    - French/Canadian experiment with 20 BGC floats in Baffin Bay in NAOS project (André et al. 2020)
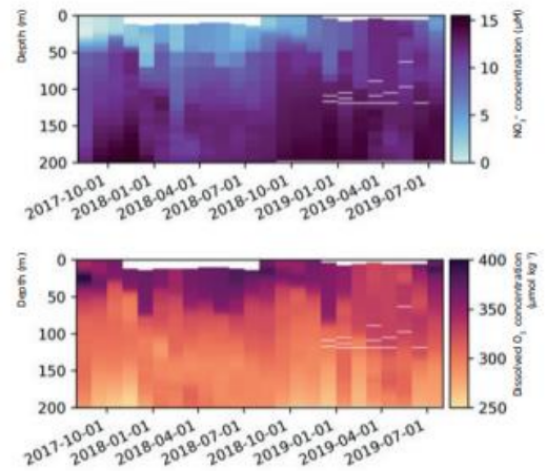   - USA with SOCOM project in Southern Ocean
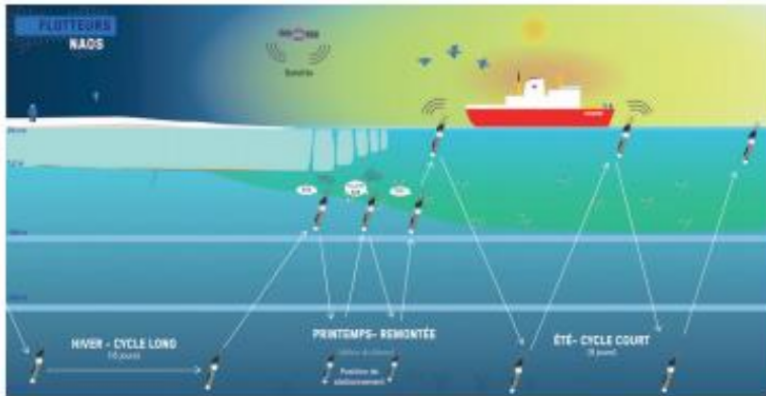
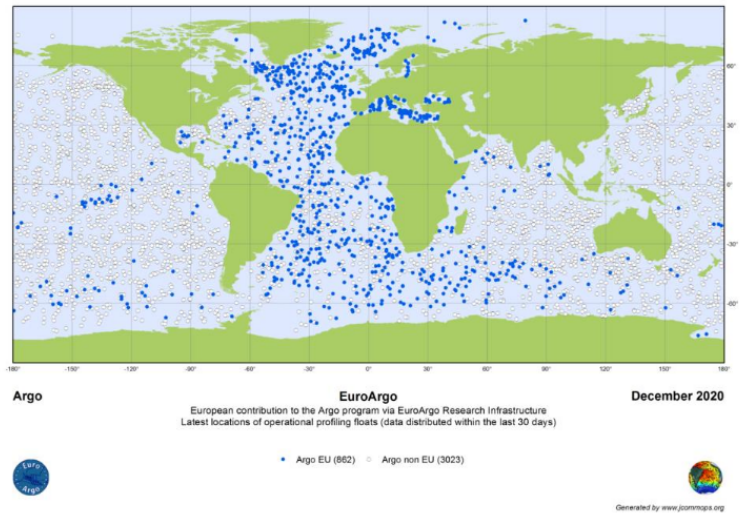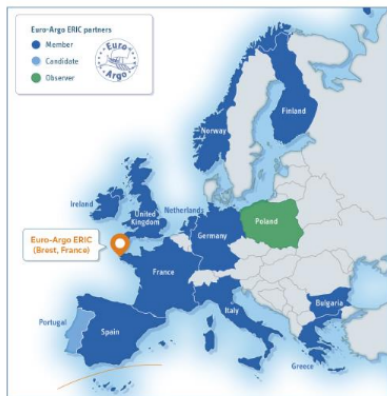Pro-Ice cycle. © J. Sansoulet

Nitrate and oxygen in Baffin Bay
Concentrations obtained by under-ice BGC profiling floats.

WHAT IS EURO-ARGO?

*Euro-Argo **sustains** and **optimises** the European contribution to the **international Argo programme**, providing, deploying and operating nearly 25% of the floats network.*
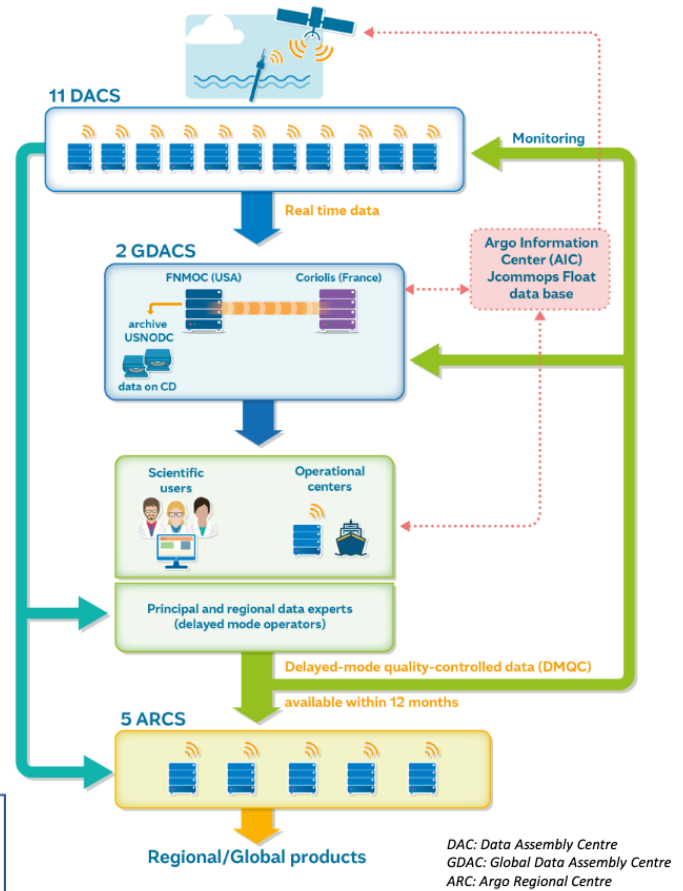
- The Euro-Argo European Research Infrastructure Consortium (ERIC) was created in May 2014, as part of the 2006 ESFRI Roadmap and engages the countries and their ministries.

Argo   EuroArgo   December 2020
European contribution to the Argo program via EuroArgo Research Infrastructure
Latest locations of operational profiling floats (data distributed within the last 30 days)

• Argo EU (862)   ○ Argo non EU (3023)

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12 countries & continuously engaging with EU and Pan-EU countries, to strengthen European Argo network.

5

EURO-ARGO DATA MANAGEMENT

- A **free** and **open** data policy relying on an organised <u>data management system</u> and an international community

- 100% **quality-controlled** dataset

- Two versions of Argo data:

  → **Real-Time** data

  → **Delayed-Mode** data

- NetCDF Format

- The Argo Data Management Team is implementing a framework to make Argo data Findable Accessible Interoperable Reusable

H2020 project
[2019-2022]

ENVRI FAIR

11 DACS

Monitoring

Real time data

2 GDACS

FNMOC (USA)   Coriolis (France)

archive USNODC

data on CD

Argo Information Center (AIC) Jcommops Float data base

Scientific users

Operational centers

Principal and regional data experts (delayed mode operators)

Delayed-mode quality-controlled data (DMQC)

available within 12 months

5 ARCS

Regional/Global products

DAC: Data Assembly Centre
GDAC: Global Data Assembly Centre
ARC: Argo Regional Centre

EURO-ARGO OBJECTIVES 2019-2023

As a contribution to extended Argo strategy, Euro-Argo defined its Five-Year plan and its 5 new objectives, as a contribution to the «Global, full-depth and multidisciplinary Argo design».
See: https://doi.org/10.13155/71936

THE 5 OBJECTIVES OF THE NEW 5-YEAR PLAN

| Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
Sustain the existing Core Argo mission.	Develop the extension of Euro-Argo contribution to Argo according to the Euro-Argo strategy as a contribution to the "Global, full-depth and multidisciplinary Argo" design.	Develop scientific and technological coordination with other ocean observing networks and contribute to a Global Ocean Observing System design and its European contribution through European Ocean Observing System (EOOS) initiative.	Develop the engagement with European Argo user communities and stakeholders and reinforce Euro-Argo visibility.	Operate the Euro-Argo ERIC Office under good governance.
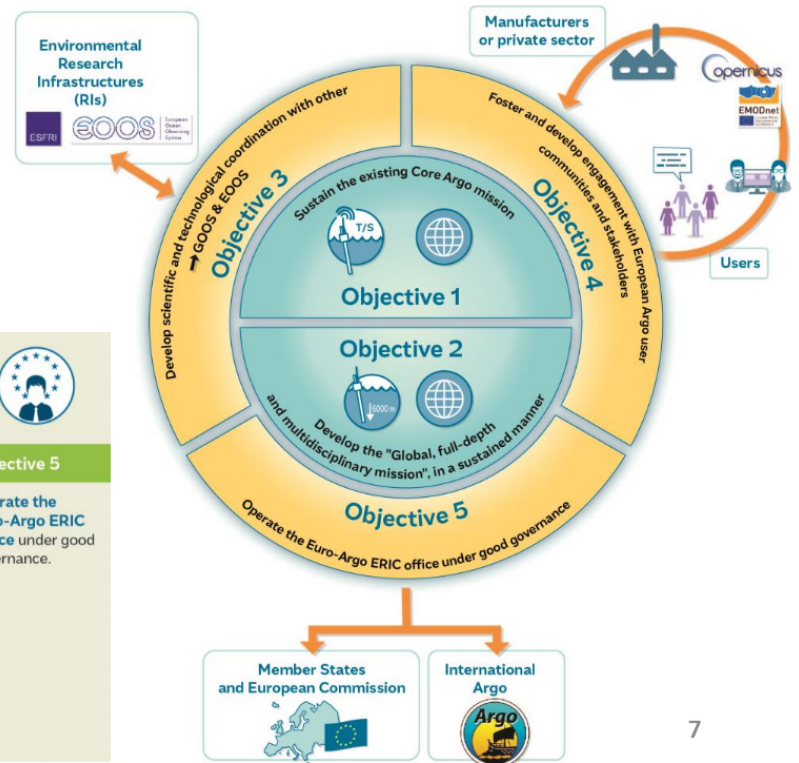
High Latitudes: strategy in the Nordic Seas

Strategy detailed in the "Roadmap for evolution of Argo in Europe" Nov 2013 – SIDERI FP7 project. Last version 2017: https://doi.org/10.13155/48526.

-> New version in preparation.

- Life expectancy ~2 years in the Nordic Seas, with high numbers of floats dying during winter months along the western boundaries

Argo data distribution in the Nordic Seas, plotted on: 25-Jun-2013
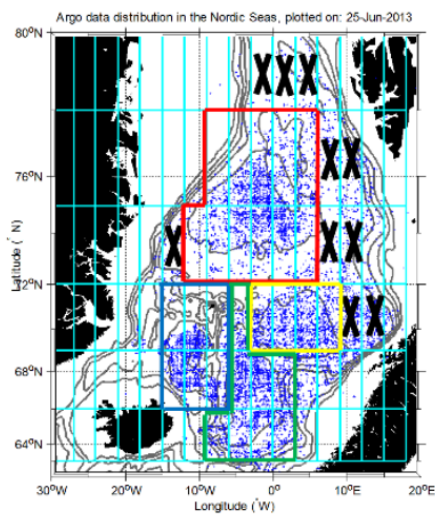
Target:

10 floats in boundary currents

29 floats in deep basins:
  red   – Greenland Sea,
  blue   – Icelandic Plateau
  yellow – Lofoten Basin
  green – Norwegian Basin.

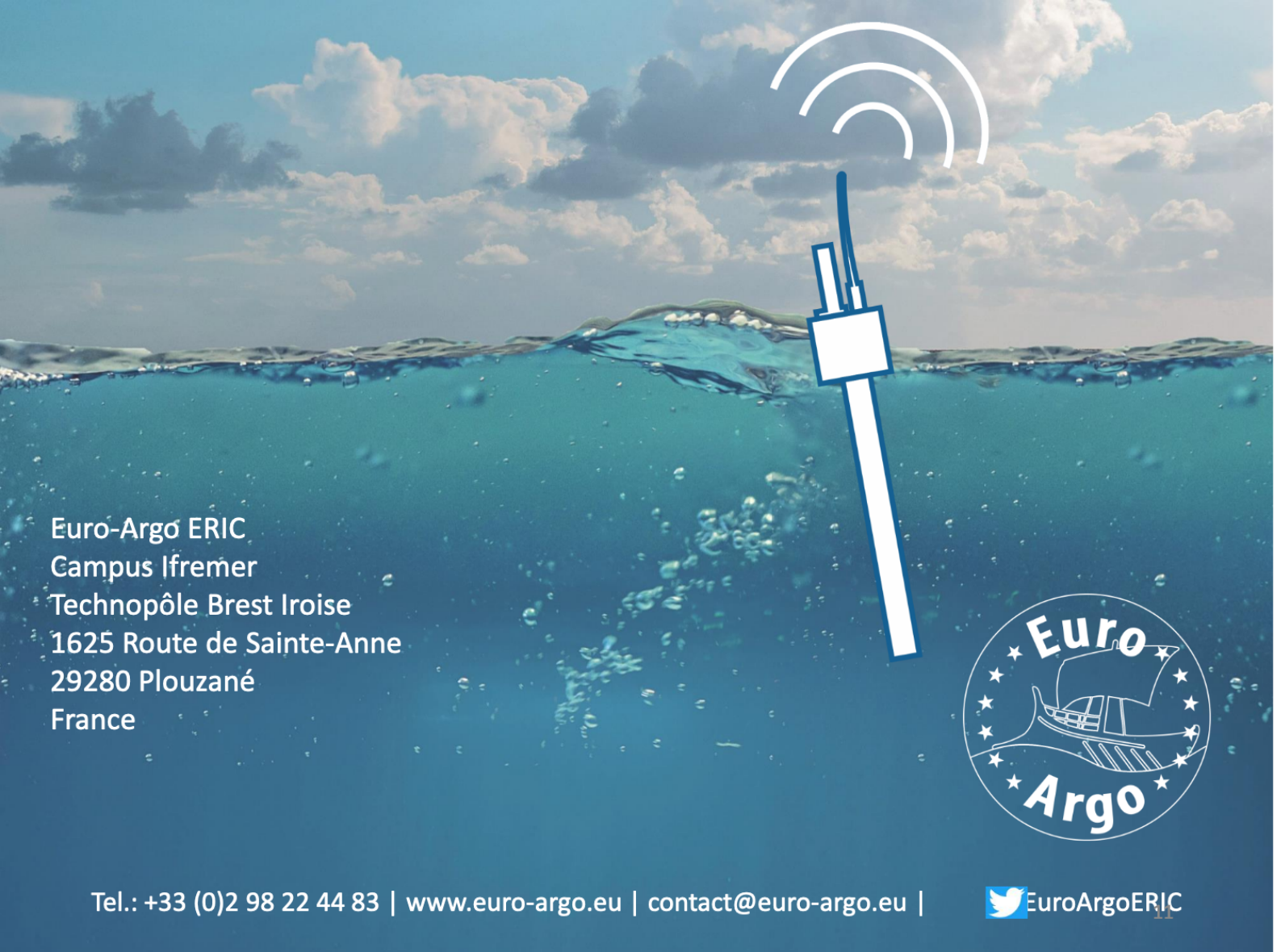# Current work within the Euro-Argo RISE H2020 project

- Collaborative document: *Best practices for ice avoiding on Argo floats*

- Cooperation with new countries:
  - [Arctic & Baltic Argo workshop 8-9 April](#)

- Reference database of ship CTD profiles
  - ISA (Ice Sensing Avoidance) development
    - 2 floats in the Sophia Basin
  - DMQC in the Arctic
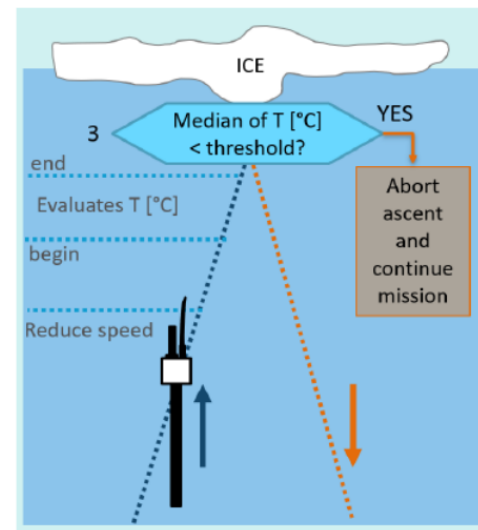
Euro-Argo plans for the coming years

- National deployments 2021-2022 (not exhaustive):
  - Nordic Seas: 7 BGC, 2 Deep, 7 T/S (Norway) in 2021
  - Baffin Bay & possibly other regions: 11 BGC floats (5 with UVP, 4 with transmissiometer) (France/Canada)
  - 2-3 T/S floats (Poland) in the Arctic
  - …

- Continue work on Ice Avoidance (Germany)

Euro-Argo ERIC
Campus Ifremer
Technopôle Brest Iroise
1625 Route de Sainte-Anne
29280 Plouzané
France

Tel.: +33 (0)2 98 22 44 83 | www.euro-argo.eu | contact@euro-argo.eu | EuroArgoERIC