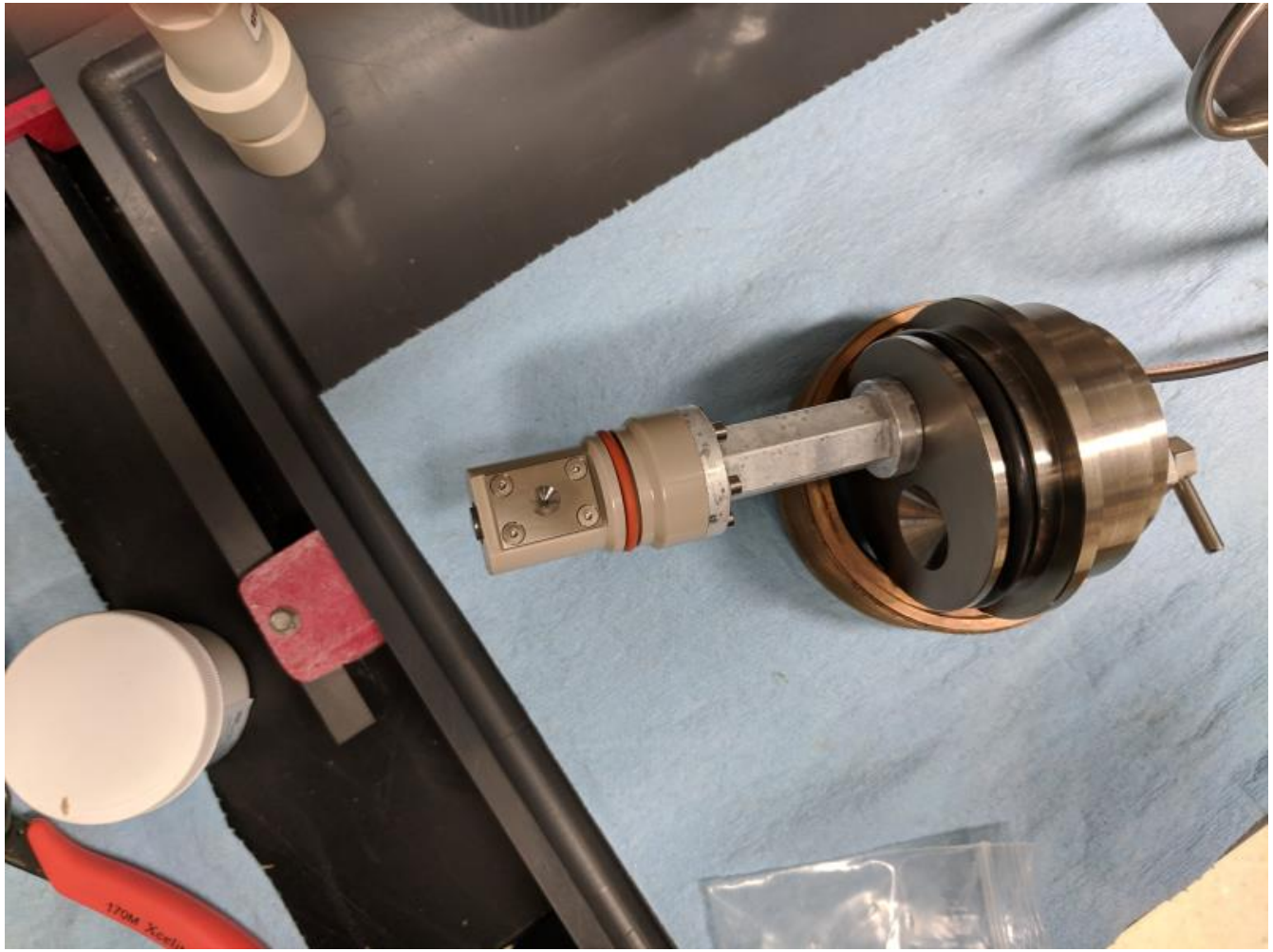
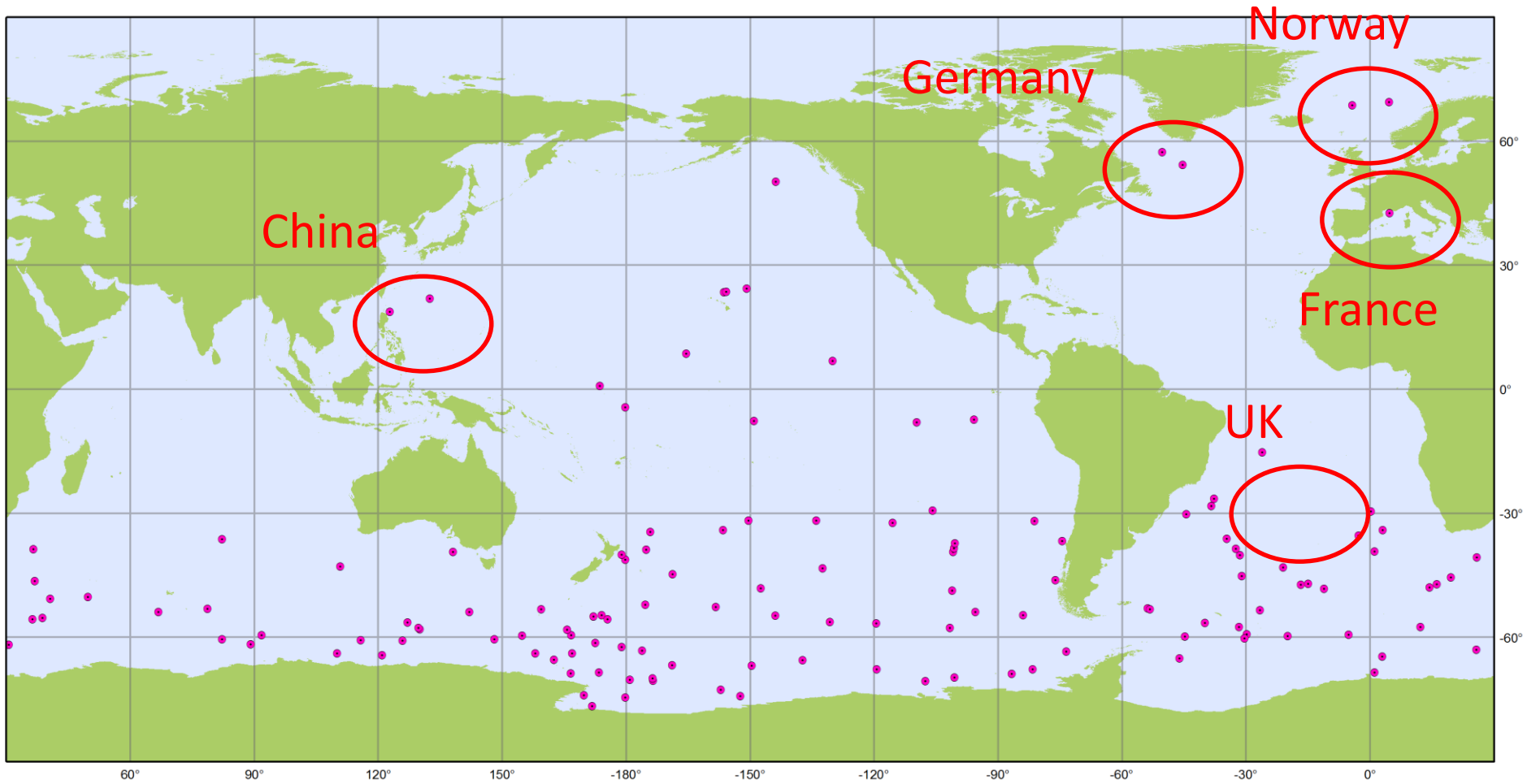


biogeochemical Argo



Argo **BioGeoChemical Argo - pH** **September 2019**

Latest location of operational floats (data distributed within the last 30 days)

TRANSISTOR_PH (136)

Generated by www.jcommops.org, 07/10/2019

EURO-ARGO RISE

pH Processing & DMQC

WP4.2 Biogeochemical Data Management organisation Meeting

Villefranche-sur-Mer, France, 14. Oct. 2019

Arne Körtzinger, Birgit Klein

Henry Bittig, Matt Donelly

Violetta Paba

GEOMAR

BSH Bundesamt für Seeschifffahrt und Hydrographie

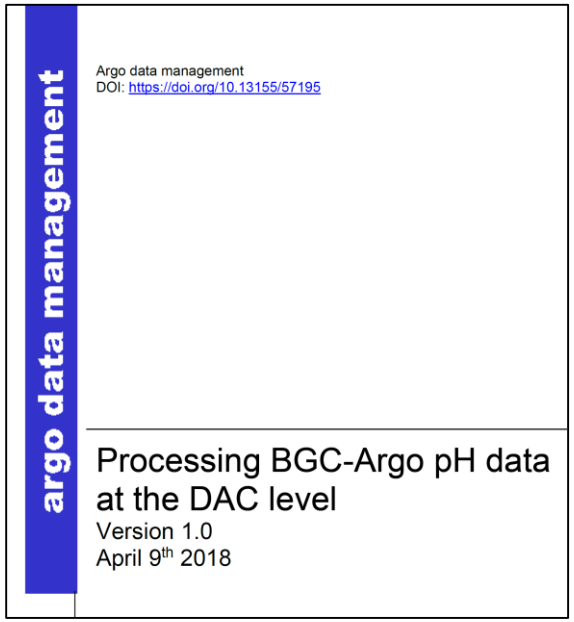
Leibniz Institute for Baltic Sea Research Warnemünde

BODC

Processing: State of the art

BGC-Argo DAC cookbook & QC manual:

- processing raw -> pH (1 sensor type)
- simple RTQC (range, spike)
- adjustment based on CANYON-B, LIRv2, MLR and other variables (T, S, O_2)



9 Matlab code to compute pH

The function phcalc was used to produce the pH data shown in Table 6.

```
function [phfree,phtot]= phcalc(Vrs, Press, Temp, Salt, k0, k2, Pcoefs)
%
% INPUTS:
%   Vrs     = Voltage bewteen reference electrode and ISFET source
%   Press   = Pressures in decibars
%   Temp    = Temperature in degrees C
%   Salt    = Salinity (usually CTD salinity on the PSS)
%   k0      = Sensor reference potential (intercept at Temp = 0C)
%   k2      = linear temperature coefficient (slope)
%   Pcoefs  = sensor dependent pressure coefficients

% ************************************************************************
%  SET SOME CONSTANTS
% ************************************************************************
%Universal gas constant, (R) , http://physics.nist.gov/cgi-bin/cuu/Value?r
R    = 8.31446; % J/(mol K)
F    = 96485; %Faraday constant Coulomb / mol
Tk   = 273.15 + Temp; % degrees Kelvin
ln10 = log(10); % natural log of 10

% ************************************************************************
% CALCULATE PHYSICAL AND THERMODYNAMIC DATA
% Dickson, A. G., Sabine, C. L., & Christian, J. R. (2007). Guide to best
% practices for ocean CO2 measurements.
% ************************************************************************

% IONIC STRENGTH OF SEAWATER (mol / kg H2O)
% Varified units by comparing to Dickson et al. 2007: Chap 5, p10 Table 2
```

Processing: State of the art

BGC-Argo DAC cookbook & QC manual:

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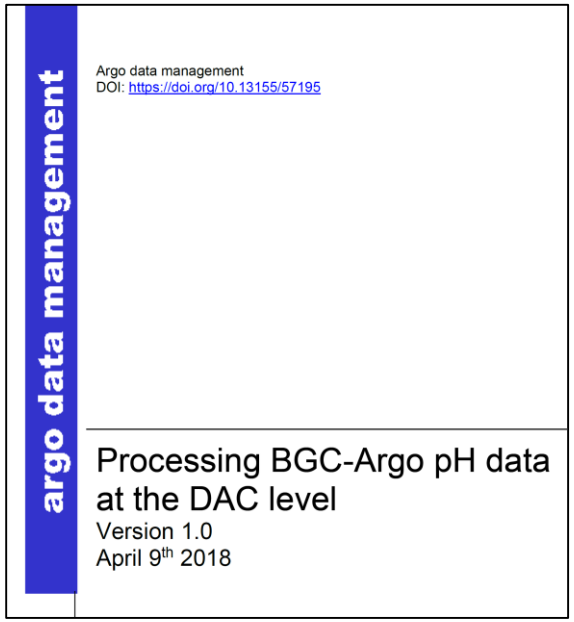
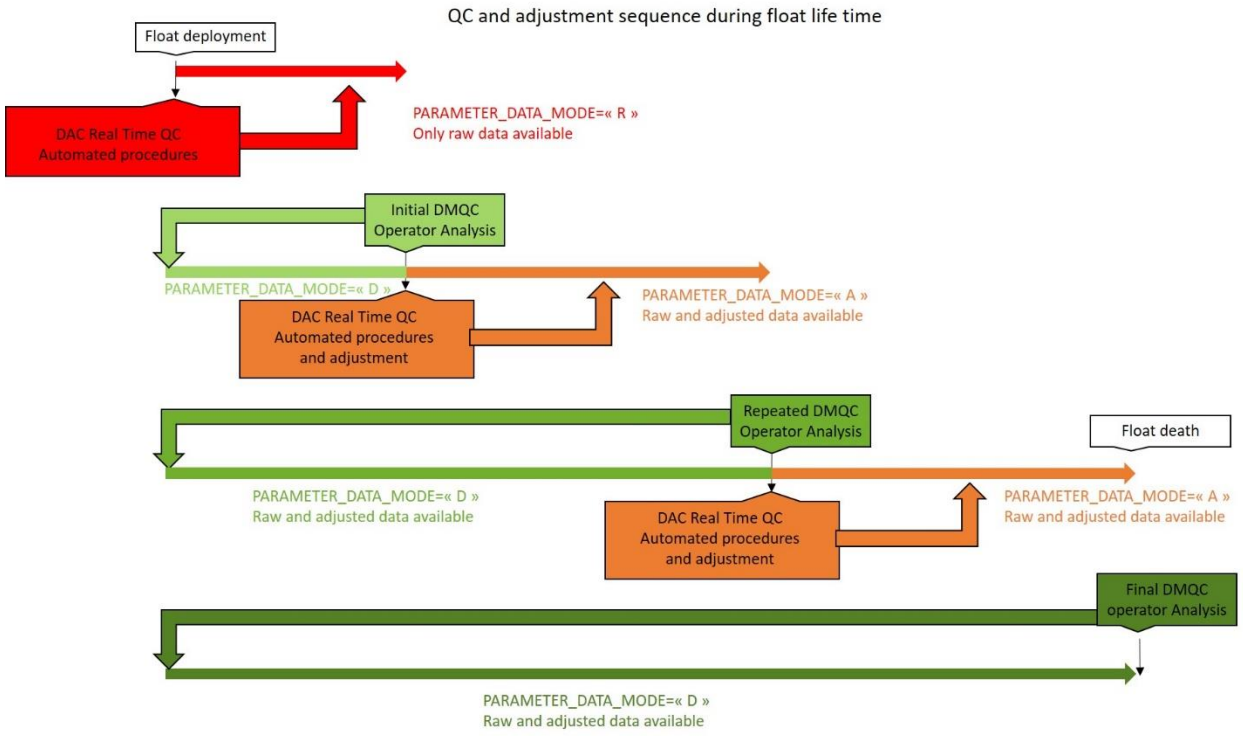

argo data management

Argo data management
DOI: https://doi.org/10.13155/57195

Processing BGC-Argo pH data at the DAC level
Version 1.0
April 9th 2018



Bittig et al. (2019) A BGC-Argo guide: Planning, deployment, data handling and usage. Front. Mar. Sci. 6:502.
doi: 10.3389/fmars.2019.00502

Processing: State of the art DAC status

BGC-Argo DAC cookbook & QC manual:

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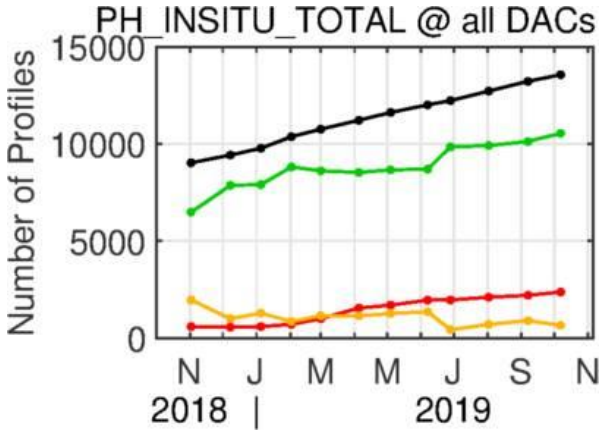
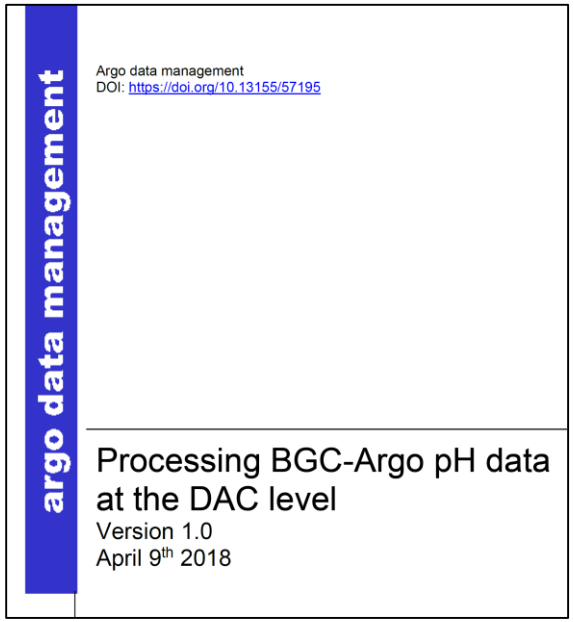


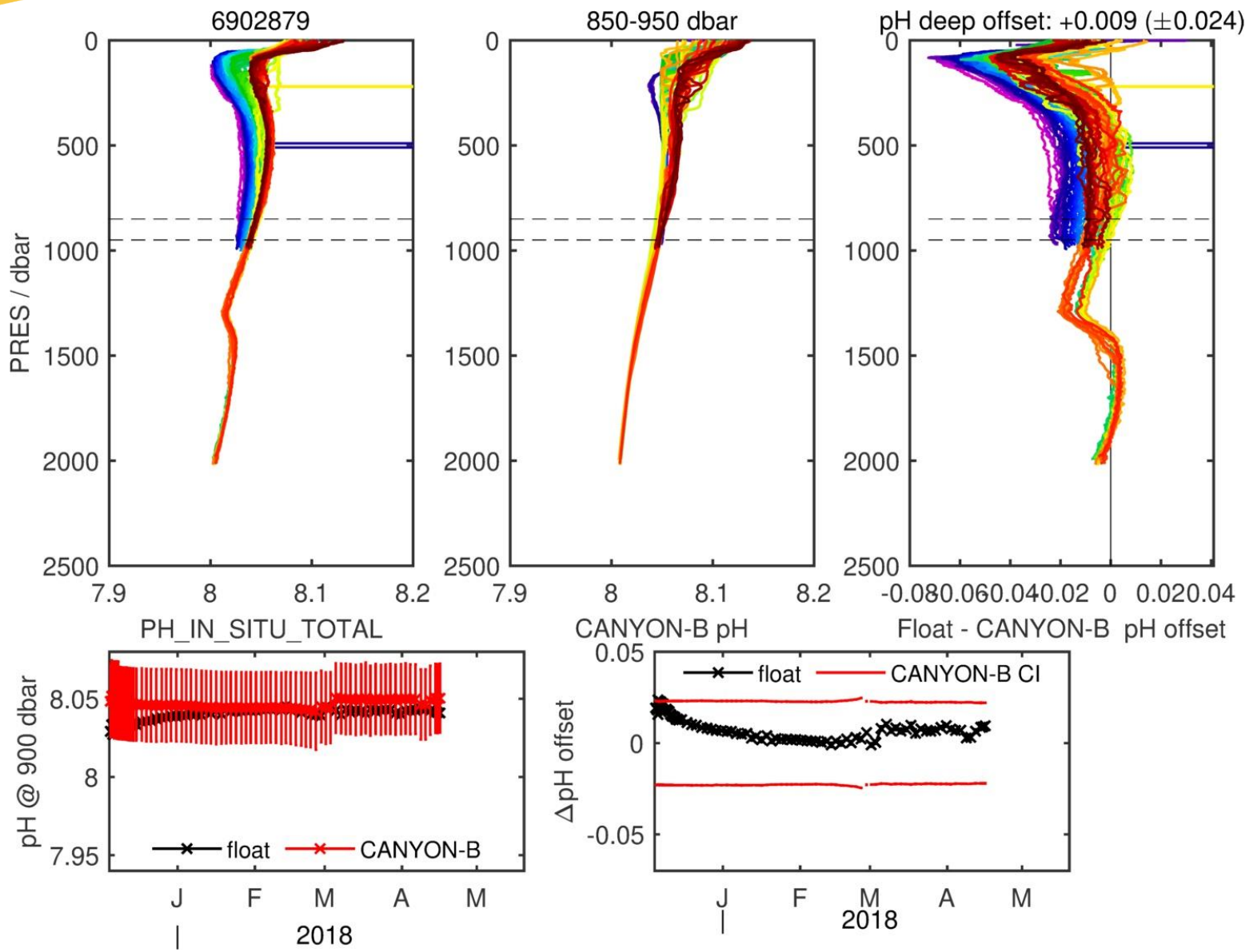


Number of PH floats for each DAC as identified from different sources

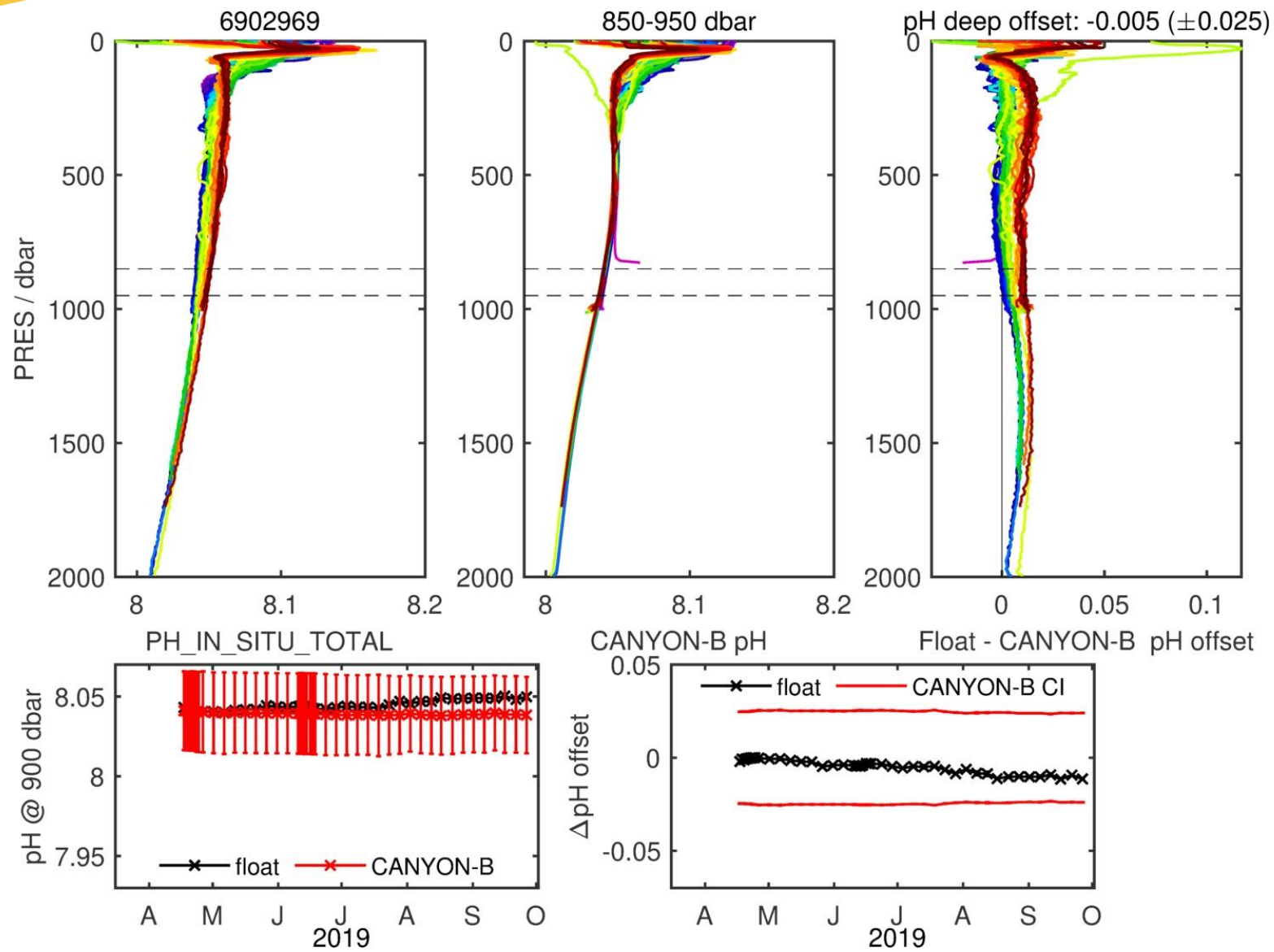
DAC	n/a	aoml	bodc	coriolis	csio	csiro	incois	jma	kma	kordi	meds	nmdis	total
total number of floats	8	175	—	9	2	1	—	1	—	—	—	—	196
PH floats found by:													
JCOMMOPS	8	168	—	7	2	1	—	1	—	—	—	—	187
GDAC meta files	—	173	—	9	2	1	—	1	—	—	—	—	186
...in v3.1	—	173	—	9	2	1	—	1	—	—	—	—	186
GDAC profile files	—	160	—	8	2	1	—	—	—	—	—	—	171
...in v3.1	—	160	—	8	2	1	—	—	—	—	—	—	171
GDAC merge index	—	160	—	8	2	1	—	—	—	—	—	—	171

http://biogeochemical-argo.org/cloud/document/implementation-status/BGC_summary.pdf (07 Oct 2019)

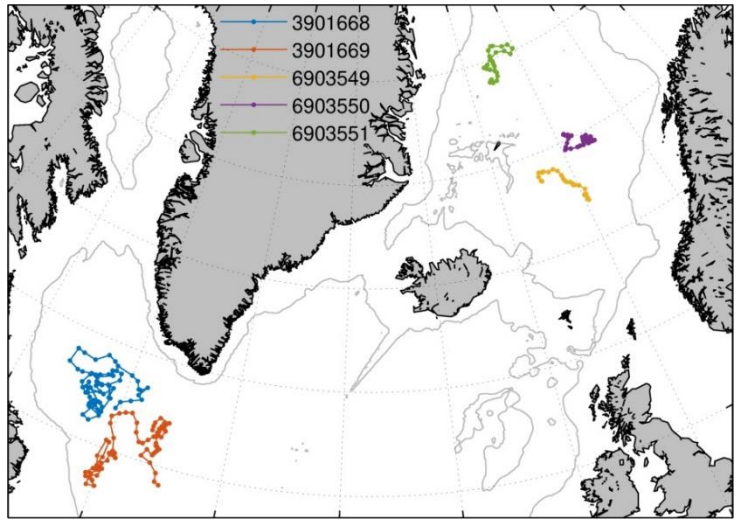
IF: 7 Floats with data: Med Sea

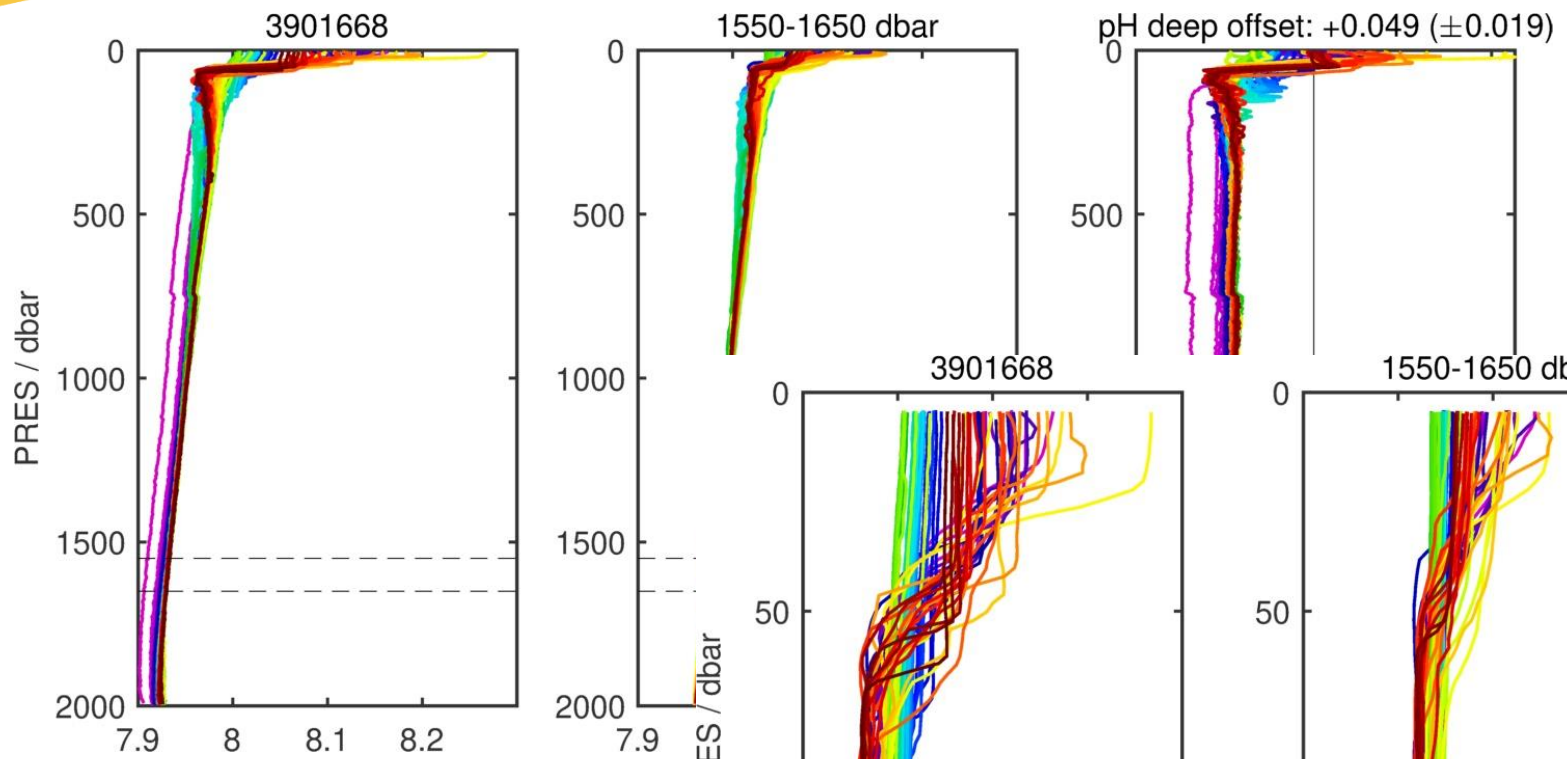


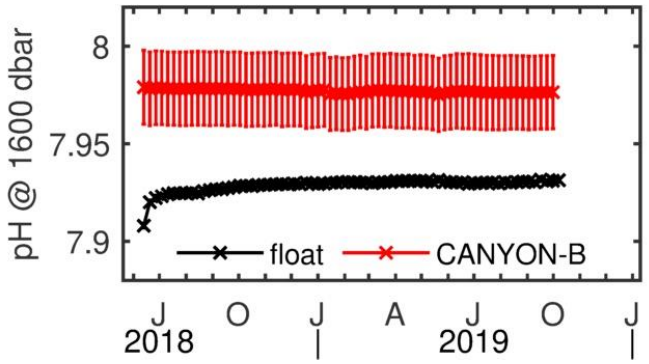
IF: 7 Floats with data: Med Sea

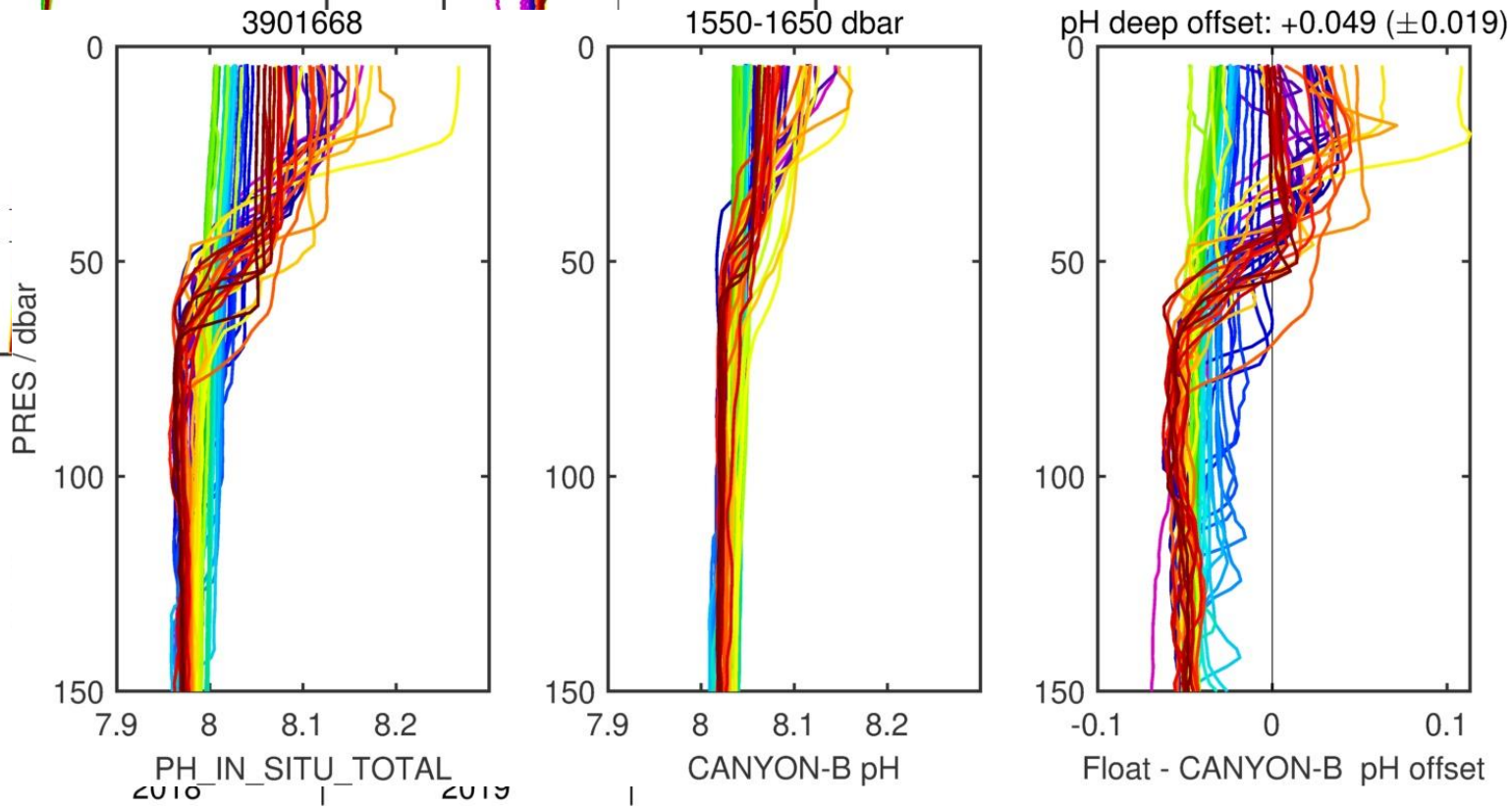


IF: 7 Floats with data: Labrador Sea

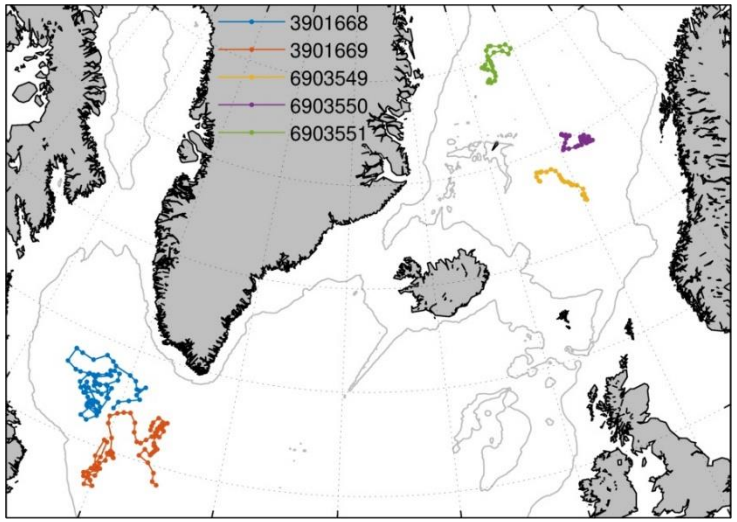


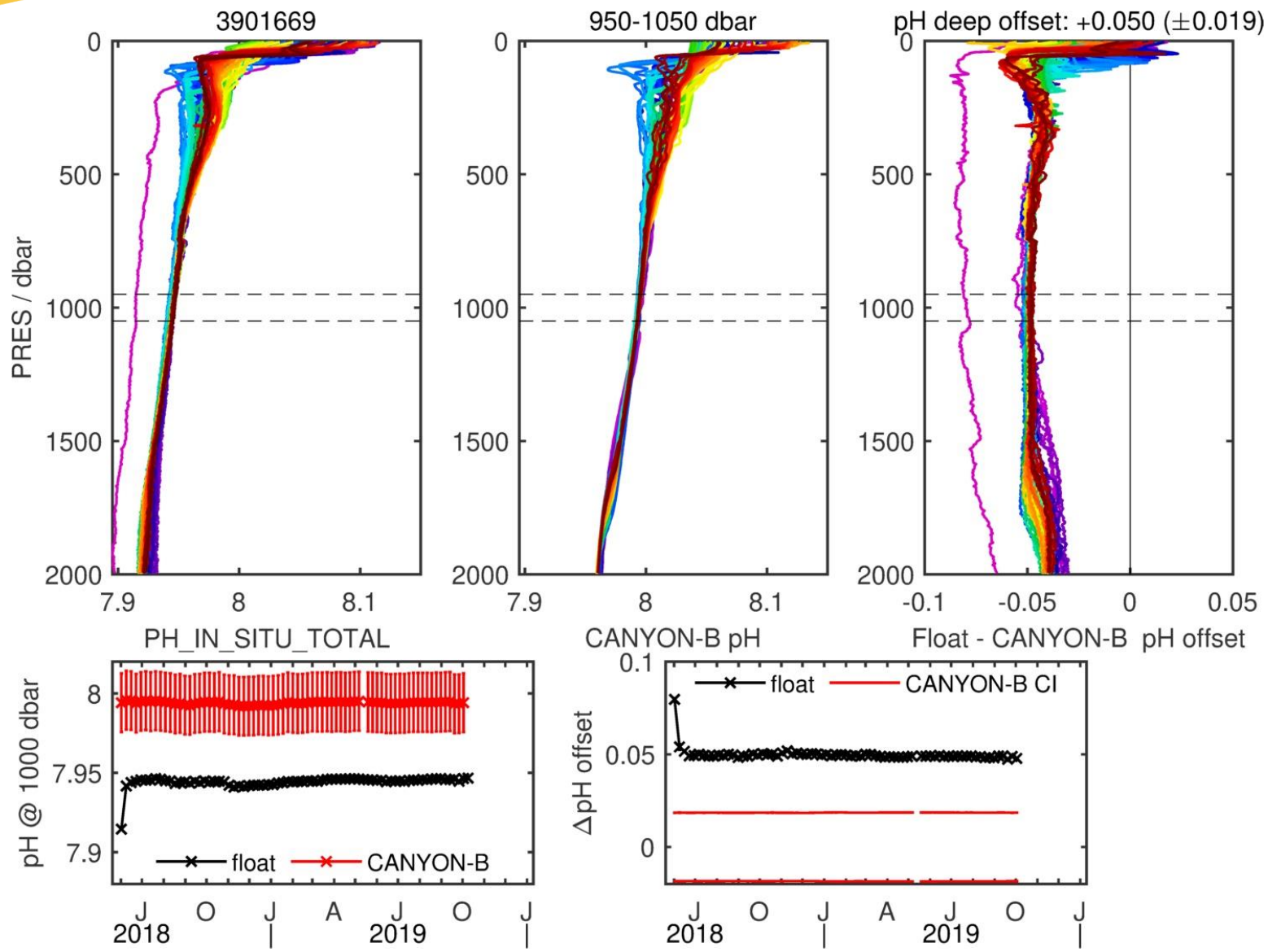




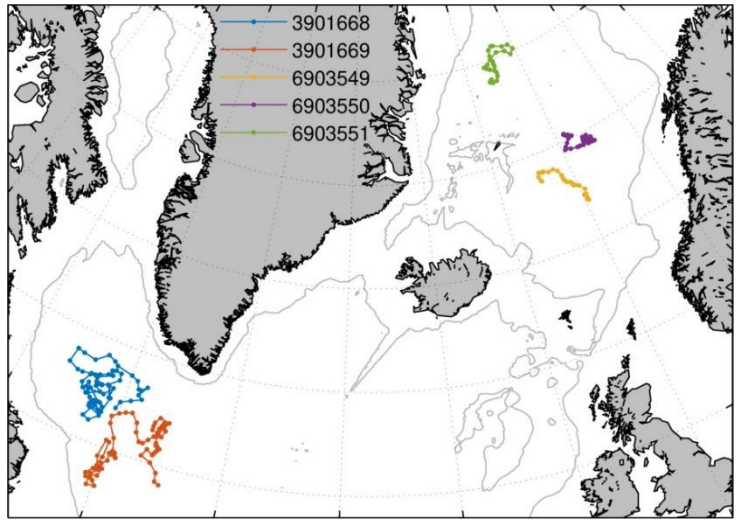


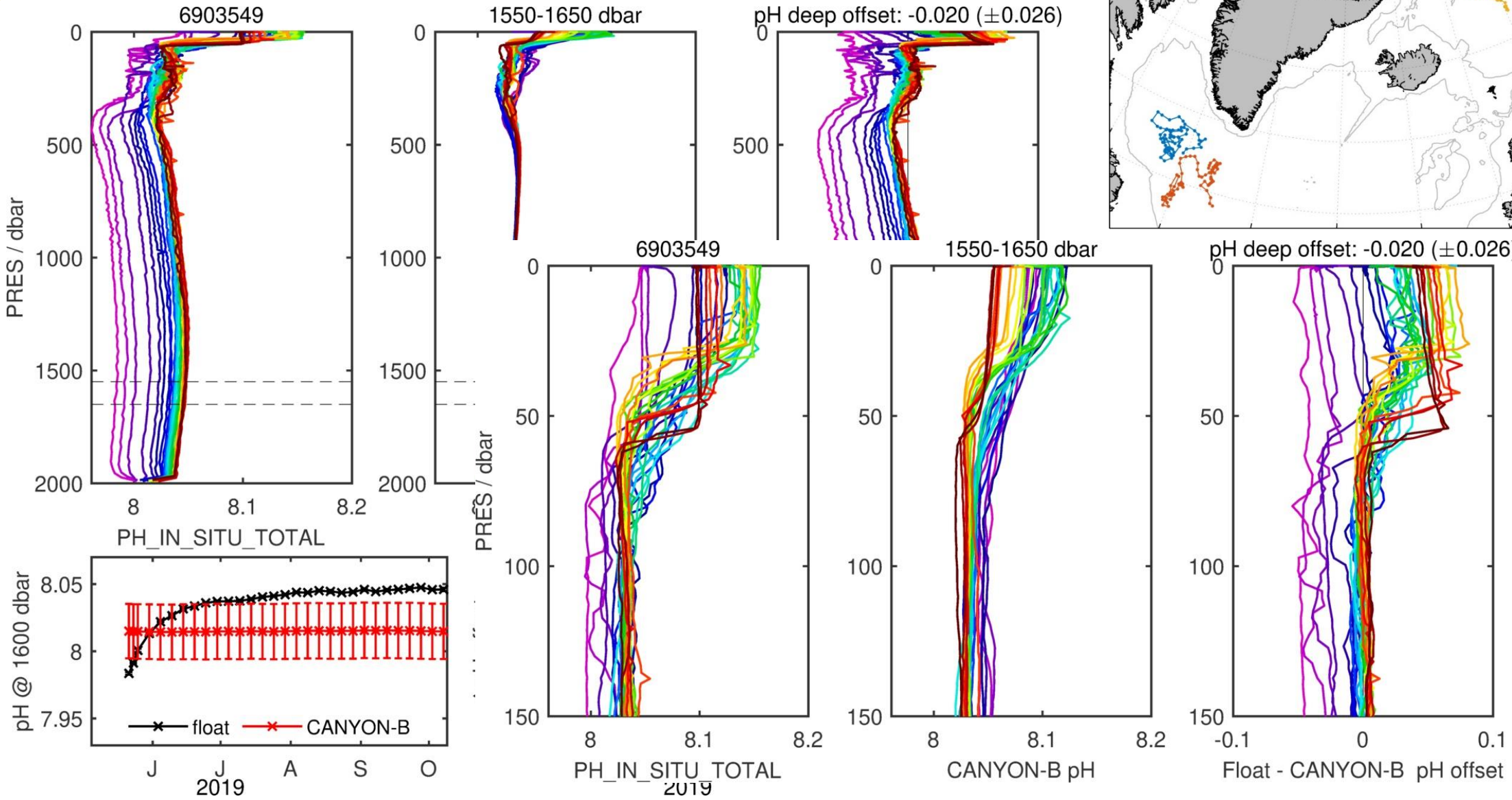
IF: 7 Floats with data: Labrador Sea



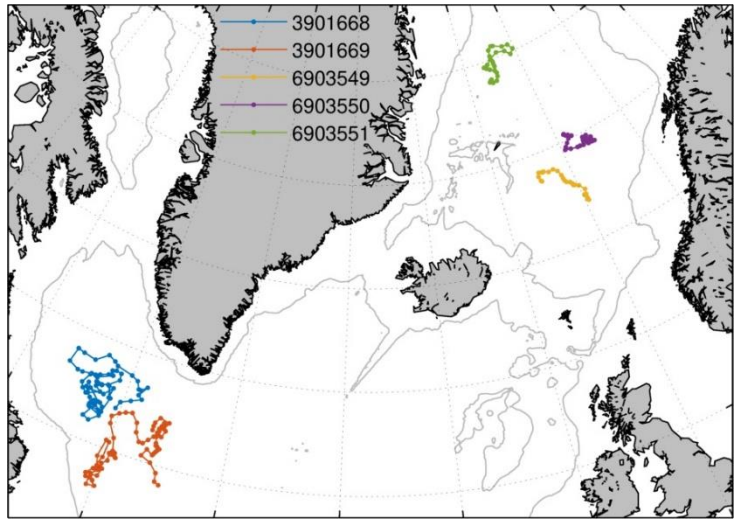


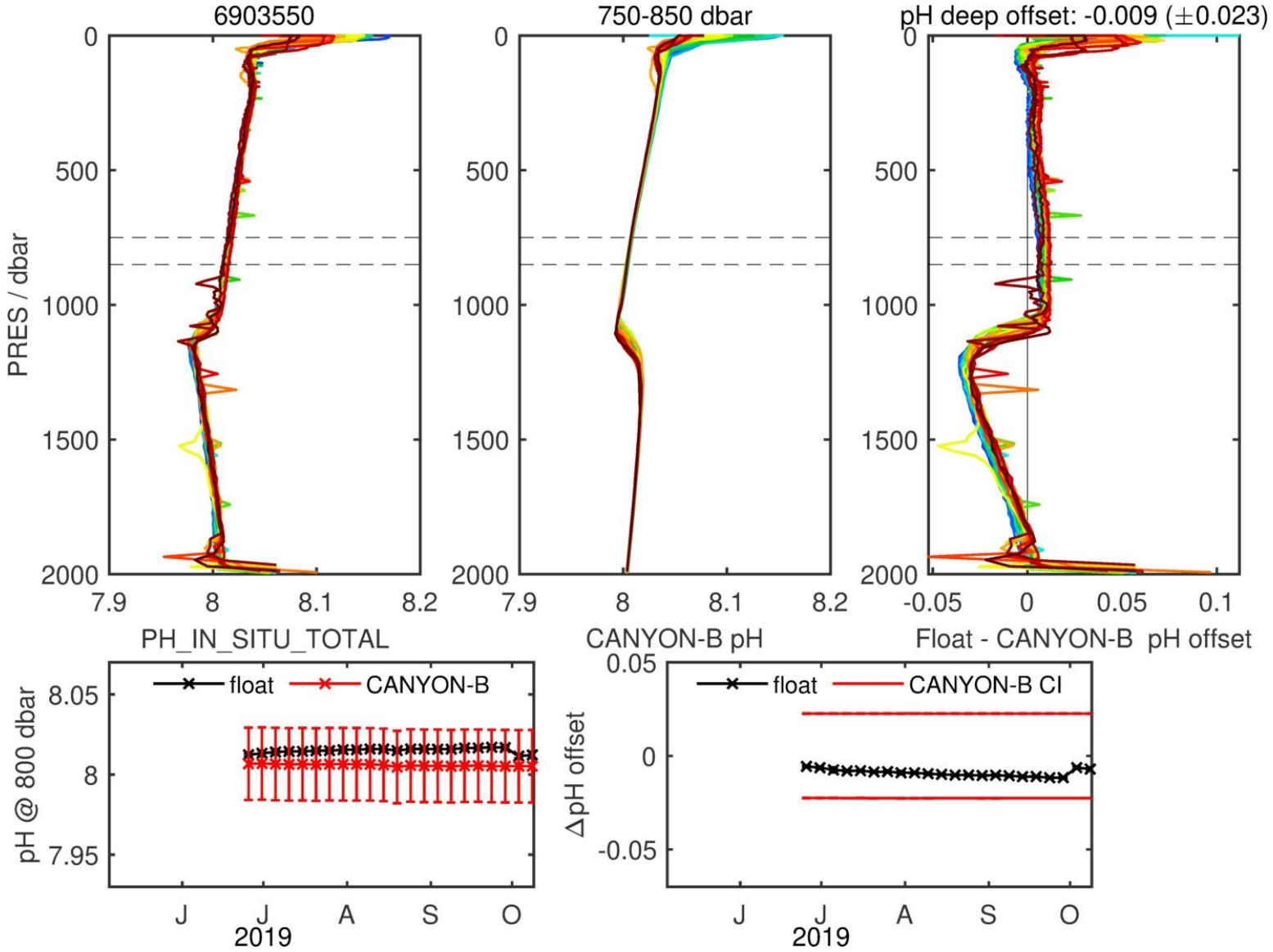
IF: 7 Floats with data: Nordic Seas





IF: 7 Floats with data: Nordic Seas





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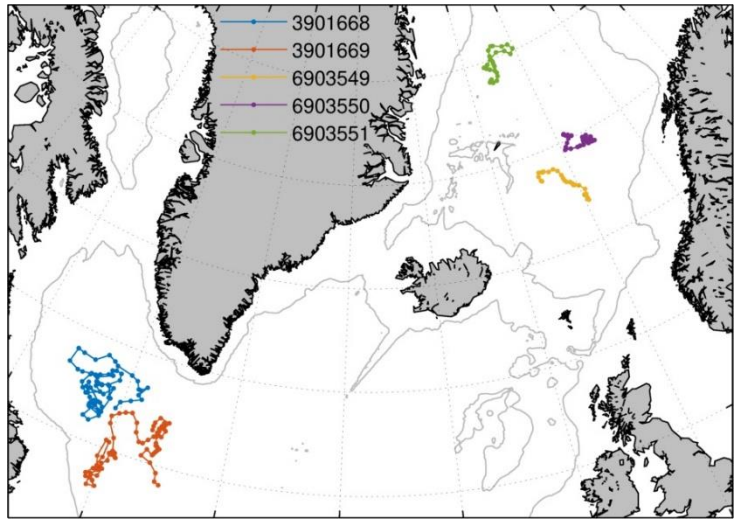

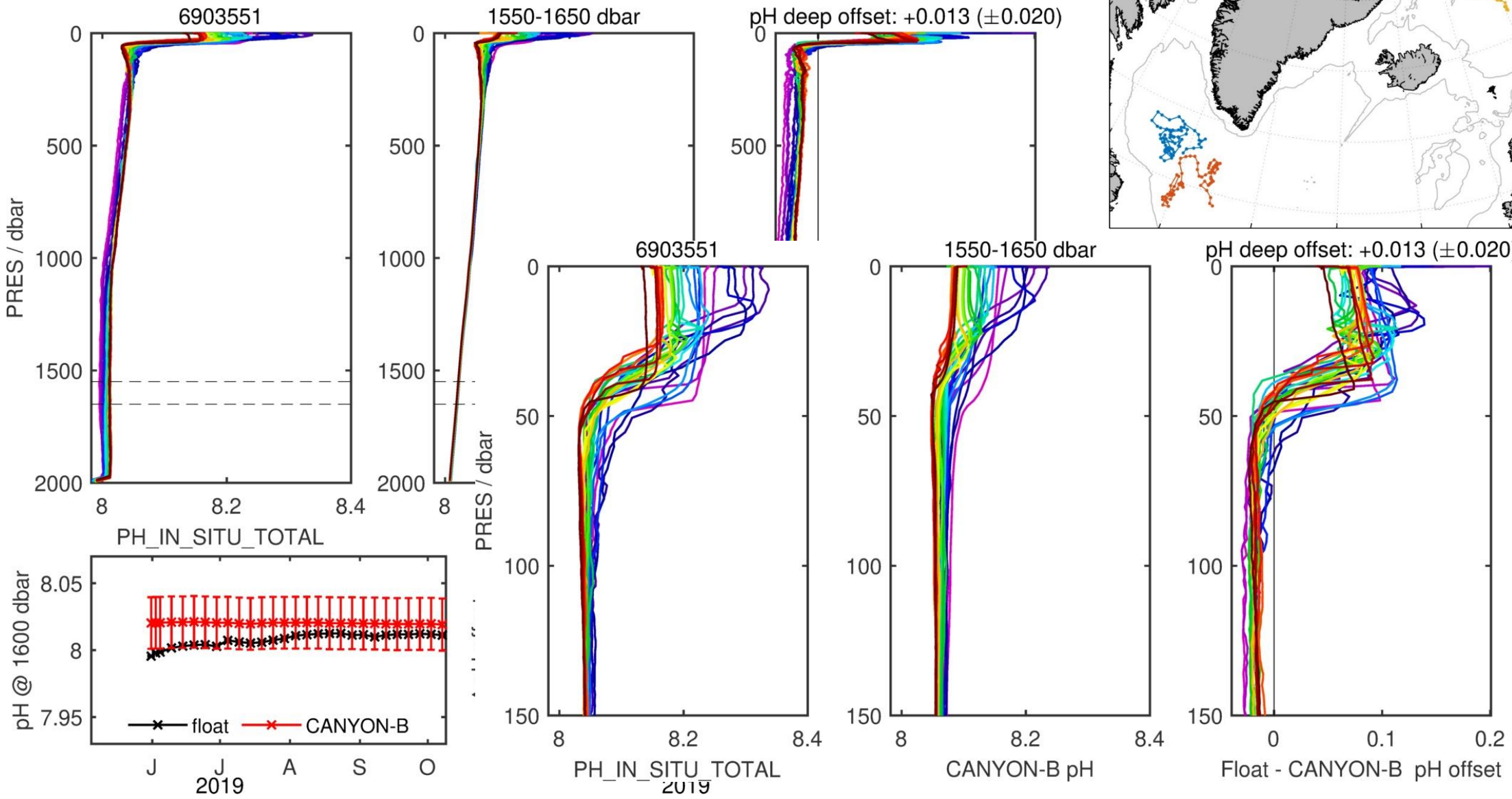

EURO-ARGO RISE

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