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PAN-EUROPEAN INFRASTRUCTURE FOR OCEAN & MARINE DATA MANAGEMENT

North Atlantic Aggregated dataset and Climatology

Christine Coatanoan, Plenary Meeting, Brest, 17th September 2015

Dataset (2015) V2 1900-2012 N=1662303
2013-2014 N=78791
2015 (Argo) N=688
Time missing !! N=65484

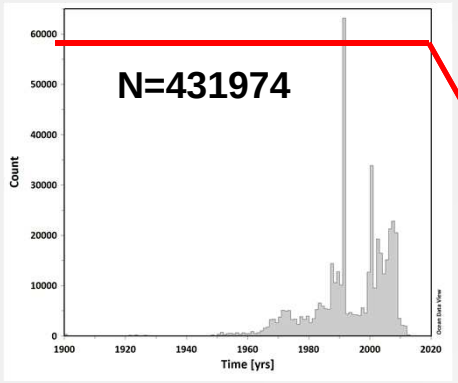
Dataset (2013) V1

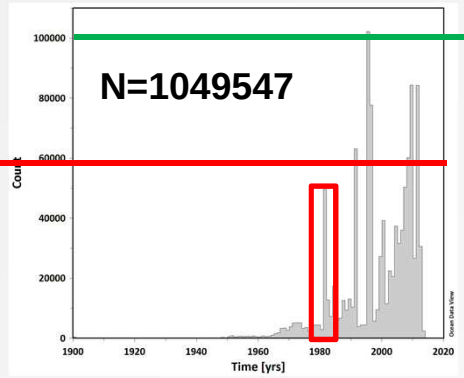
Dataset (2014) V1.1

V1 ➡ V1.1

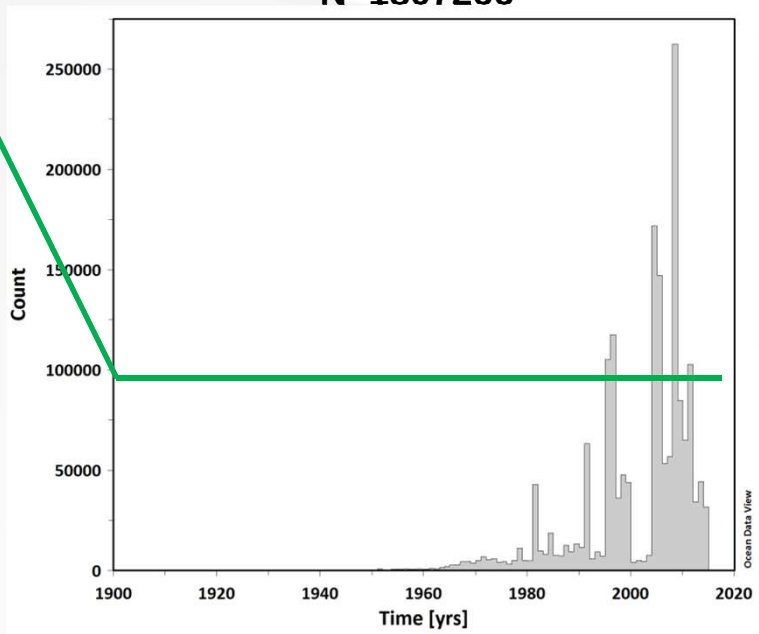
V2

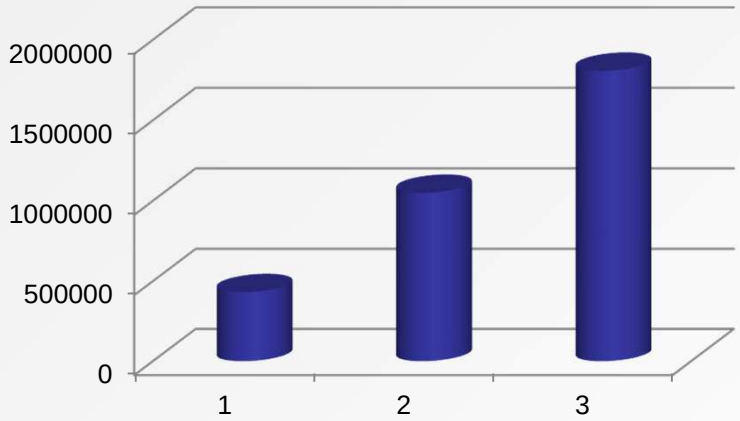
~72% more/V1.1





N=1807266





Increase of the dataset

– www.seadatanet.

PAR	# stations
	1807266
T	1693840
S	785476
TS	784015

Most important Edmo_code providers for Atlantic Area

V1 2013 - 431974 stations **V1.1 2014 - 1049547 stations**

Edmo_code	2014 (V1.1)	2015 (V2)	Data increase (%)
43 (BODC)	331786	1008756	~+204%
353 (IEO)	188078	186529	~-0.8%
396 (MI)	127592	304511	~+139%
486 (SISMER)	99601	104860	~+5.3%
540 (SHOM)	49580	51840	~+4.5%
681 (RNODC)	38795	65809	~+77.4%

V2 2015 - 1807266 stations

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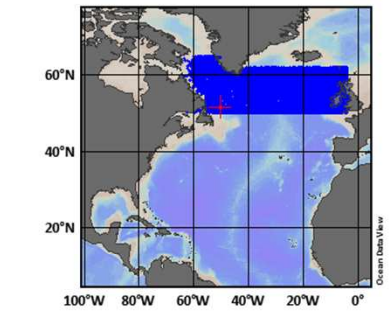
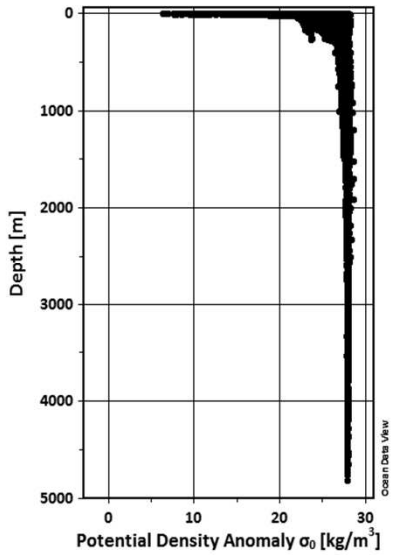
1980-1984

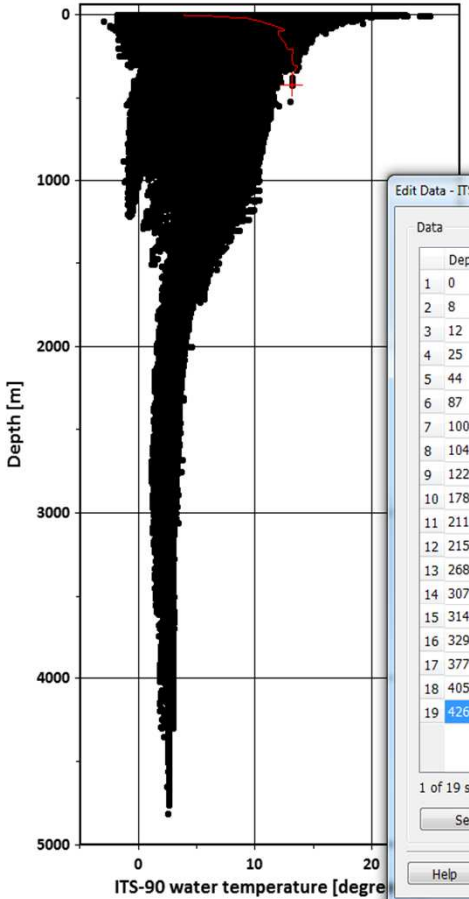
V2

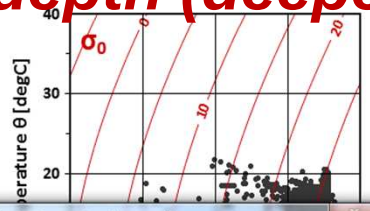
QF 0,1& 2

Ex of anomalies : inversion in depth (deeper=surface) ??









Edit Data - ITS-90 water temperature [degrees C]

Data

	Depth [m]	ITS-90 wate	Errors IT:	QF
1	0	3.9		1
2	8	3.9		1
3	12	6.4		1
4	25	9.4		1
5	44	10.6		1
6	87	12.3		1
7	100	12.5		1
8	104	12		1
9	122	12		1
10	178	12.6		1
11	211	12.8		1
12	215	13.3		1
13	268	13.2		1
14	307	13.3		1
15	314	13.7		1
16	329	13.5		1
17	377	13.2		1
18	405	13.2		1
19	426	13.2		1

1 of 19 samples selected

Select All | Invert Selection

Change Value | Change Error Value | Delete Value(s) | Delete Error Value(s) | Change Quality Flag(s)

Help | OK | Cancel

Station ID: 1650313

Station	8174295 (C)
Position	50.117°W / 51.6°N
Date	21 October 1979
Time	12:00:00.000
Depth Rang...	[0.0 - 426.0]
Bot. Depth ...	1100
LOCAL_CDI...	8174295
EDMO_code	540
Instrument ...	SDN:P01::ADEPZZ01 SDN:L22::TOOL0435 ...
Reference	http://seadatanet.maris2.nl/v_cdi_v3/print...
Data set na...	8174295_XB
Discipline	Administration and dimensions;Physical oce...
Category	Administration and dimensions;Water colu...
Variables m...	Temperature of the water column;Vertical ...
Data format	ODV
Data format...	0.4
Data size	
Data set cr...	20141218
Latitude 1	51.60
Latitude 2	51.60
Longitude 1	-50.12
Longitude 2	-50.12
Datum	
Measuring a...	point
Water dept...	
Depth refer...	
Minimum ins...	
Maximum in...	
Start date	19791021

Sample: 19 / 19

1: Depth [m]	426.0	1
2: ITS-90 water temperature ...	13.20	1
3: Water body salinity [per mille]		9
drvd: Potential Density Anomaly ...		1
drvd: Potential Temperature θ [...		1

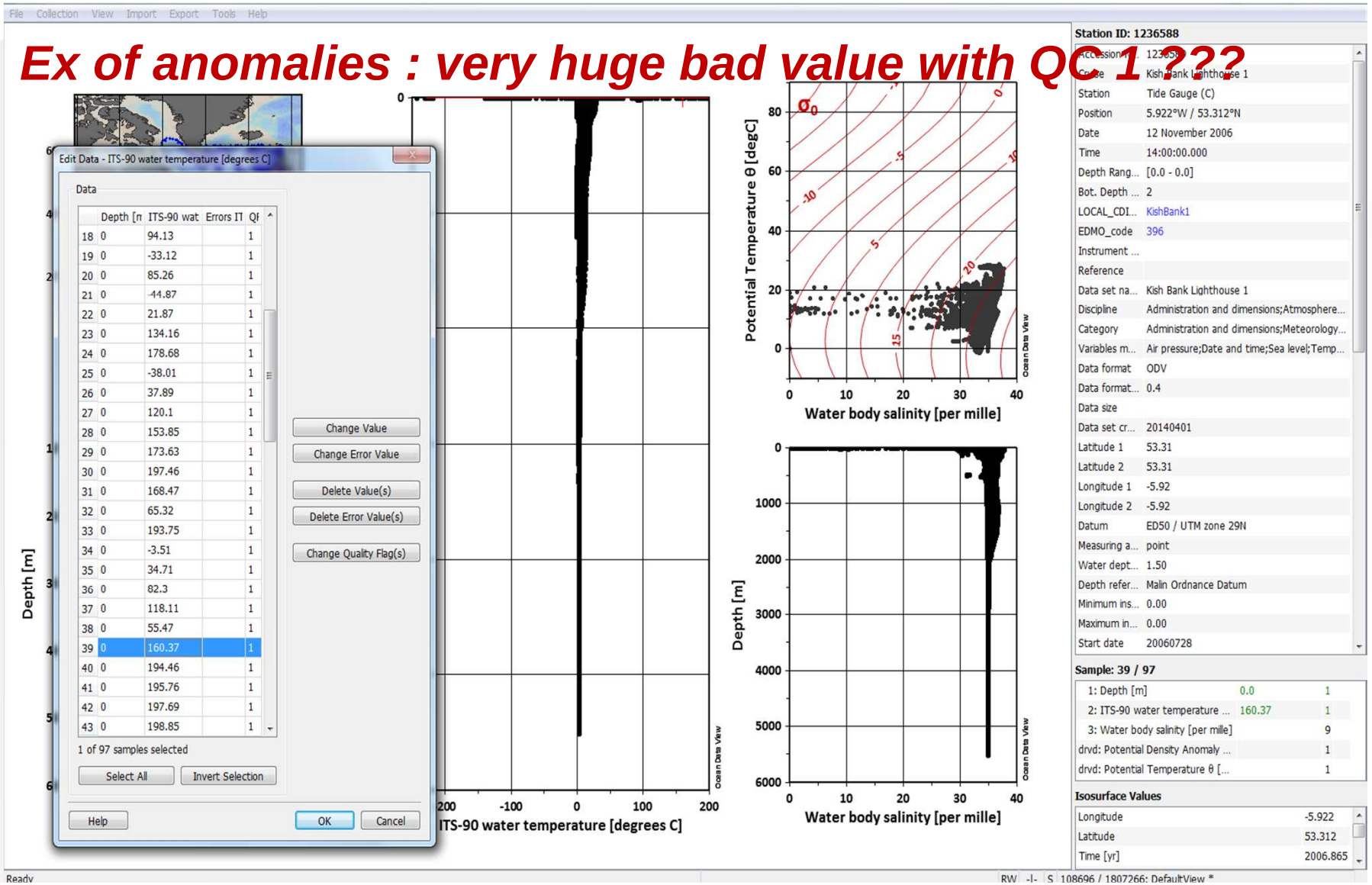
Isosurface Values

Longitude	-50.117
Latitude	51.600
Time [yr]	1979.804

Ready

RW -|- S 909676 / 1807266: DefaultView *

Ex of anomalies : very huge bad value with QC 1 ???



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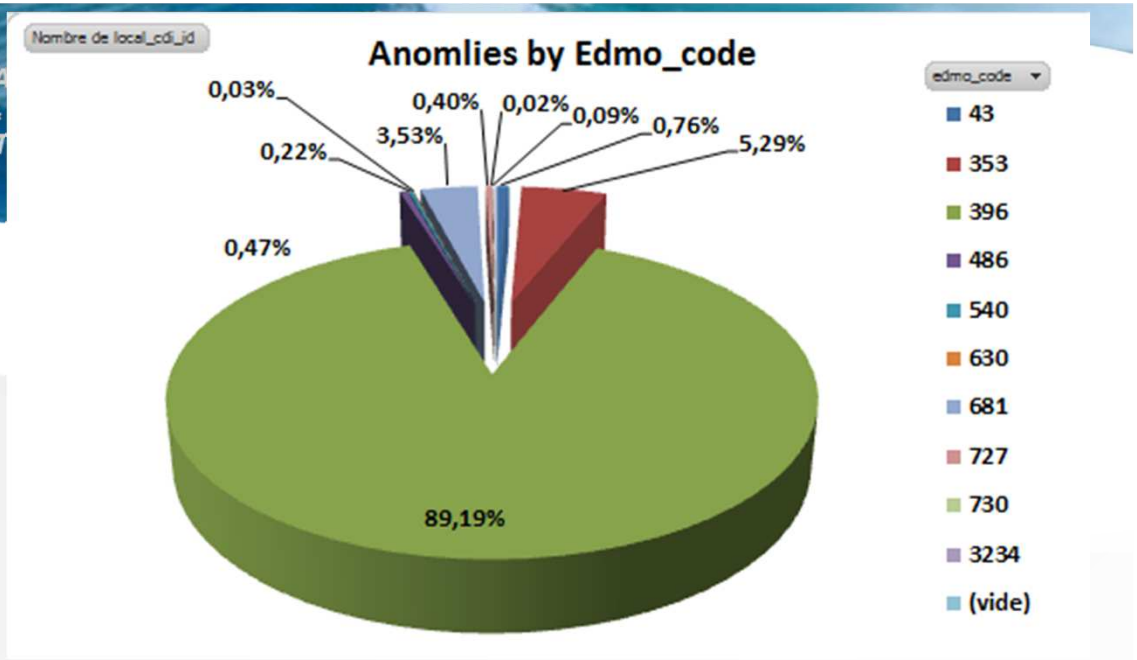
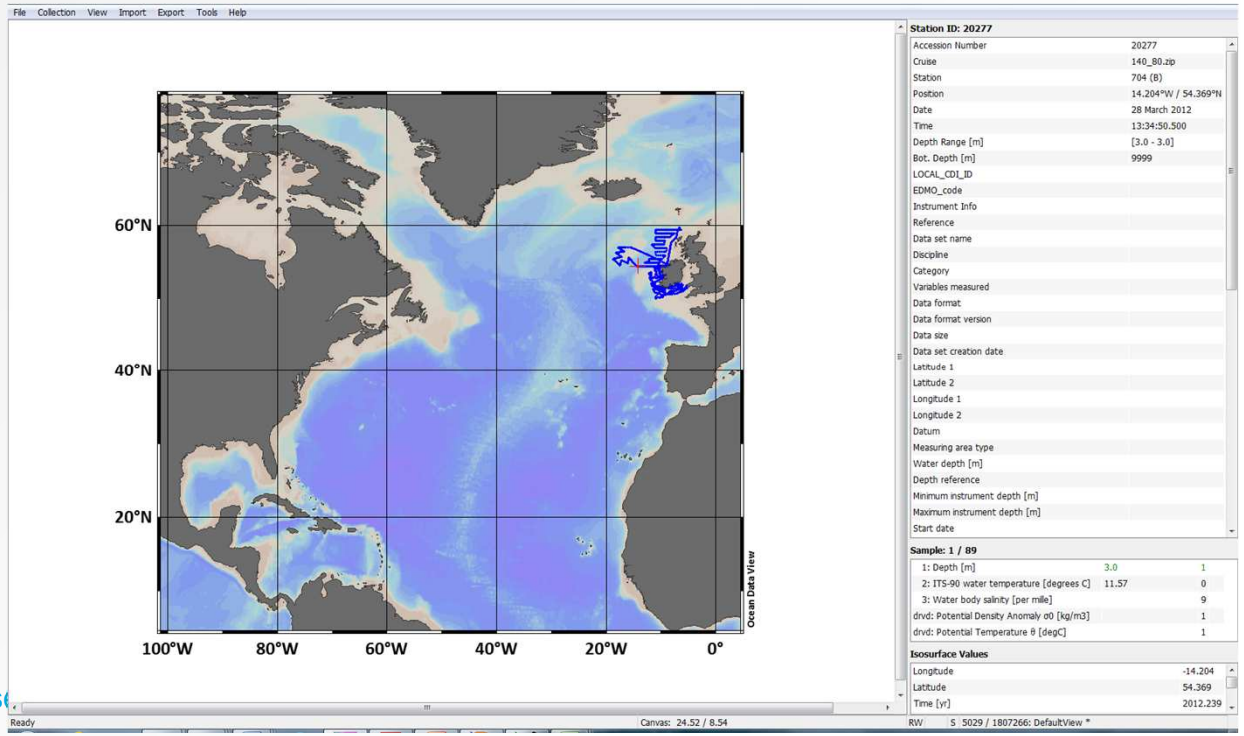
Anomalies

Edmo_code	LOCAL_CDI_ID
43	132
353	920
396	15524
486	82
540	39
630	6
681	614
727	69
730	4
3234	16
(vide)	
Total général	**17406**



Empty => No edmo_code
No local_cdi_id

Ex : Cruise = 140_80.zip ??
Marine Institute ???



Anomalies - Feedback ⟹

Corrections done
Corrections in progress
Corrections will be done

Edmo_code LOCAL_CDI_ID

Étiquettes de lignes	Nombre de local_cdi_id
43	132
353	920
396	15524
486	82
540	39
630	6
681	614
727	69
730	4
3234	16
(vide)	
Total général	**17406**

BODC (UK) OK
IEO (Spain) OK
MI (Ireland) OK

SISMER (France) OK
SHOM (France) OK
NIOZ (Netherlands) OK
RIHMI-WDC NODC (Russian Federation) OK
Marine Hydro Physical Institute (Ukraine) No feedback

ICES (Denmark) OK
PANGAEA (Germany) OK

In terms of %

	TOT	QF0	QF1	QF2	QF:3-9
T	73877673	1200693 **1,62%**	72438070 **98,05%**	374 **0,0005%**	238536 **0,33%**
T after correction	73877673	988646 **1,34%**	72109310 **97,6%**	374 **0,0005%**	779337 **1,05%**

	TOT	QF0	QF1	QF2	QF:3-9
S	34036664	1301510 **3,82%**	32244014 **94,73%**	46811 **0,13%**	444329 **1,30%**
S after correction	34036664	1301510 **3,82%**	31814244 **93,47%**	46811 **0,13%**	874099 **2,57%**

1990 to 2011

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Time-space resolution

Climatology - DIVA

- Diva 4.6.9
- Reference field

(semi-normed analysis)

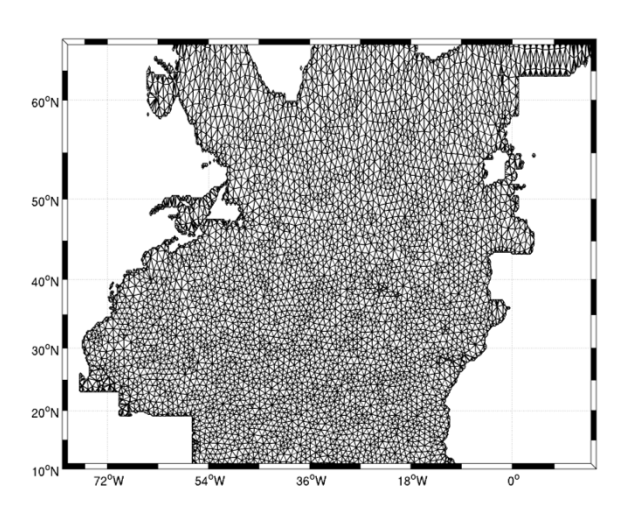
- Error field defined

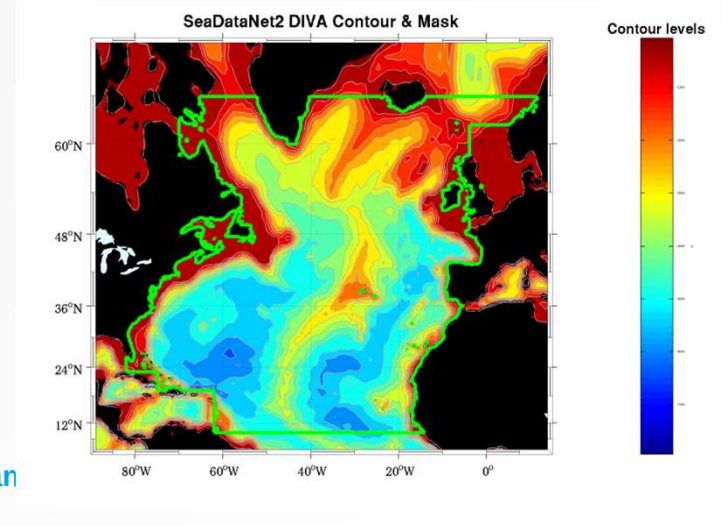
as “clever mean error field”
(ispec=111)

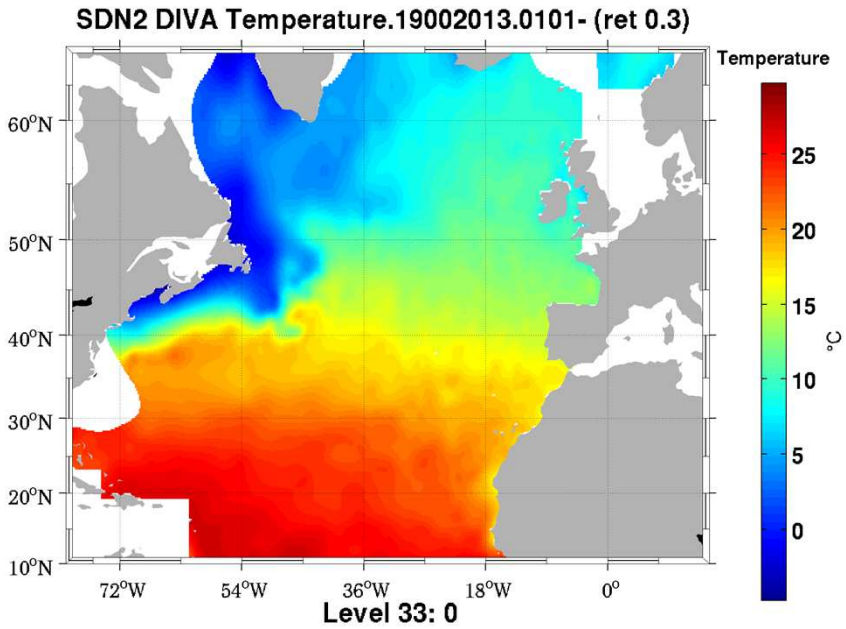
- Variable : Temperature & Salinity
- Year : 1900 to 2013
- Monthly : 01 to 12
- Season : 1202 – 0305 – 0608 – 0911
- Depth : (IODE) 33 levels - 0 to 5500
- used 0 to 4000)

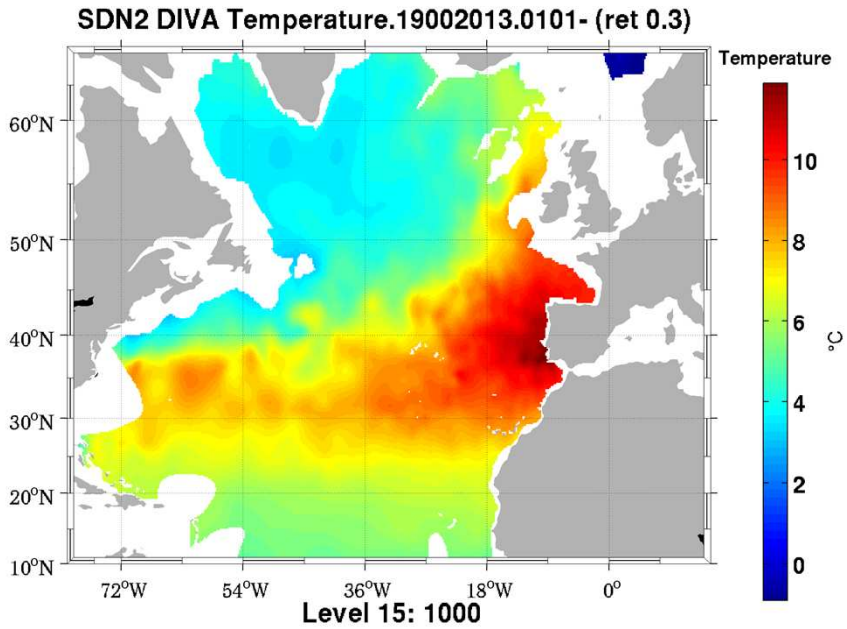
(5500,5000,4500,4000,3500,3000,2500 ,2000,1750,1500,1400,1300, 1200,1100,1000,900, 800,700,600,500, 400,300,250, 200,150, 125,100,75,50,30, 20,10,0)

- Data : public and restricted

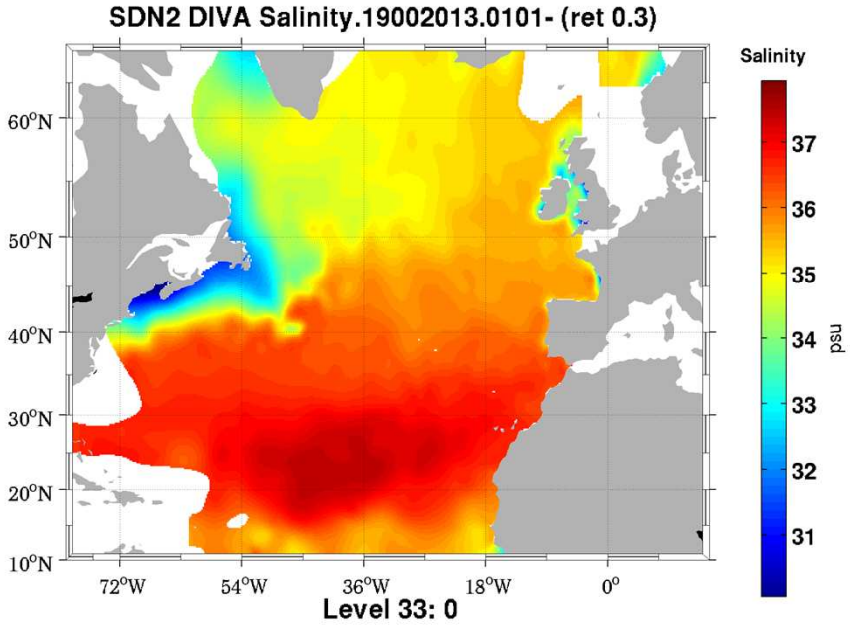


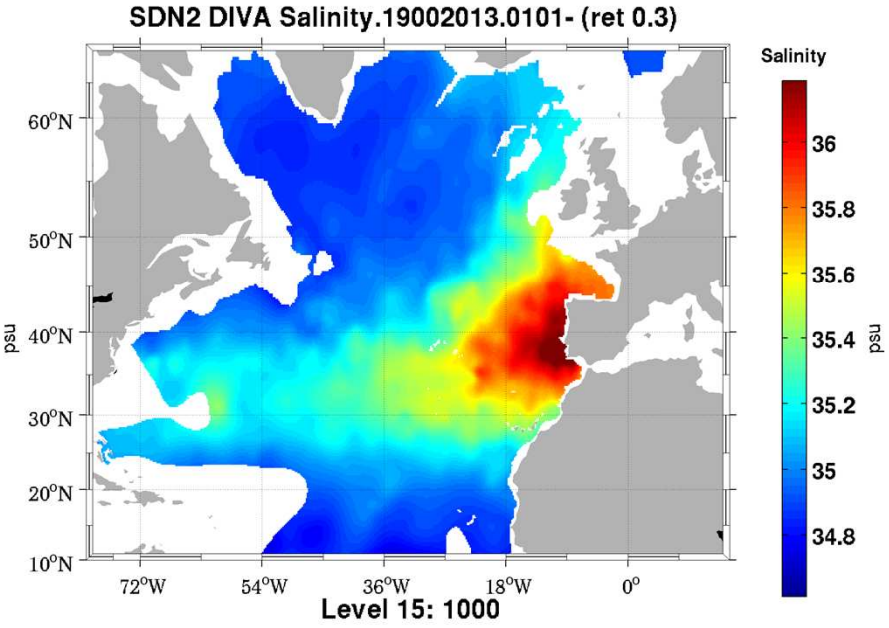






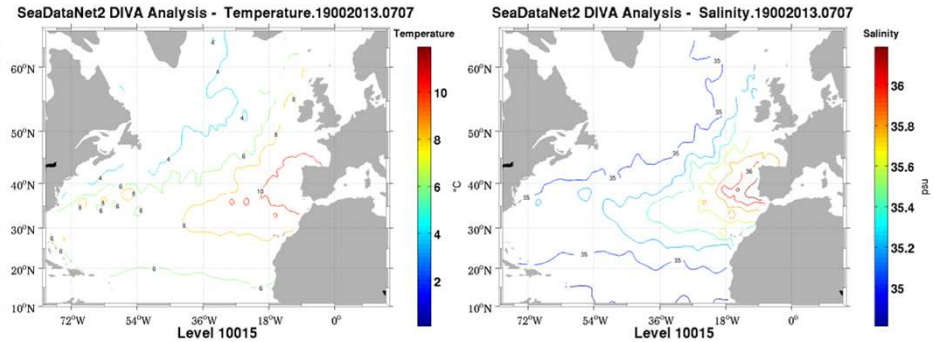
DIVA (error masking - 30% threshold)





Validation

Tomczak, Matthias & J Stuart Godfrey: Regional Oceanography: an Introduction 2nd edition (2003))



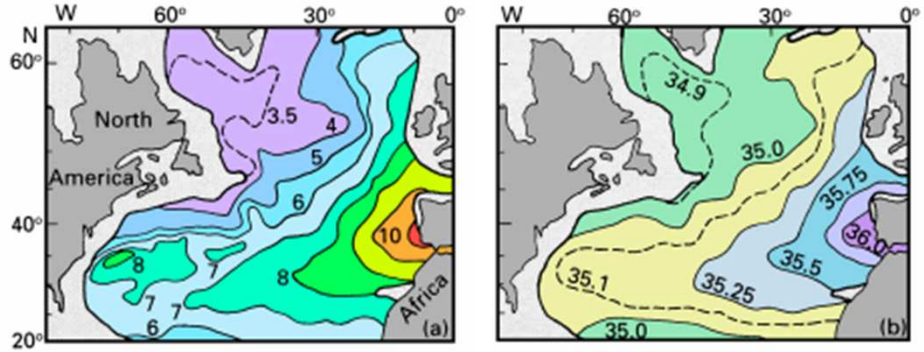
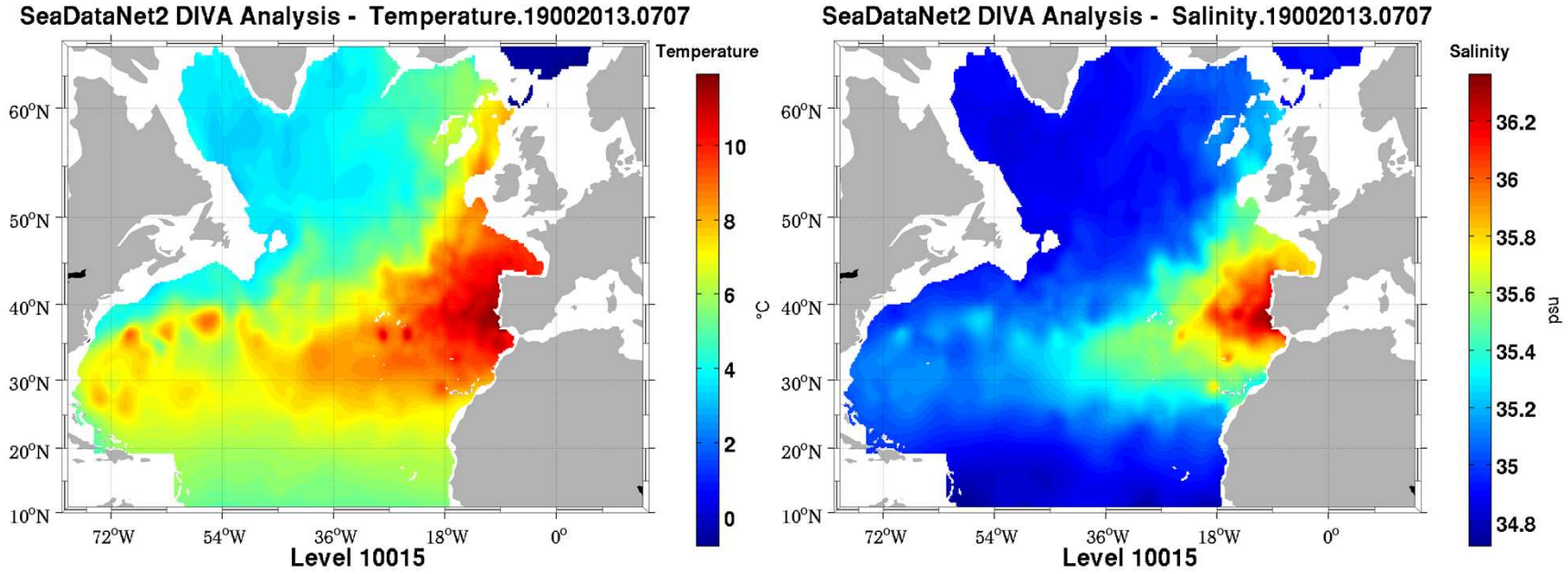


Fig. 15.4. Temperature (°C) (a) and salinity (b) in the North Atlantic Ocean at 1000 m depth.



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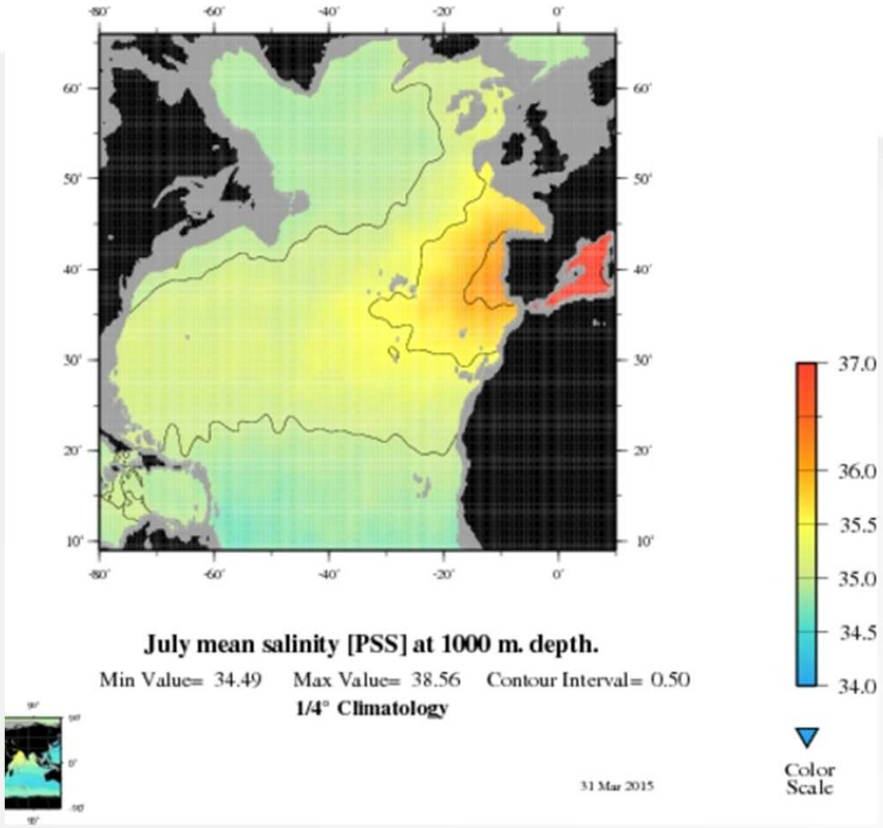

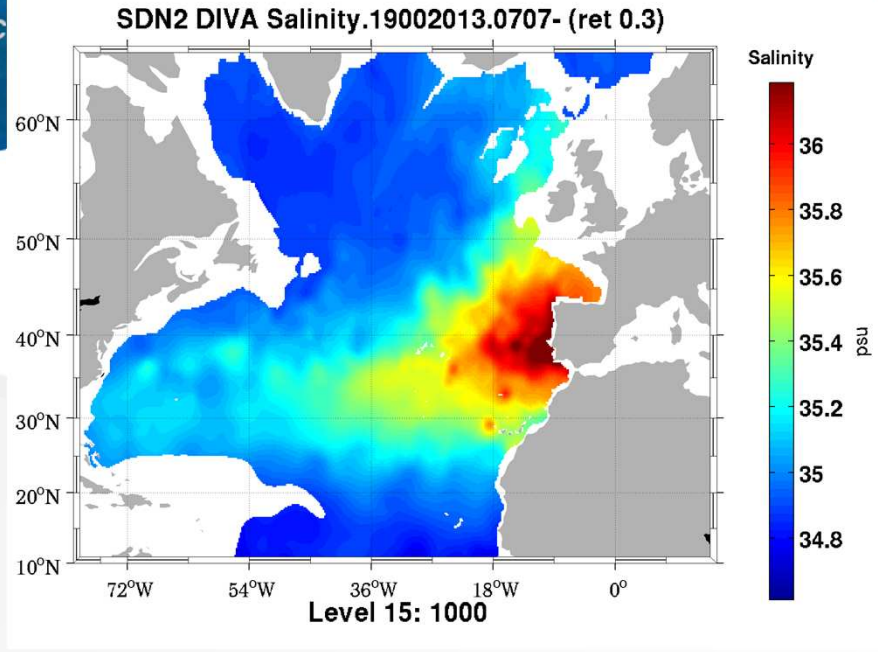

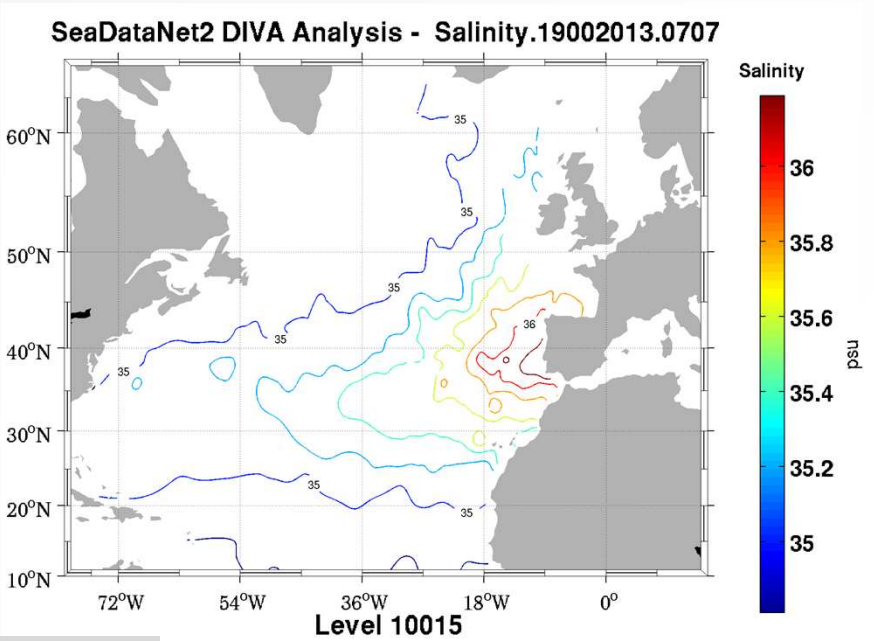

Zweng, M.M, J.R. Reagan, J.I. Antonov, R.A. Locarnini, A.V. Mishonov, T.P. Boyer, H.E. Garcia, O.K. Baranova, D.R. Johnson, D.Seidov, M.M. Biddle, 2013. *World Ocean Atlas 2013, Volume 2: Salinity.* S. Levitus, Ed., A. Mishonov Technical Ed.; NOAA Atlas NESDIS 74, 39 pp.

http://www.nodc.noaa.gov/OC5/SELECT/woaselect/woaselect.html

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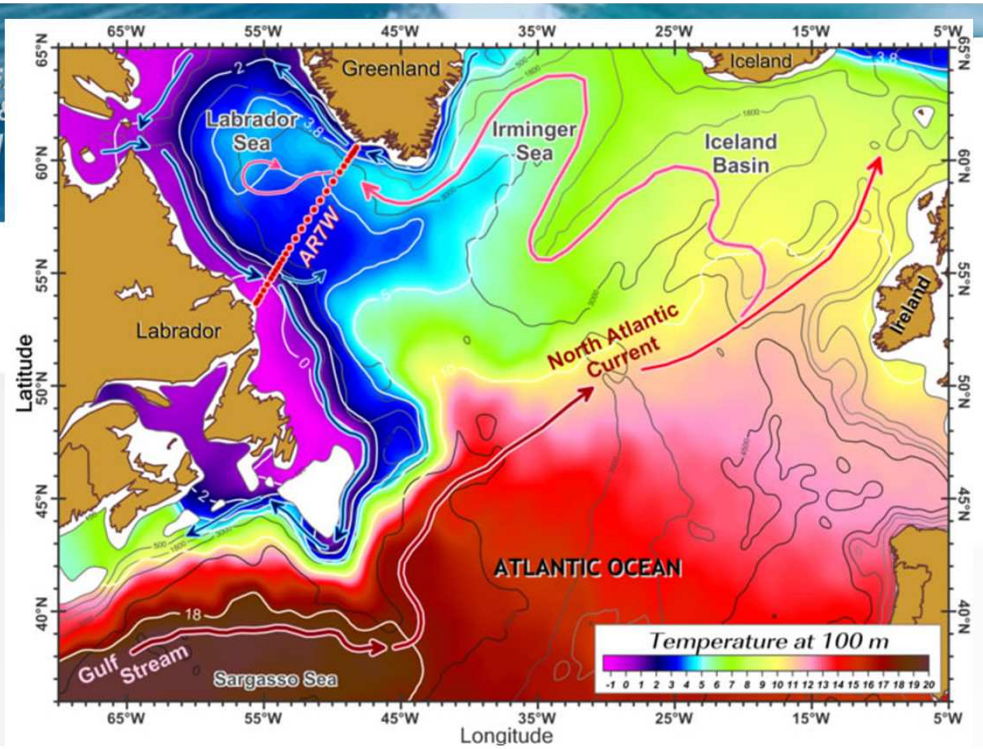
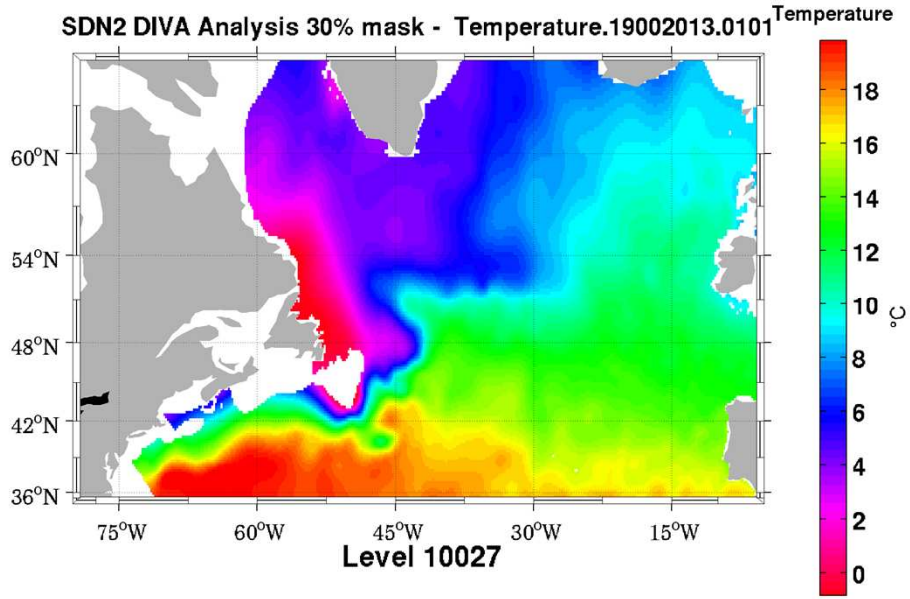
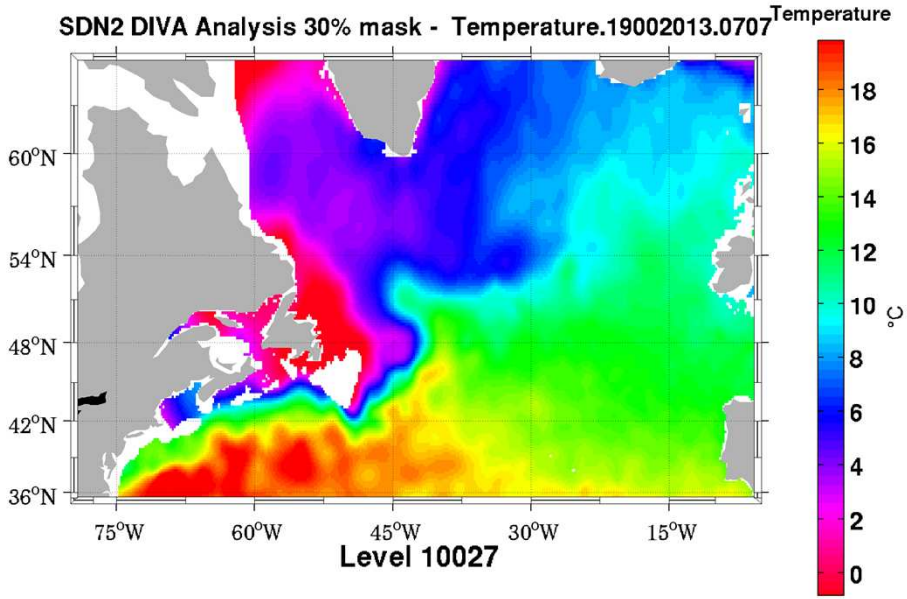
Map of annual-mean temperature at 100m below the surface in the NW Atlantic with a schematic representation of circulation

Yashayaev, I. 2007. Hydrographic changes in the Labrador Sea, 1960-2005. Progress in Oceanography, Vol.73, No. 3-4, 242-276. doi:10.1016/j.pocean.2007.04.015.







Level at 100m depth

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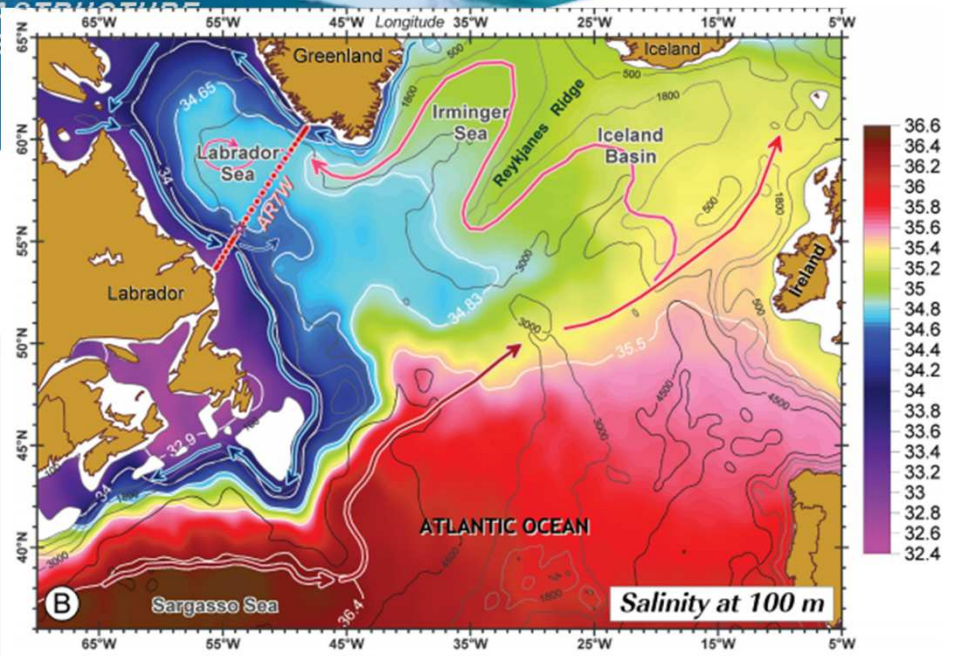
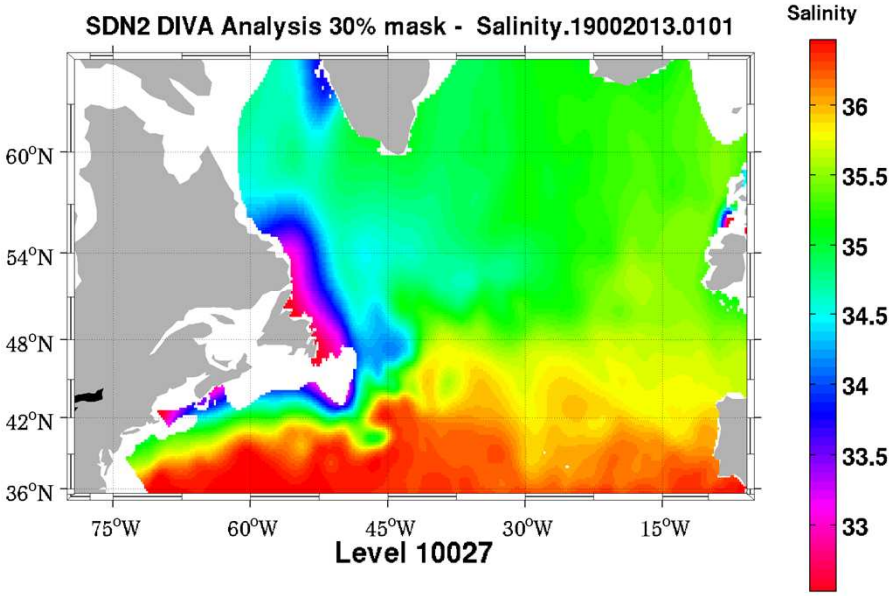
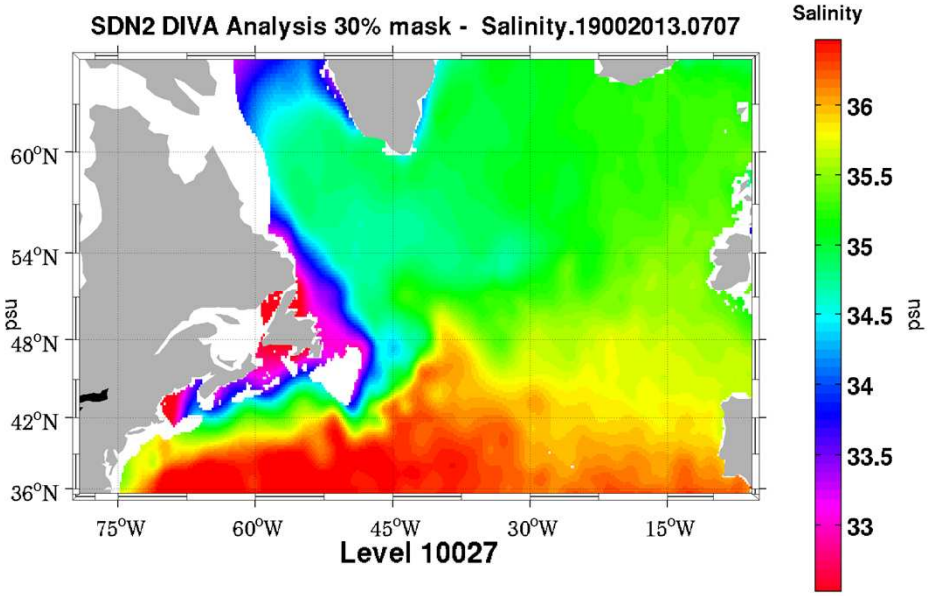
Distributions of salinity at 100 m below the surface in the northern North Atlantic.
The red arrows indicate the Gulf Stream and associated North Atlantic Current, which transport warm saline surface water. The blue arrows indicate the East and West Greenland and Labrador Currents, which carry relatively cold and fresh water southward,







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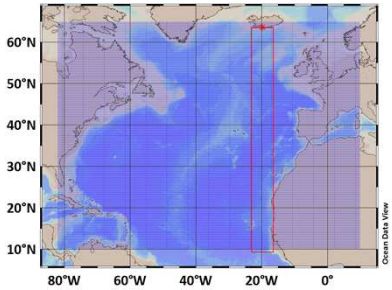
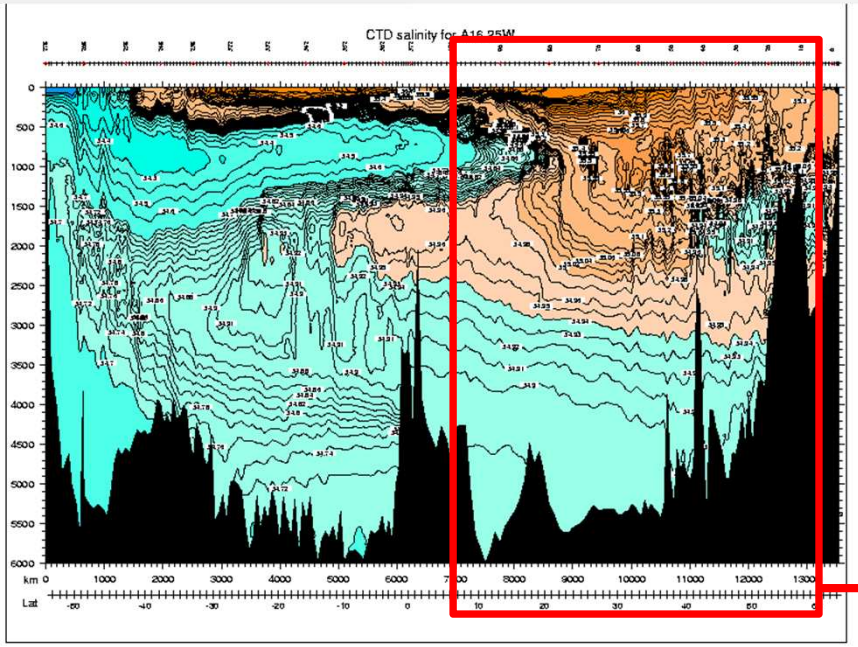
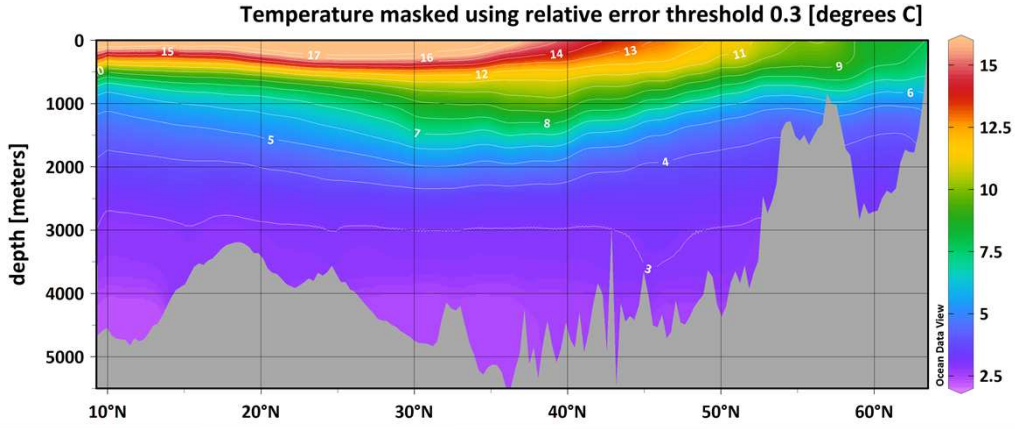
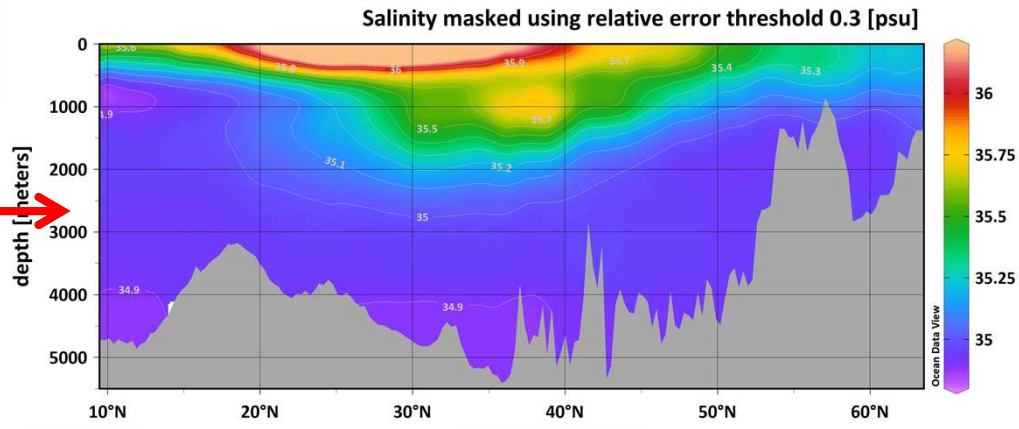


Salinity patterns in the ocean. L.D. Talley in Vol.1 The Earth system: physical and chemical dimensions of global environmental change. Encyclopedia of Global Environmental change, 2002.

Tsuchiya, M, Talley LD, McCartney MS. 1992. An Eastern Atlantic Section from Iceland Southward across the Equator. Deep-Sea Research Part a-Oceanographic Research Papers. 39:1885-1917







sdn-userdesk@seadatanet.org – www.seadatanet.org

Conclusions

- **V2 data collection** contains more data than V1.1 version (increase of data from V1 to V2)
- QC analysis of V2 data set highlighted that there are still some:

1. bad data are flagged as good
2. still few data are on land
3. still QF 0
4. data without time, edmo_code, local_cdi_id

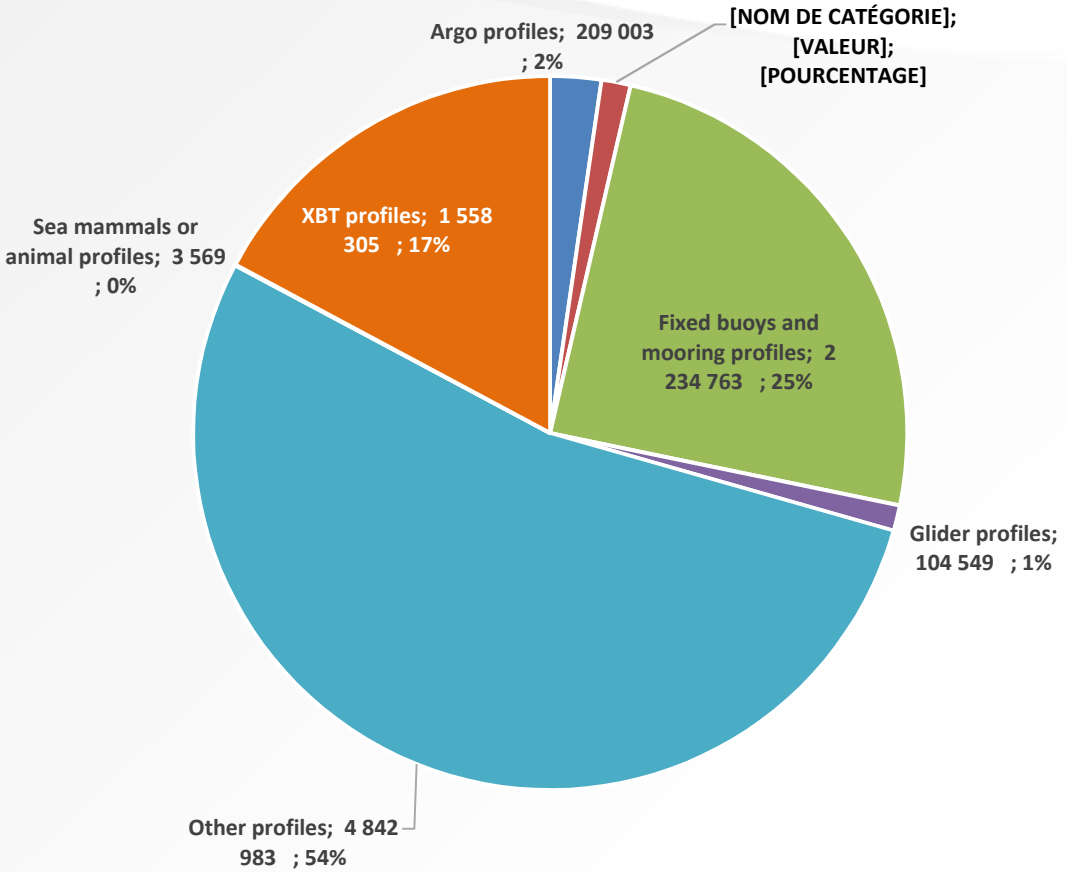
- **Anomalies list has been sent to NODCs (10) with feedbacks**
- **A lot of time-series like vertical profiles then not a lot of data for the time-series dataset**
- Release for MyOcean-Copernicus (IBI area) 1990-2014 provided

- **Climatology**
- Done with DIVA-4.6.9 monthly + season (first results of validation consistent with WOA)
- Insertion of aggregated dataset V2 and climatology on Sextant catalogue
- Climatology (monthly) in OceanBrowser

Copernicus to SDN, Atlantic area

- 9 073 007 “Copernicus” profiles to complement 1 740 032 “SeaDataNet” profiles (+521%)

Type of profiles	nb profiles
Argo profiles	209 003
CTD profiles	119 835
Fixed buoys and mooring profiles	2 234 763
Glider profiles	104 549
Other profiles	4 842 983
Sea mammals or animal profiles	3 569
XBT profiles	1 558 305
Total	**9 073 007**



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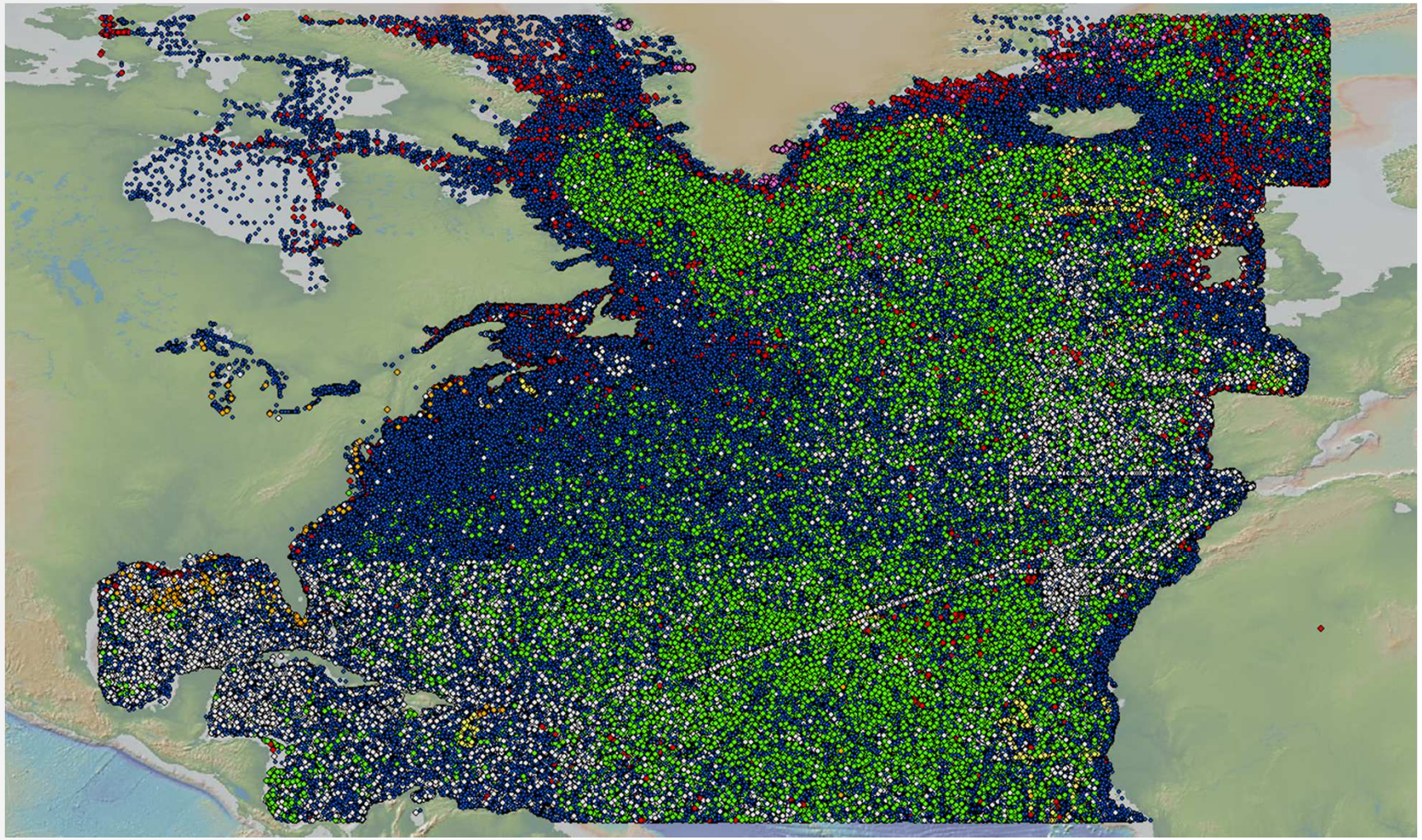
@Thierry_Carval

Copernicus to SDN, Atlantic area

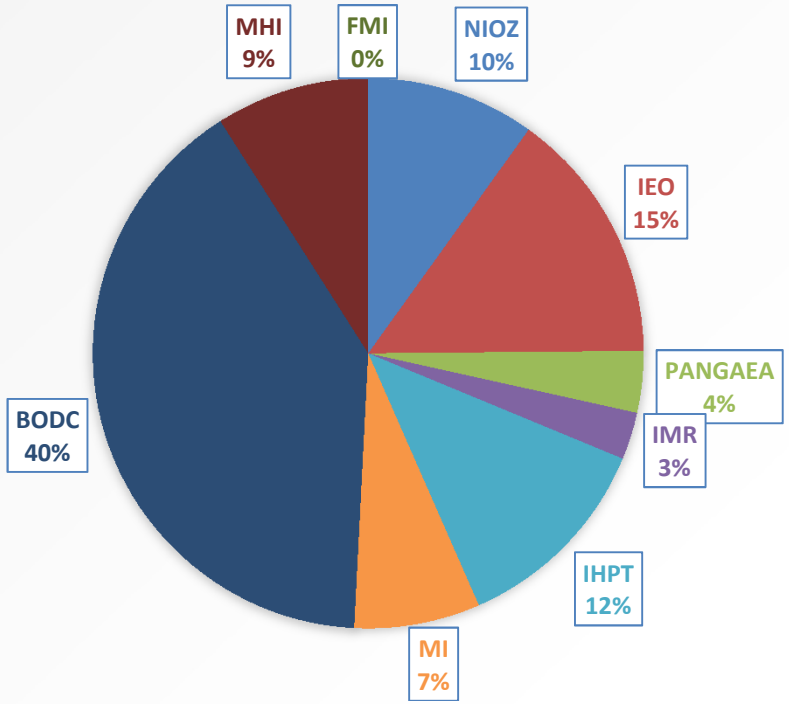
blue: xbt **red: ctd** **green: argo** **brown: mooring** **grey: other** **yellow : glider**



SDN to Copernicus, Atlantic area

- 9 305 new “SeaDataNet” profiles to complement 9 million profiles

data centre	nb profiles
NIOZ Royal Netherlands Institute for Sea Research	921
IEO/Spanish Oceanographic Institute	1 392
PANGAEA - Data Publisher for Earth & Environmental Science	337
Institute of Marine Research - Norwegian Marine Data Centre	258
IHPT, Hydrographic Institute	1 132
Marine Institute (Ireland)	688
British Oceanographic Data Centre	3 738
Marine Hydrophysical Institute	838
Finnish Meteorological Institute	1
Total	**9 305**



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SDN to Copernicus, Atlantic area

blue: xbt **red: ctd** **green: argo** **brown: mooring** **grey: other** **yellow : glider**