



CTD Reference Database for Argo DMQC

Christine Coatanoan (Ifremer) & Ingrid Angel Benavides (BSH)



Coriolis

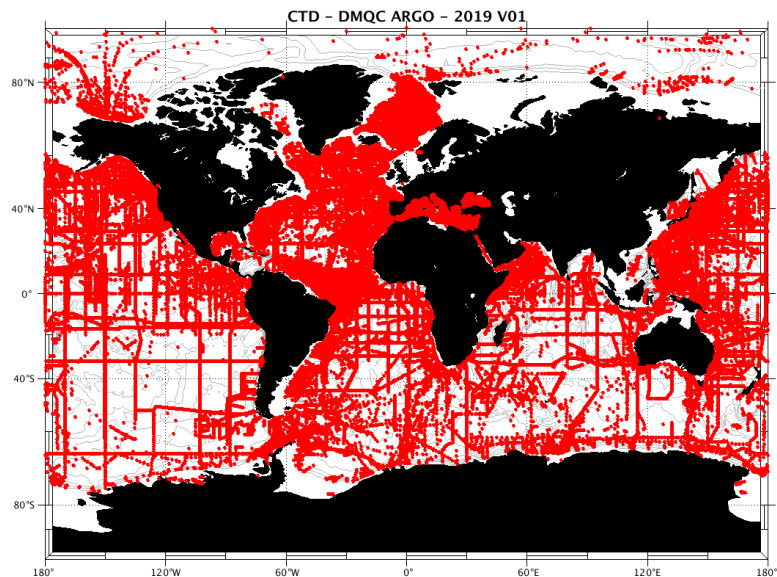


Ifremer



ADMT – Actual version 2019 V01

After the last ADMT : 2019_V01 : Delivered at the end of 2019



Main Sources for CTD RefDB 2019V01

- Updates of the Ocean climate Library (OCL)
- Updates from the ICES database
- Updates from CCHDO (GO-SHIP programs)
- Data directly from scientists (cruise MSM83)



Actions since the last ADMT

ADMT20

Action #54. “Ask Christine Coatanoan to incorporate high QC GO-SHIP product profiles selected for DEEP-ref-DB to Core ref db. This will be released yearly. Suggest that if the GO-SHIP profile from CCHDO exists in the ref DB, it should be replaced with higher QC'd version”.

News

GO-SHIP Easy Ocean Data Product Now Available

2020-09-15

CCHDO is now hosting the new [GO-SHIP Easy Ocean CTDO data product](#) (Katsumata et al. 2020). These data consist of cleaned station and objectively mapped temperature, salinity and oxygen ocean transects of more than 40 GO-SHIP sections, each with multiple repeats. Data are available to download by section, ocean basin, or globally in multiple data formats including Matlab and NetCDF.

Link for Deep-ref-DB recovered on 2th October, not clear which QC done on this dataset, QC check needed, integration in progress



+ gridded

- reported

Download all reported

+ atlantic

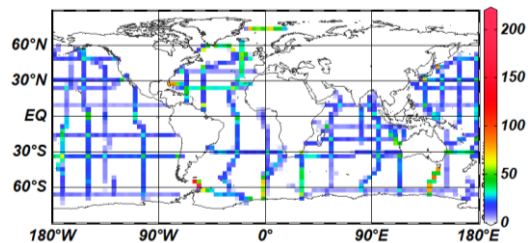
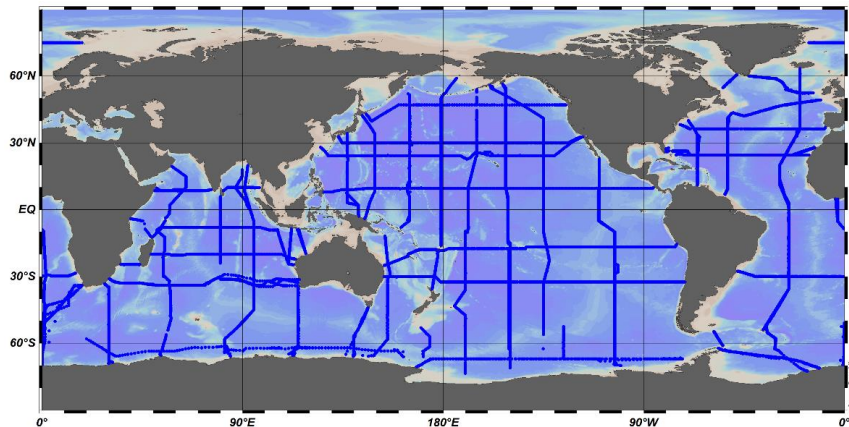
+ indian

+ pacific

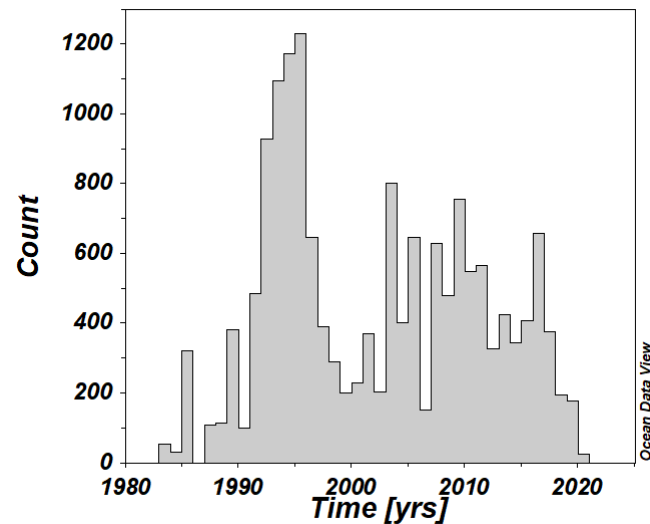
+ southern

Actions since the last ADMT

GO-SHIP EASY OCEAN DATA PRODUCT (16231 stations)



Density of the stations



Temporal distribution

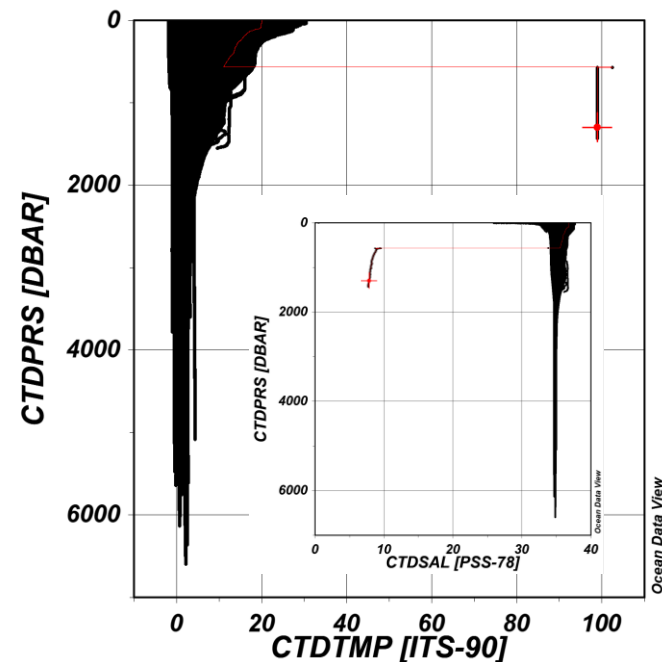
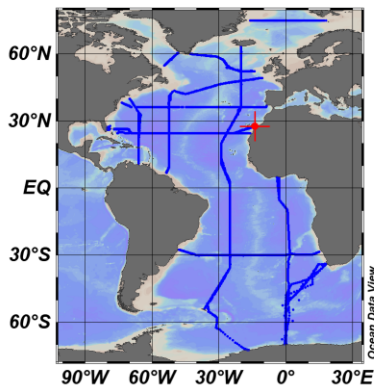
Actions since the last ADMT

GO-SHIP EASY OCEAN DATA PRODUCT

Quality check : Anomalies detected

Check measurements with QC2

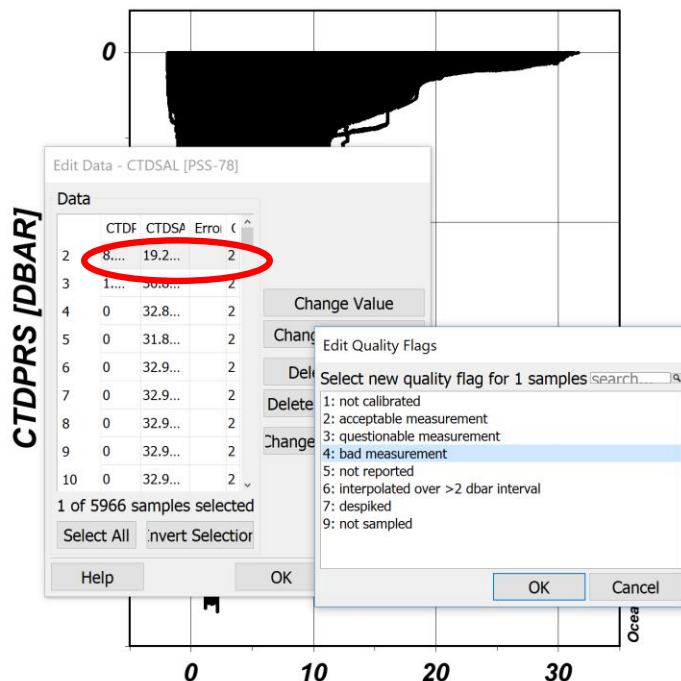
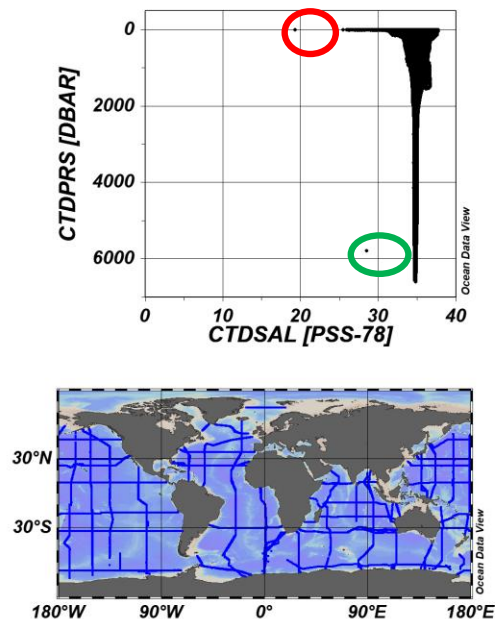
- 1: not calibrated
- 2: acceptable measurement
- 3: questionable measurement
- 4: bad measurement
- 5: not reported
- 6: interpolated over >2 dbar interval
- 7: despiked
- 9: not sampled



All data displayed in plots have QC2

Actions since the last ADMT

GO-SHIP EASY OCEAN DATA PRODUCT



Accession... 7749
 Cruise 49KA199905_1
 Station X13 (C)
 Position 164.961°E / 47.006°N
 Date 29 May 1999
 Time 17:57:00
 CTDPRS ... [1 - 5966]
 Bot. Dept..
 Comments p01_1999_0043_ct1.txt
 Cruise Re...

Sample: 2 / 5966 (search...)

1: CTDPRS [DB...	2	2
2: CTDTMP [ITS...	3.69	2
3: CTDSAL [PSS...	19.275	2
4: CTDOXY [UM...		9

Isosurface Values

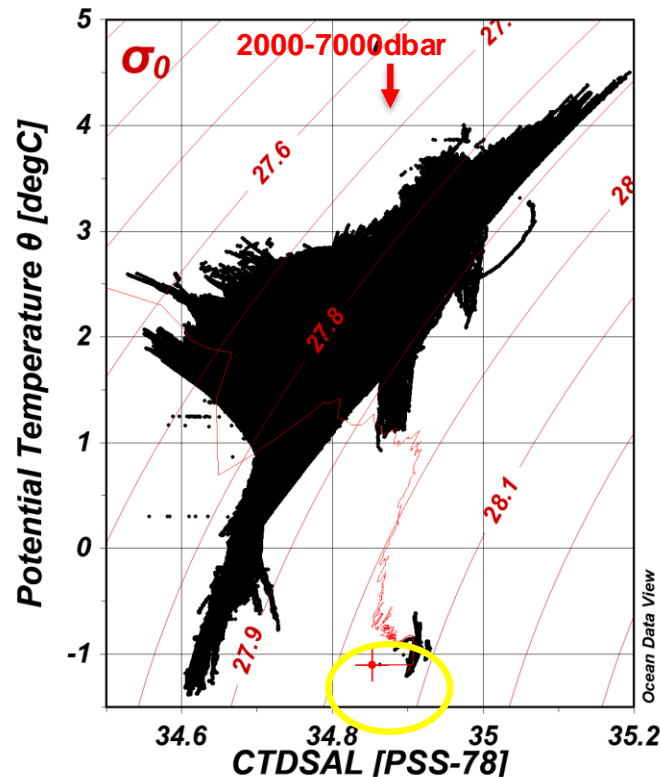
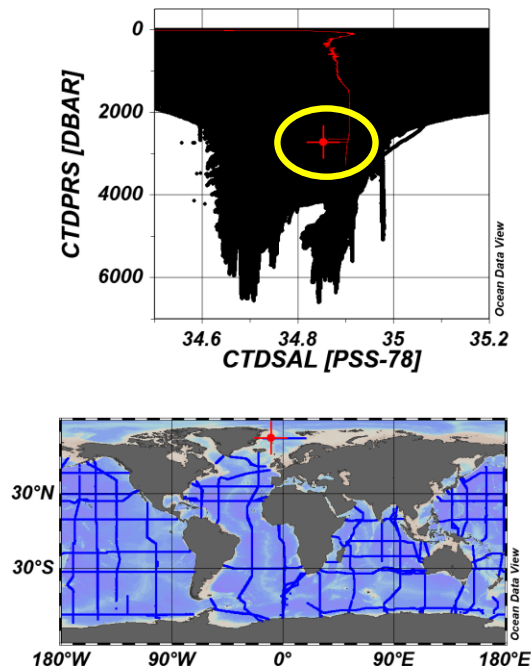
Longitude	164.961
Latitude	47.006
Time [Yr]	1999.408
Day of Year	149
CTDTMP [ITS-90] @ CT...	3.70
CTDSAL [PSS-78] @ CT...	31.635
CTDOXY [UMOL/KG] @ ...	

Ex of salinity with value < 20 in surface: QC 2 -> 4

Actions since the last ADMT

GO-SHIP EASY OCEAN DATA PRODUCT

Quality check using the Θ S diagram



Accession... 127
 Cruise None
 Station 119 (C)
 Position 9.307°W / 75°N
 Date 16 September 1997
 Time 12:30:00
 CTDPRS ... [9 - 3290]
 Bot. Dept...
 Comments [75n_1997_0011_ct1.txt](#)
 Cruise Re...

Sample: 2715 / 3282

1: CTDPRS [DB...	2723	2
2: CTDTMP [ITS...	-0.96	2
3: CTDSAL [PSS...	34.853	2
4: CTDOXY [UM...		9
drvd: Potential Te...	-1.10	0
drvd: In situ Dens...	40.921	0

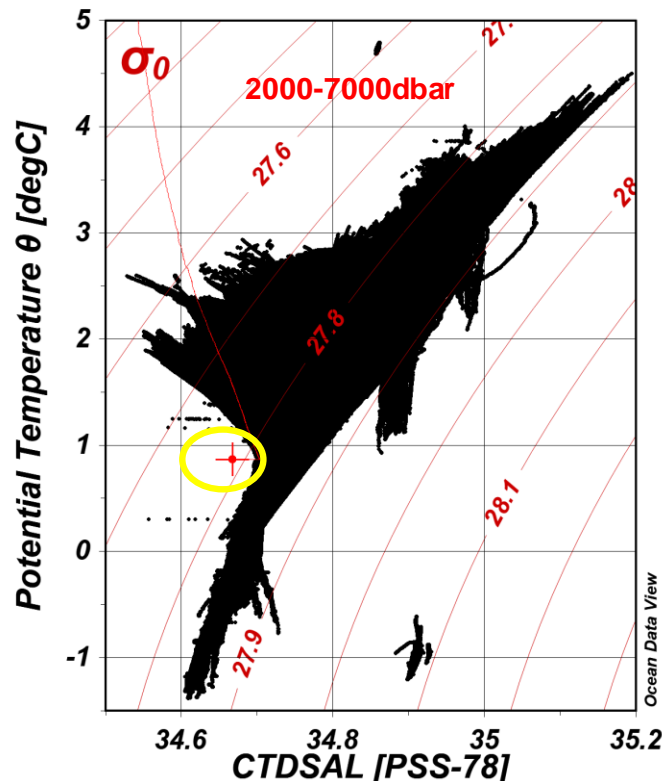
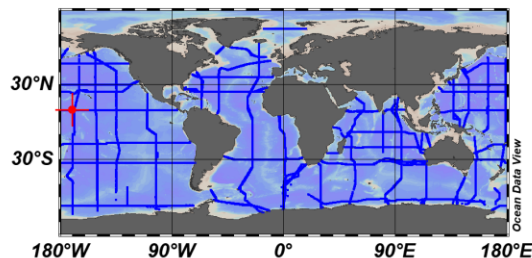
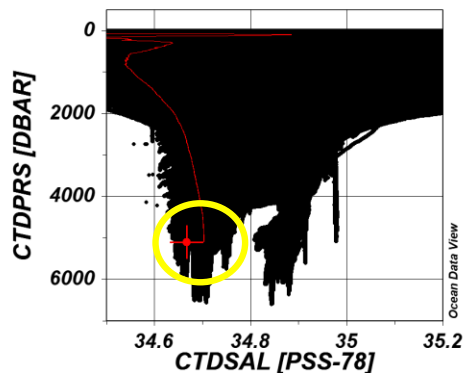
Isosurface Values

Longitude	-9.307
Latitude	75.000
Time [yr]	1997.708
Day of Year	259
CTDTMP [ITS-90] @ CT...	0.66
CTDSAL [PSS-78] @ CT...	32.180
CTDOXY [UMOL/KG] @ ...	

Actions since the last ADMT

GO-SHIP EASY OCEAN DATA PRODUCT

Quality check using the Θ S diagram



Accession...	9134
Cruise	32MW893_2
Station	108 (C)
Position	170.335°W / 9.497°N
Date	18 March 1989
Time	00:48:00
CTDPRS ...	[1 - 5103]
Bot. Dept...	
Comments	p04_1989_0103_ct1.txt
Cruise Re...	

Sample: 2552 / 2552

1: CTDPRS [DB...	5103	2
2: CTDTMP [ITS...	1.32	2
3: CTDSAL [PSS...	34.668	2
4: CTDOXY [UM...	190	2
drvd: Potential Te...	0.87	0
drvd: In situ Dens...	51.012	0

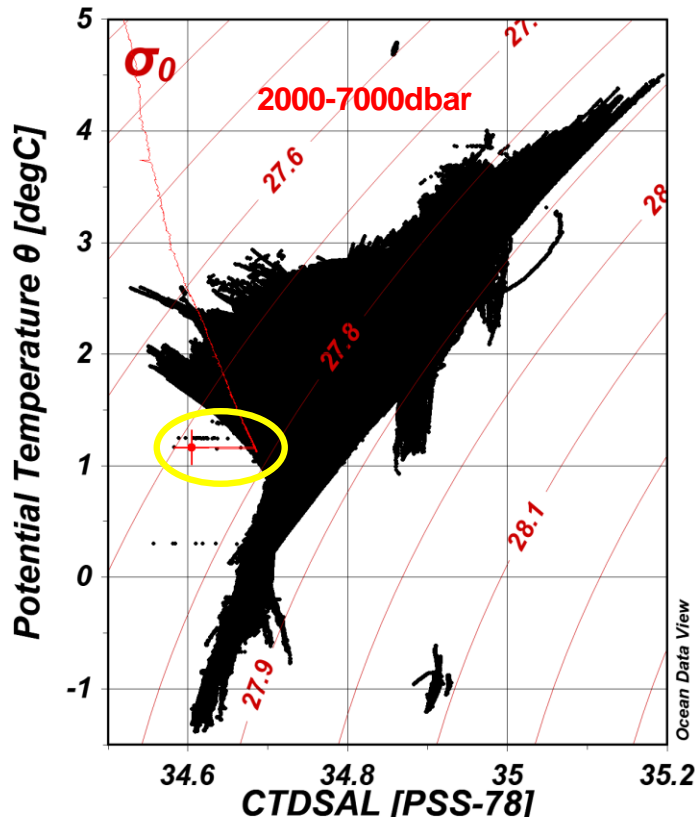
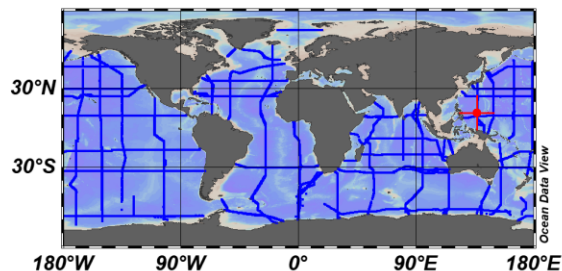
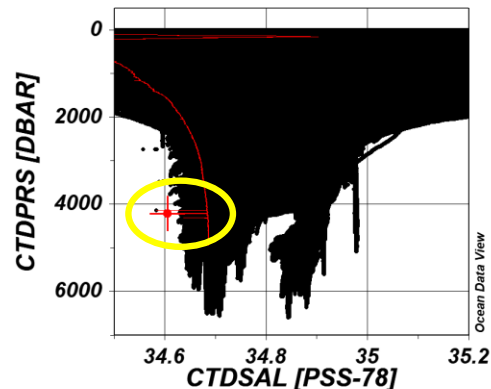
Isosurface Values

Longitude	-170.335
Latitude	9.497
Time [yr]	1989.208
Day of Year	77
CTDTMP [ITS-90] @ CT...	26.87
CTDSAL [PSS-78] @ CT...	34.323
CTDOXY [UMOL/KG] @ ...	216

Actions since the last ADMT

GO-SHIP EASY OCEAN DATA PRODUCT

Quality check using the σ_t diagram



Accession... 10258
 Cruise 49RY9407_2
 Station 58 (C)
 Position 136.999°E / 11.519°N
 Date 04 August 1994
 Time 15:45:00
 CTDPRS ... [3 - 4937]
 Bot. Dept...
 Comments p09_1994_0048_ct1.txt
 Cruise Re...

Sample: 2106 / 2468

1: CTDPRS [DB...	4213	2
2: CTDTMP [ITS...	1.51	2
3: CTDSAL [PSS...	34.605	2
4: CTDOXY [UM...	160	2
drvd: Potential Te...	1.16	0
drvd: In situ Dens...	47.024	0

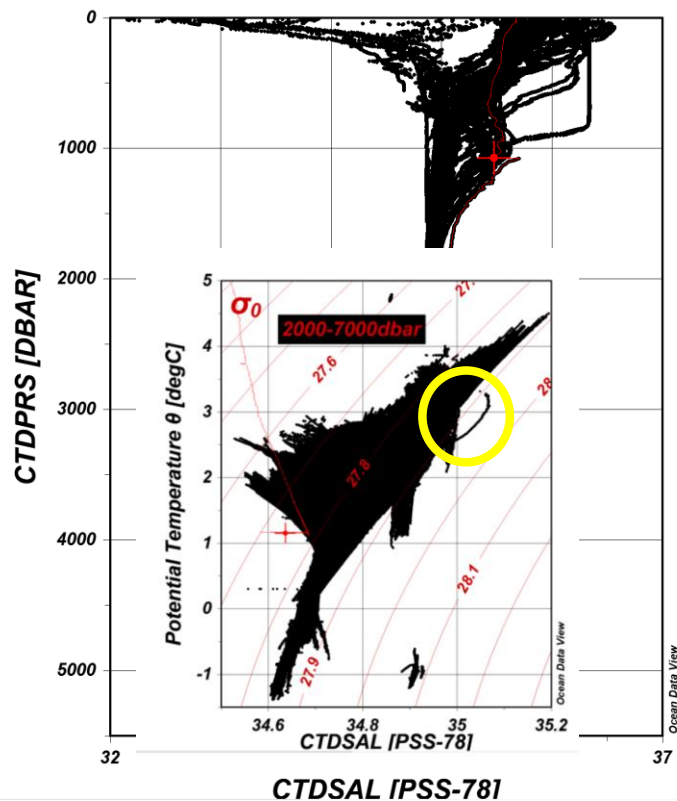
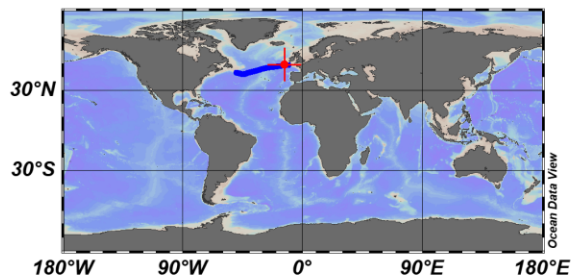
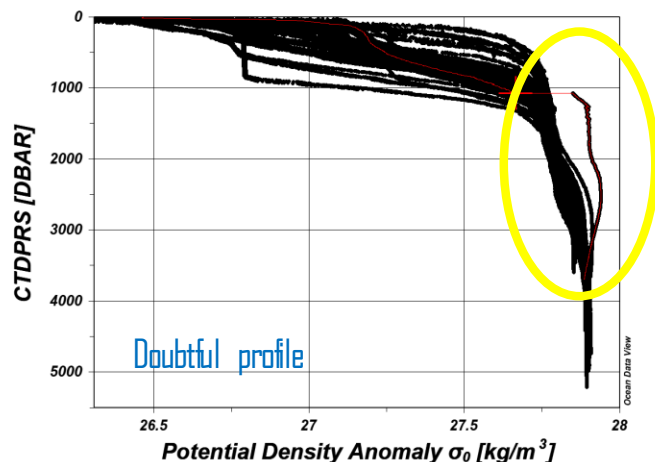
Isosurface Values

Longitude	136.999
Latitude	11.519
Time [yr]	1994.591
Day of Year	216
CTDTMP [ITS-90] @ CT...	28.94
CTDSAL [PSS-78] @ CT...	34.005
CTDOXY [UMOL/KG] @ ...	171

Actions since the last ADMT

GO-SHIP EASY OCEAN DATA PRODUCT

Quality check using potential density



Accessi...	60
Cruise	06MT039_3
Station	274 (C)
Position	13.28°W / 48.927°N
Date	13 June 1997
Time	10:44:00
CTDPRS...	[4 - 3694]
Bot. De...	
Comme...	a02_1997_0067_ct1.txt
Cruise P...	
Sample: 536 / 1846	
1: CTDPRS [DB...	1074 2
2: CTDTMP [IT...	8.02 2
3: CTDSAL [PS...	35.475 2
4: CTDOXY [U...	205 2
5: CTDCT [ITS...	7.89 2
6: CTDSA [G/K...	35.65 2
divd: Potential T...	7.90 0
Isosurface Values	
Longitude	-13.280
Latitude	48.927
Time [yr]	1997.448
Day of Year	164
CTDTMP [ITS-90] @ C...	15.15
CTDSAL [PSS-78] @ C...	35.676
CTDOXY [UMOL/KG] ...	265
CTDCT [ITS-90] @ CT...	15.12



Actions since the last ADMT

GO-SHIP EASY OCEAN DATA PRODUCT

- GO-SHIP EASY OCEAN DATA PRODUCT not so clean
- Need visual check to perform quality control (using ODV with WHP format)
- Integration in CTD reference database has to be done : if the GO-SHIP profile from CCHDO exists in the CTD reference, it will be replaced with the version from easy product.
- Source : `cruise_name = expocode + data_file_name`
- QCLevel : GSD (GO-SHIP Deep Argo)

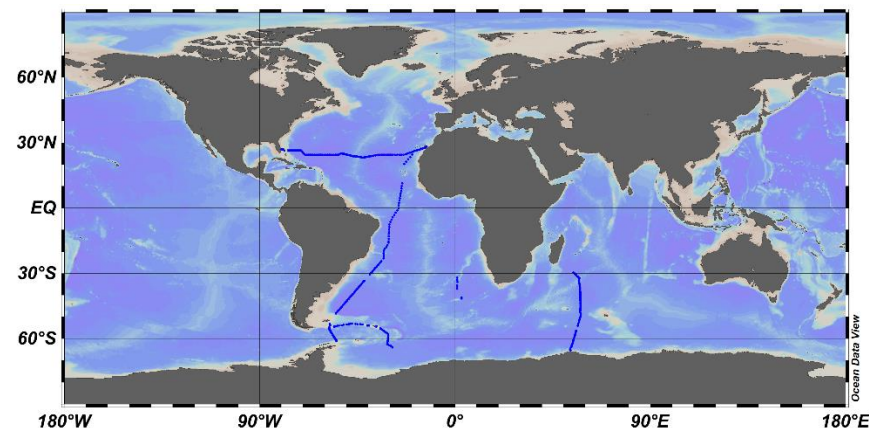
Actions since the last ADMT

CCHDO – GO-SHIP new data

Check on CCHDO webiste recent GO-SHIP data not in the EASY OCEAN PRODUCT

5 cruises

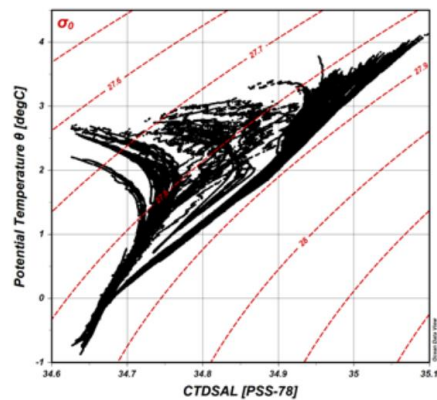
Search Results						
Expocode	Line(s)	Ship	Country	Start Date	End Date	PI
33RO20200321		RONALD H. BROWN	US	2020-03-21	2020-04-17	• Leticia Barbero
74EQ20200203	• A23 • SR1B	Discovery	GB	2020-02-03	2020-03-13	• Yvonne Firing
740H20200119	• A05	RRS JAMES COOK	GB	2020-01-19	2020-03-01	• A Sanchez-Franks
49NZ20191229	• I07 • I07C • I07S • S04I	MIRAI	JP	2019-12-29	2020-02-10	• Katsuro Katsumata
49NZ20191205	• I08N	MIRAI	JP	2019-12-05	2019-12-27	• Akihiko Murata
29HE20190405	• A17	HESPERIDES	ES	2019-04-05	2019-05-19	• Miguel Gil Coto



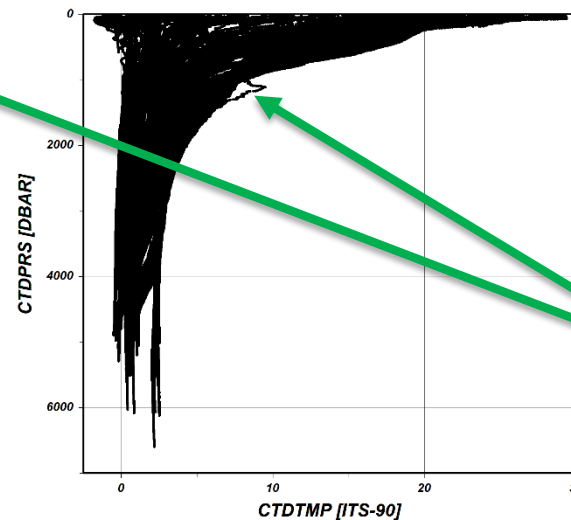
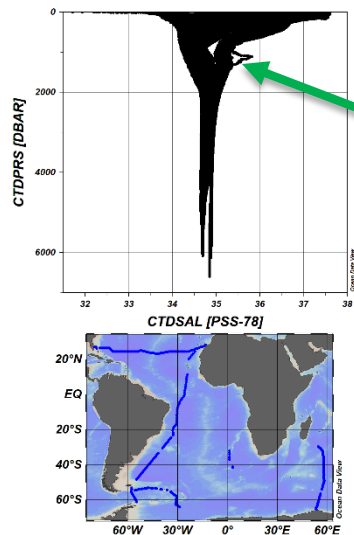
Actions since the last ADMT

CCHDO – GO-SHIP new data

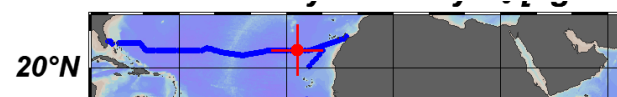
First quality check OK



[2000 : 7000] dbar



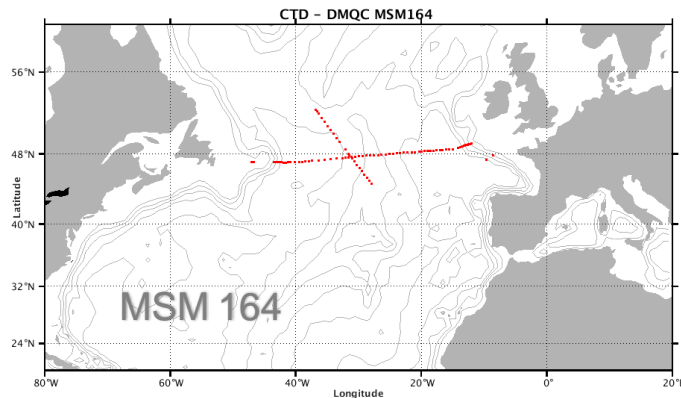
Signal of MedSea



Actions since the last ADMT

Scientific PI new data

- Atlantic Deployment CTD
- Pacific Deployment CTD
- Med Sea Deployment CTD
- MSM cruises from Reiner Steinfeldt (*Bremen University*)





Actions since the last ADMT

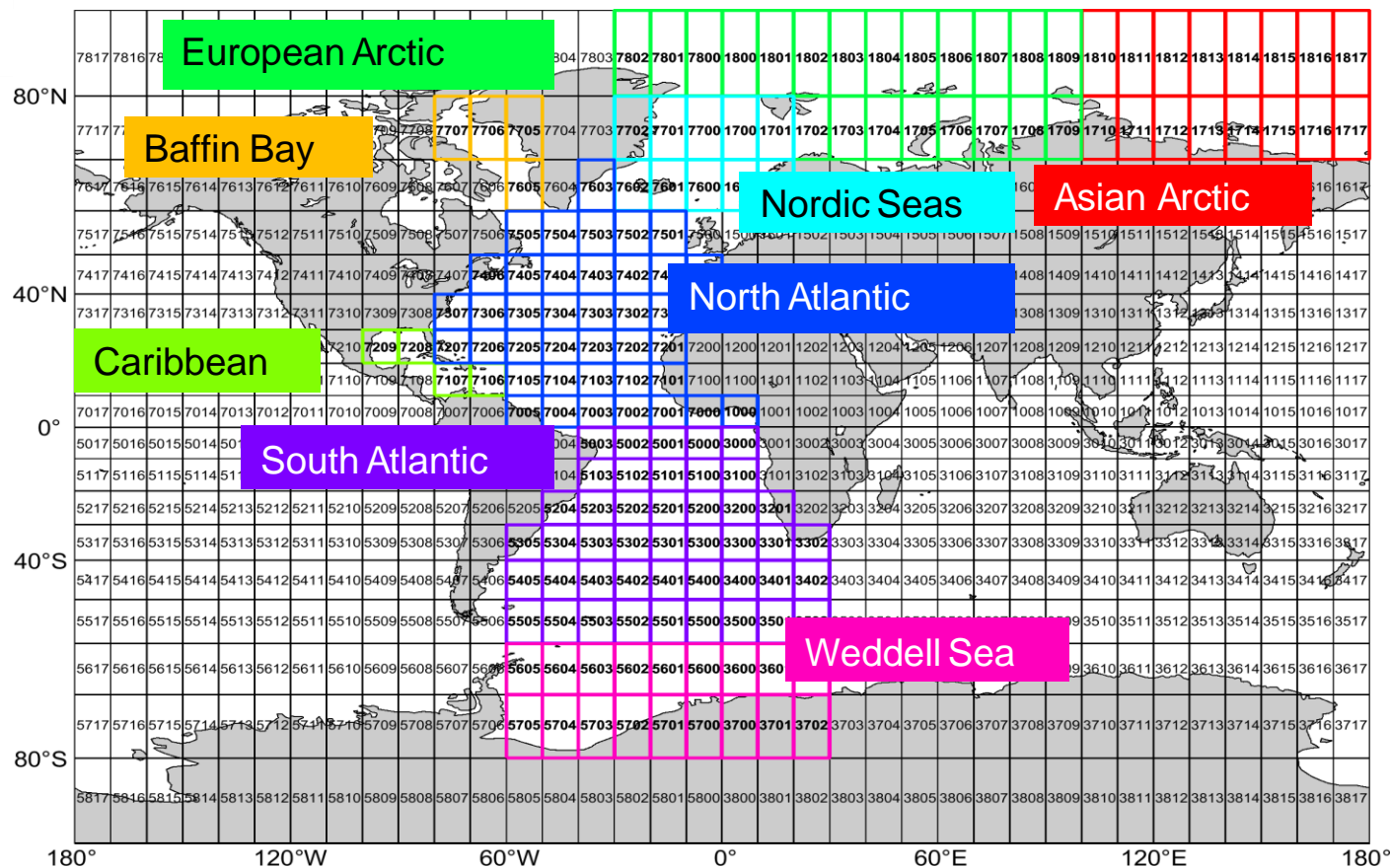
Actions from Ingrid Angel (BSH)

For all the regions (completed)

- Remove bad samples (out of range and incomplete pressure-temperature-salinity triplets)
- Remove profiles that do not fit the selection criteria (out of box limits, shallower than 900 dbar, non monotonically increasing pressure.
- Check for metadata, content and nearby duplicates. Decisions on which profile to keep as described in the MOCCA report for update of the Nordic Seas for the CTD-RDB 2019v1

Ex. North Atlantic boxes had 32546 profiles from which 2,3% were removed after metadata duplicate check, 7,7% after content duplicate checks and 3,6 after nearby duplicate checks.

Actions since the last ADMT





Actions since the last ADMT

Actions from Ingrid Angel (BSH)

Updates (work in progress)

- European and Asian Arctic regions with UDASH profiles
- Nordic Seas with profiles from the AREX cruises (IO-PAN)
- Nordic Seas, European and Asian Arctic with ICES data
 - Extensive quality control is needed



Actions since the last ADMT

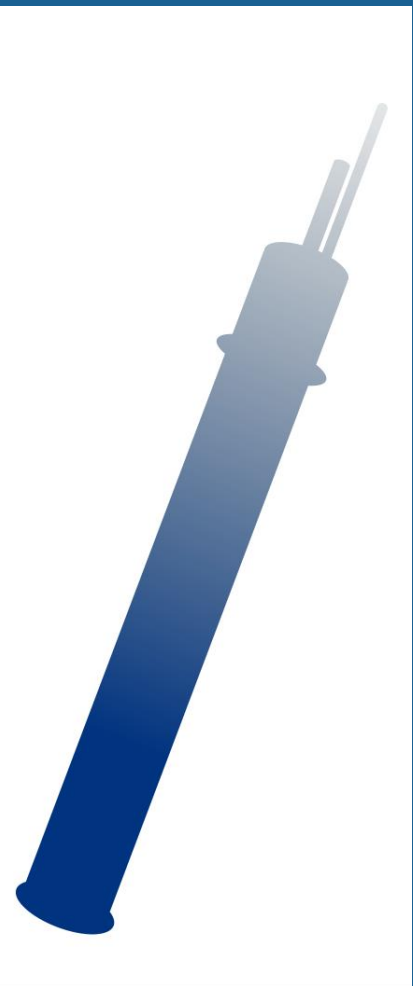
CONCLUSIONS & RECOMMENDATIONS

GO-SHIP Easy Ocean Product

- Not so clean, add one step of quality control
- For each new data source, perform quality control for all levels (0-7000dbar)
- Feedback on anomalies sent to CCHDO
- OWC method : propose only one reference database for Core and Deep (qclevel=GSD to select data from GO-SHIP easy ocean product) with format adapted (wmo box)

Next version will include

- Data from easy ocean product (replace when already in previous version)
- Work completed by Ingrid
- New CTD from Scientists
- New CTD GO-SHIP from CCHDO not in GO-SHIP easy ocean product



christine.coatanoan@ifremer.fr