CTD Reference Database for Argo DMQC

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NOAA NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

BSH
BUNDESAMT FÜR SEESCHIFFFAHRT UND HYDROGRAPHIE

Coriolis

Ifremer

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".

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

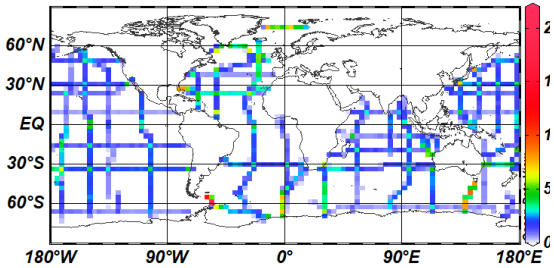
News

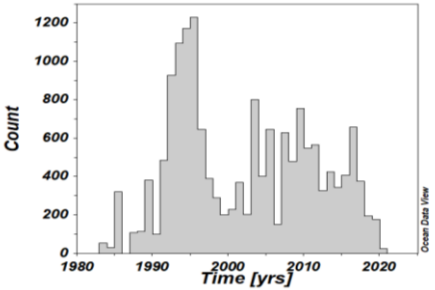
GO-SHIP Easy Ocean Data Product Now Available

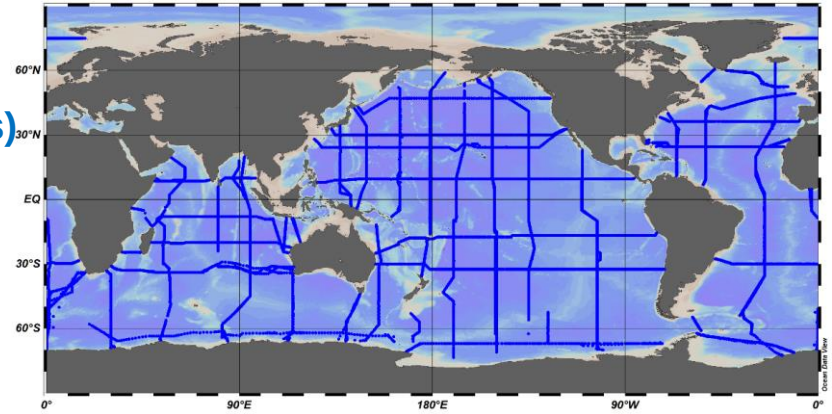
2020-09-15

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.

GO-SHIP EASY OCEAN DATA PRODUCT (16231 stations)





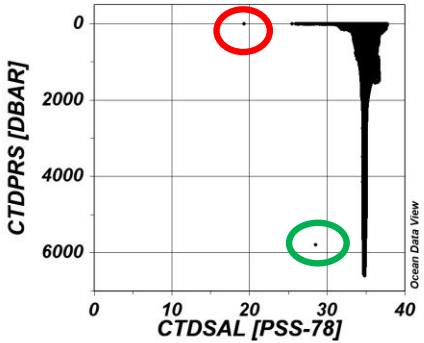


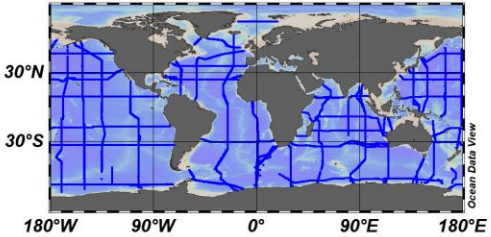
Actions since the last ADMT

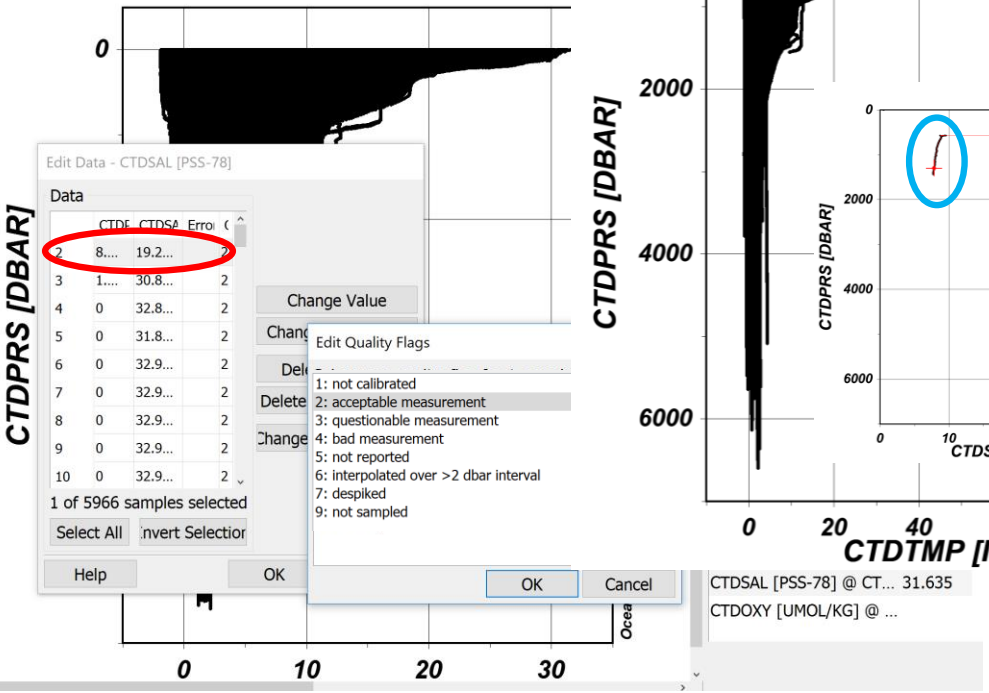
GO-SHIP EASY OCEAN DATA PRODUCT

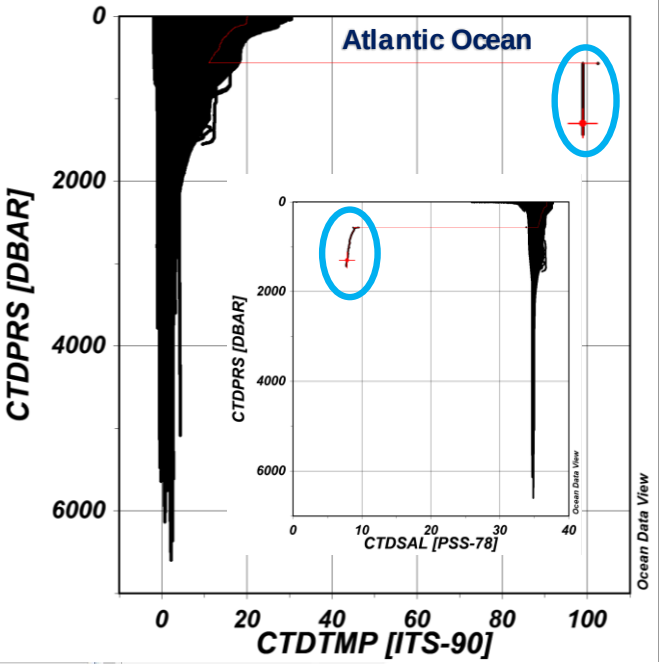
All data displayed in plots have QC2

Quality check : Anomalies detected







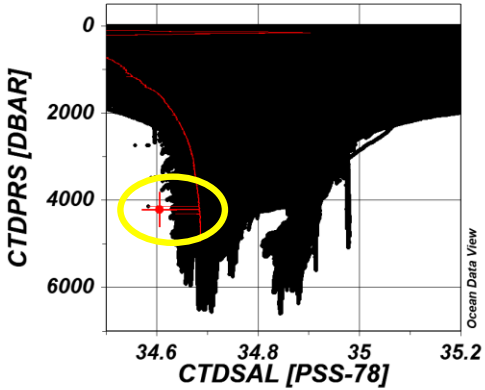


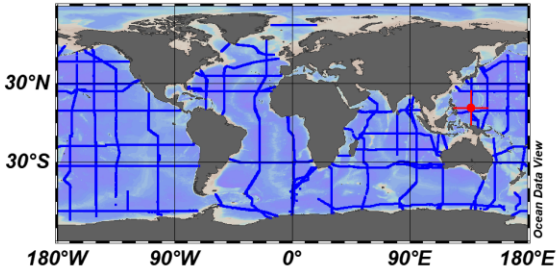
Ex of salinity with value < 20 in surface : QC 2 -> 4

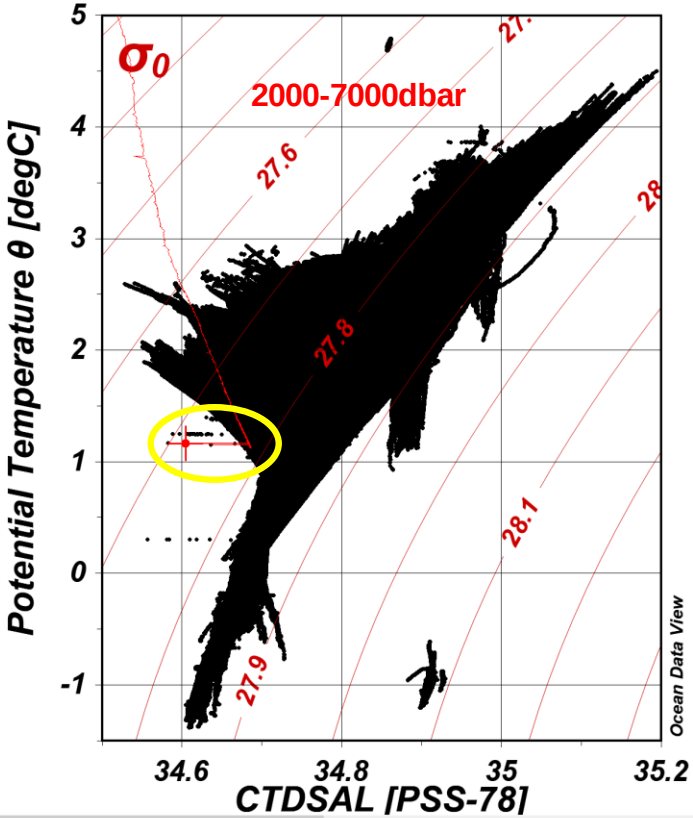
Actions since the last ADMT

GO-SHIP EASY OCEAN DATA PRODUCT

Quality check using the ΘS 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 search...

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

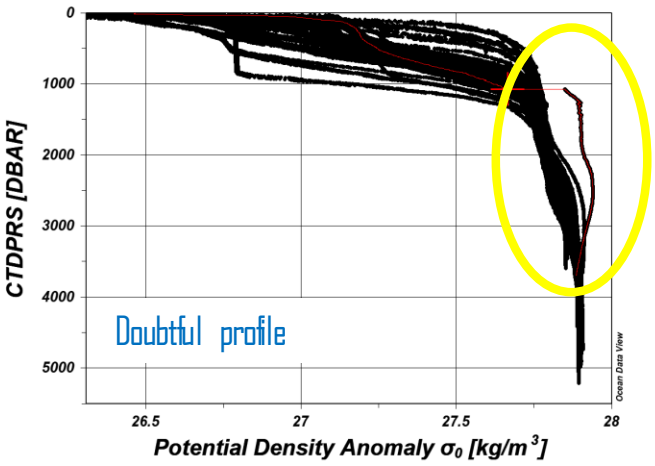
Isosurface Values

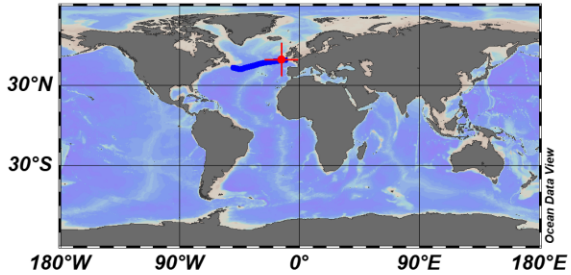
Longitude	136.999
Latitude	11.519
Time [yr]	1994.591
Day of Year	216
CTDTMP [ITS-90] @ CT...	28.94
CTDSAL [PSS-78] @ CT...	34.005
CTDOXY [UMOL/KG] @ ...	171

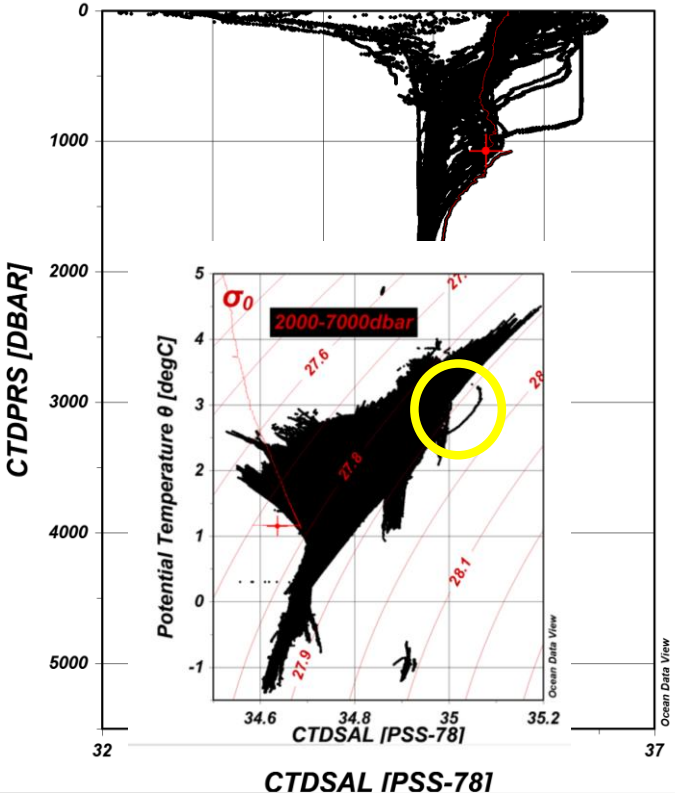
Actions since the last ADMT

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

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
dryd: 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

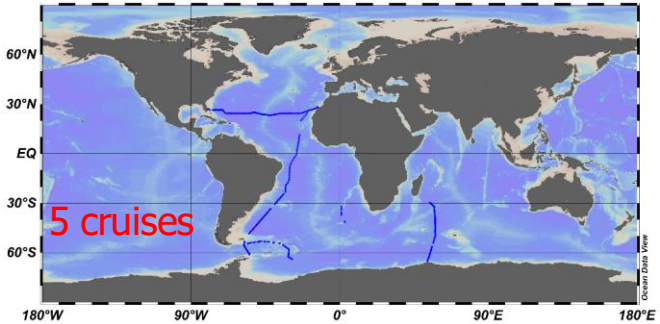
CCHDO – GO-SHIP new data

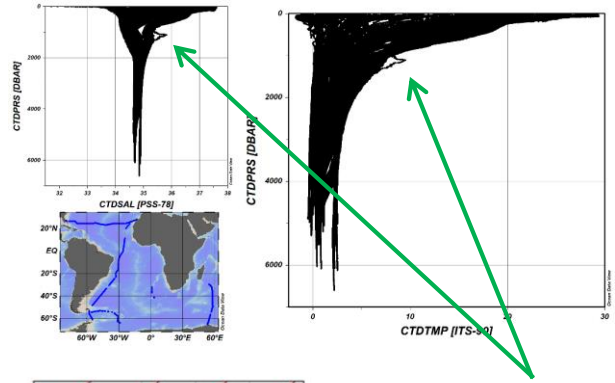
Check on CCHDO webiste recent GO-SHIP data not in the EASY OCEAN PRODUCT

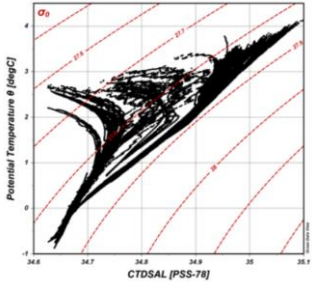
First quality check OK

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







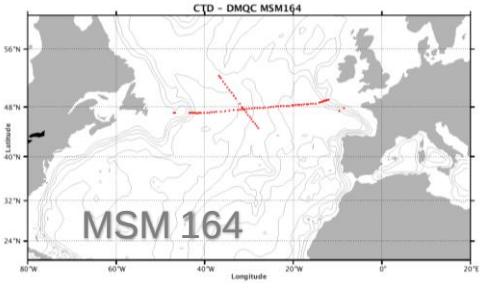
Signal of MedSea

[2000 : 7000] dbar

Actions since the last ADMT

Scientific PI new data

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



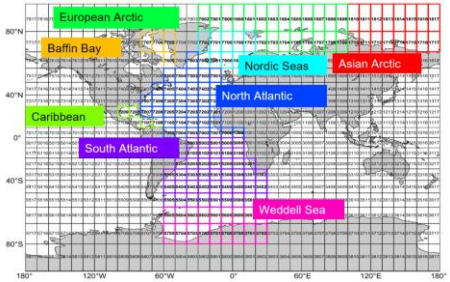
Actions from Ingrid Angel (BSH)

For all the regions (completed)

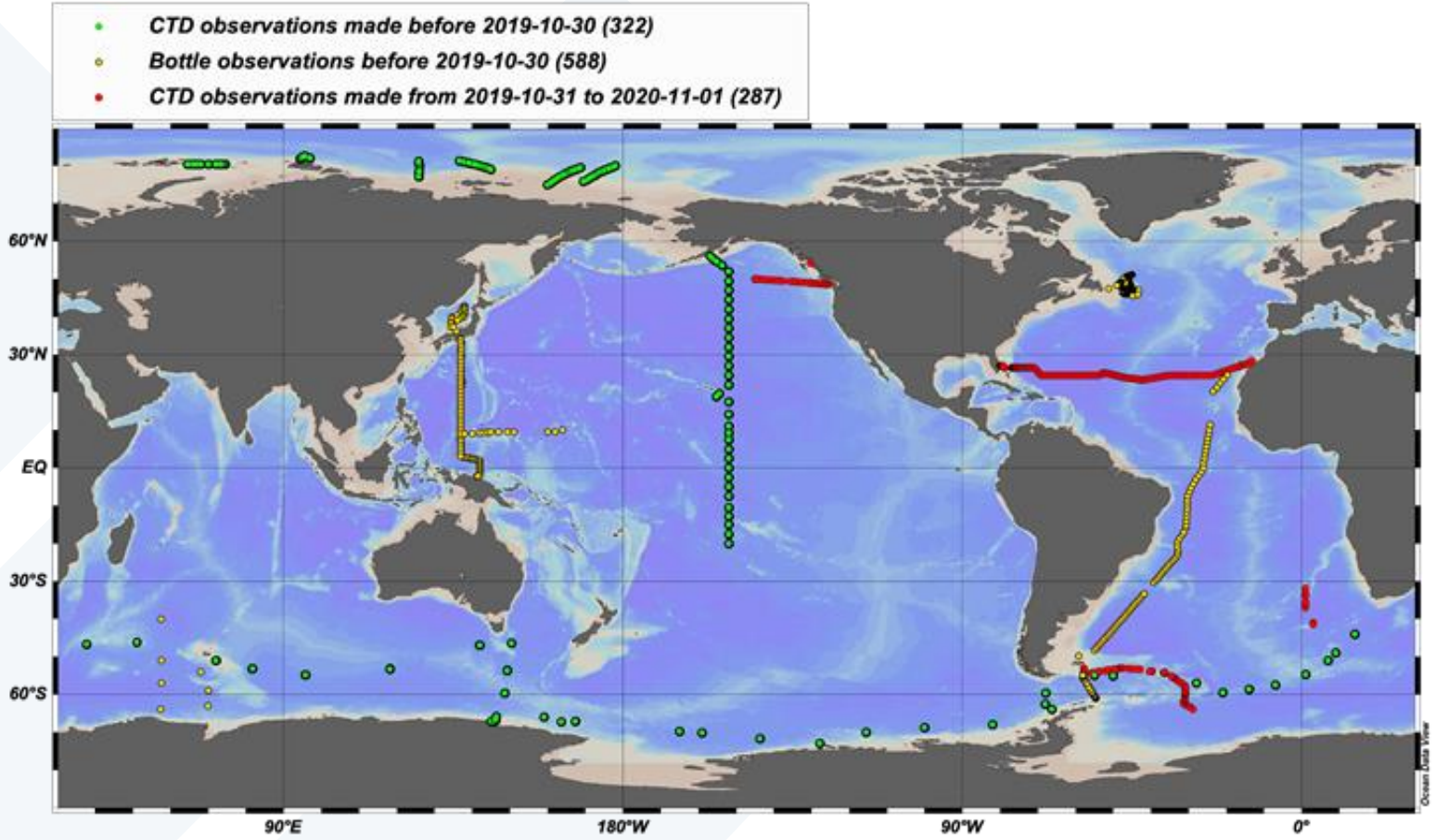
- Remove bad samples (out of range and incomplete pressure-temperature-salinity triplets)
- Remove profiles that do not fit the selection criteria (out of box limits, shallower than 900 dbar, non monotonically increasing pressure.
- Check for metadata, content and nearby duplicates. Decisions on which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

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



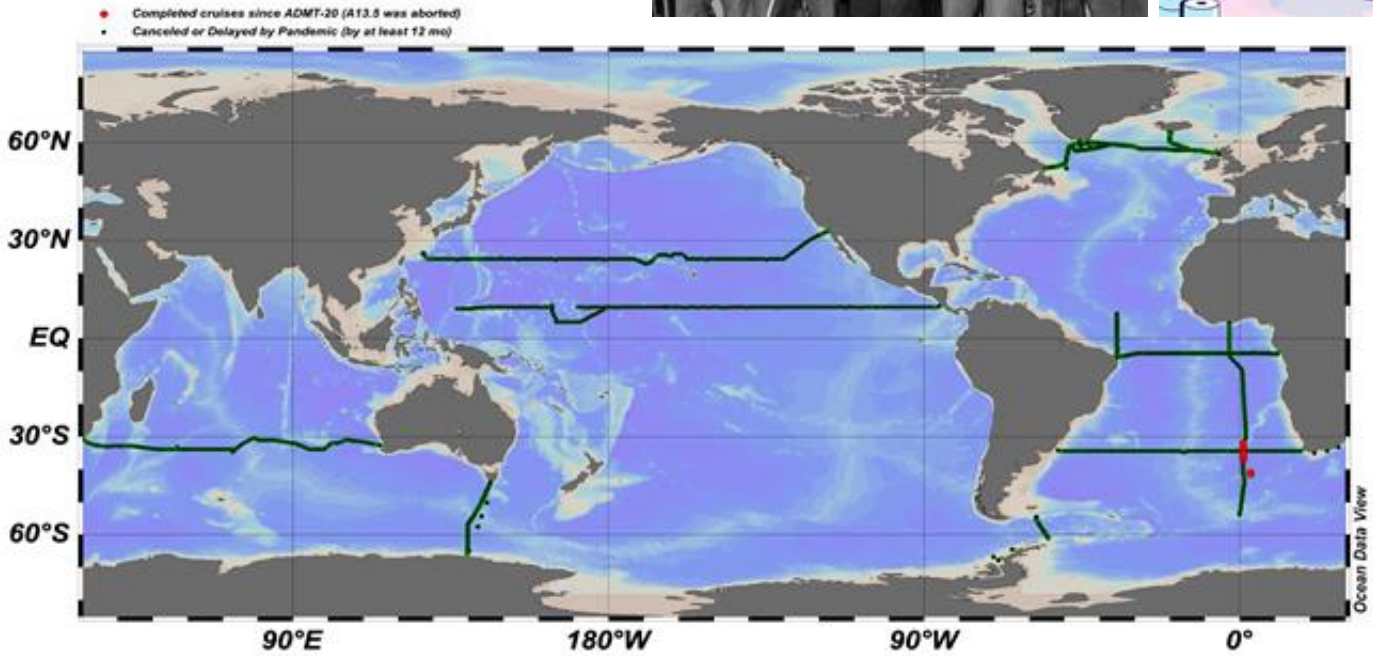
1197 new profiles available from CCHDO since ADMT-20 (2019-10-31)



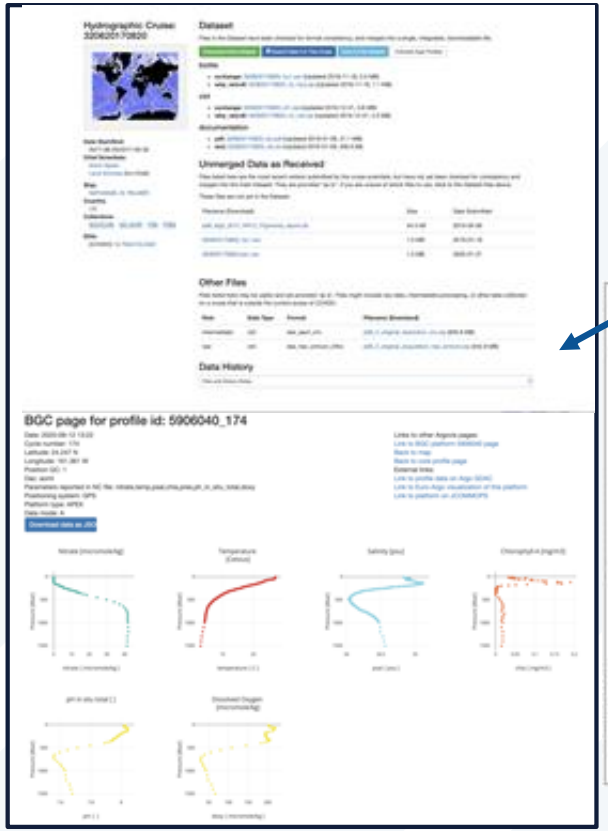
2020 and beyond

How it started

How it’s going



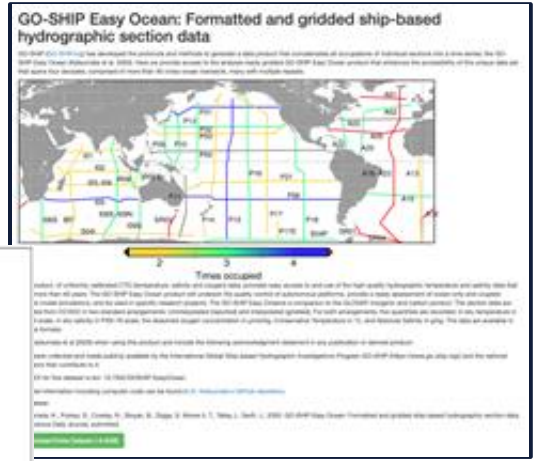
We're focused on making it easier to do science, regardless of location



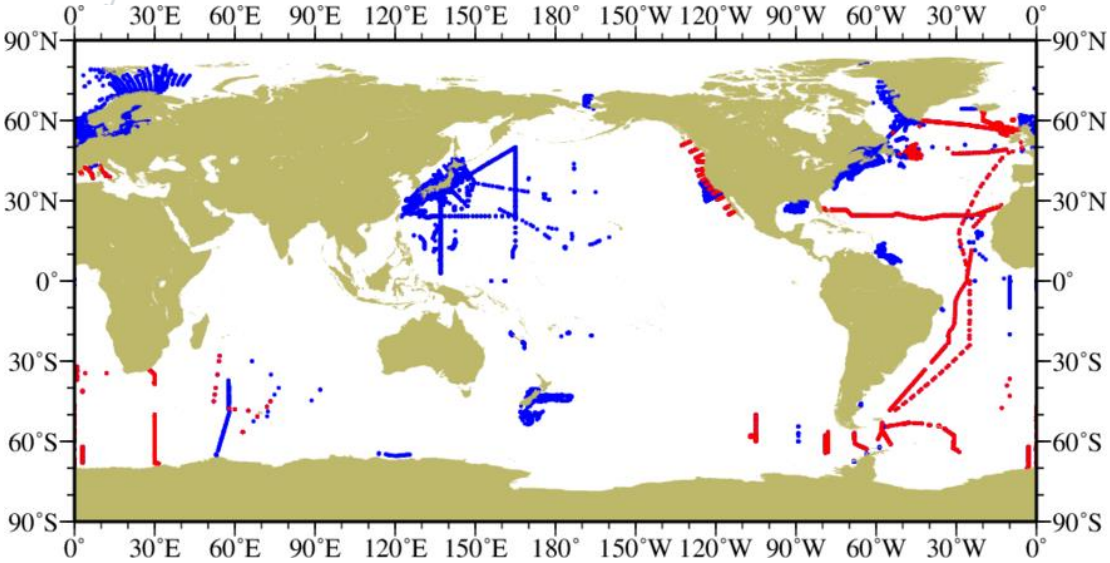
https://bit.ly/argo_go-ship_giglio
https://bit.ly/argo_go-ship_purkey

Making GO-SHIP data interoperable with Argo data

https://bit.ly/cchdo-netcdf-2020



https://cchdo.ucsd.edu/products/goship-easyocean

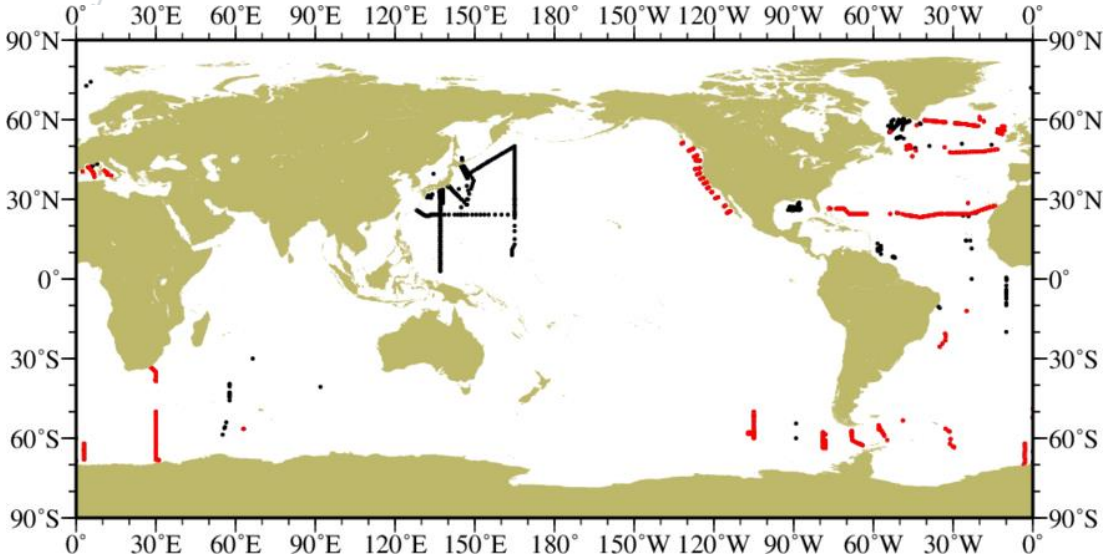


Some non CCHDO sources:

- Global Temperature and Salinity Profile Program (GTSPP) – Japanese and Canadian sources
- International Council for Exploration of the Seas (ICES)
- NOAA Northeast Fisheries Science Center
- National Institute of Water and Atmosphere Research (New Zealand)
- Russian-American Long-term Census of the Arctic (RUSALCA)

All CTD casts for years 2000 to 2020 uploaded to the World Ocean Database between November 2019 and November 2020.

Red: Sourced from the CLIVAR and Carbon Hydrographic Office (CCHDO) **1469 casts**
Blue: Other sources **13,981 casts**



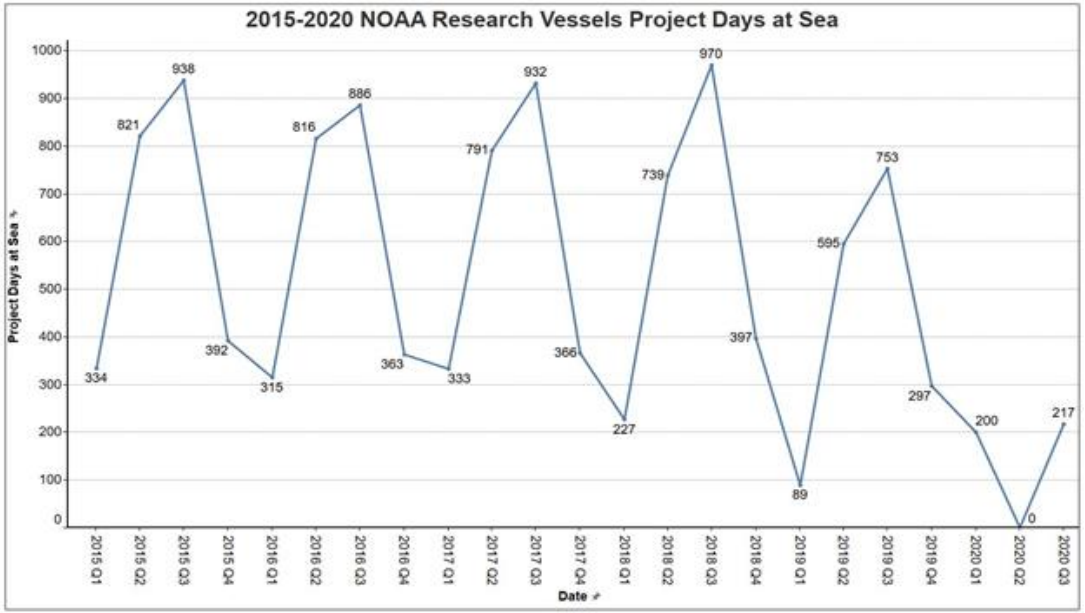
Non CCHDO sources:

- Global Temperature and Salinity Profile Program (GTSPP) – Japanese and Canadian sources
- International Council for Exploration of the Seas (ICES)
- Gulf of Mexico post Deep Water Horizon spill studies

Contribution to Argo CTD Reference Database: CTD casts to depths > 2000 m for years 2000 to 2020 uploaded to the World Ocean Database between November 2019 and November 2020.

Red: Sourced from the CLIVAR and Carbon Hydrographic Office (CCHDO) **416 casts**
Black: Other sources **569 casts**

Issues in data flow from World Ocean Database



Ship time is down in 2020 due in large part to the pandemic – expect to see less CTDs for 2020, 2021. Left figure is days at sea for all NOAA ships - fleet of 16 research vessels.

Figure courtesy of Office of Marine and Aviation Operations [OMAO} Data Assembly Center; from "Effects of the Pandemic on the Ocean Observing System" , in preparation.

International Council for Exploration of the Seas (ICES) interruption in CTD data receipt, not yet resolved.

Global Temperature and Salinity Profile Program (GTSPP) data are received in near-real time, no post cruise calibration. The expectation is the calibrated data will be received within 2 years.

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 | Source : cruise_name = expocode + data_file_name) with format adapted (wmo box)

CCHDO - WOD

- Pandemic situation, decrease of cruises since early 2020

Next version will include (beginning of 2021)

- 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
- New OCL release