Coriolis
OPERATIONAL OCEANOGRAPHY

AST-16 March 2015 Brest

Quality of Argo reference database from CCHDO data

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Objectives for reference database

Needs for Argo ?

- To have a common Reference Database (for RDACs)
- To have only high quality data in the Reference Database
- To get data in an 'impulsive' way (acquire one - use multiple)
- To get data in an unique format (for the reference database input but also for CCHDO users)

Why CCHDO ?

- To guaranty high quality for the data (they have expertise)
- Experience of managing CTD data

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Common Reference database

At ADMT6 meeting (2005) we agreed to set up a common Reference database for ARGO in collaboration with Clivar/CCHDO. The structure that has been approved was the following:

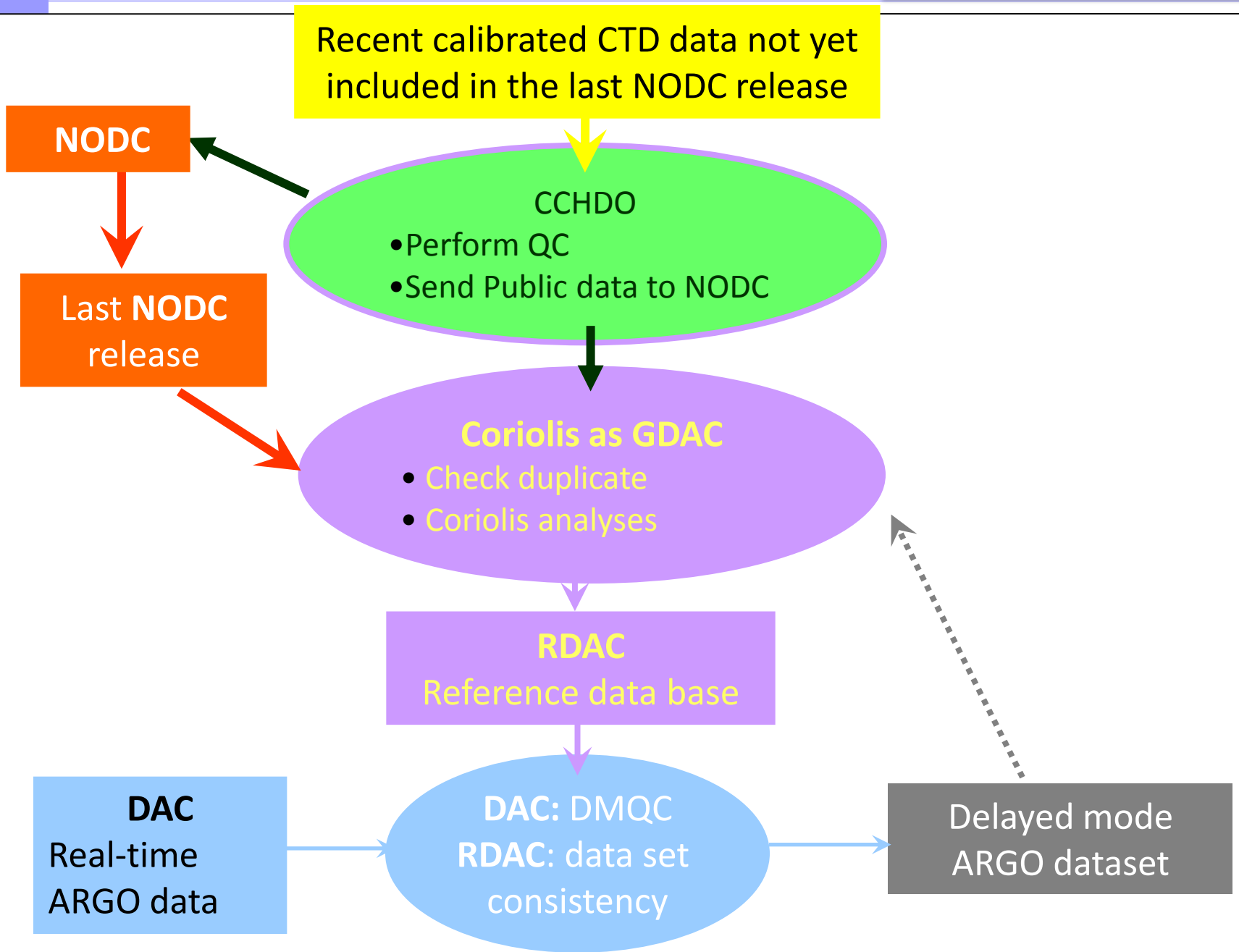
- Rdac through their networking activities will help in identifying the cruises that would be of interest for ARGO Delayed mode Data Management activities and encourage PIs/National Data centers to send their CTD to CCHDO office

- CCHDO will quality control these data according to Clivar procedures described at http://cchdo.ucsd.edu/information.html

- CCHDO will than transmit back the qualified data to Coriolis that will update the central reference database that will be available on an FTP site protected by password

What was proposed ?

Presentation ADMT7
(november 2006)



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A Brief History…(from Steve Diggs – ADMT9)

A History: CCHDO & Argo Reference CTD Data

List of CTD available at Coriolis sent to CCHDO

1st request from Sylvie to help w/ CTD data / Argo

March 2006

ADMT-7 / China

November 2006

NODC/CCHDO meeting (@ NOAA HQ)

September 2007

April-June 2006

CCHDO Disk of most recent CTD data sent to Coriolis

January - March 2007

CCHDO/Argo asks IODE membership for help

October 2007

First full cruise of non-public data (PIRATA)

- NODC and CCHDO will QC data with flags or clearly document all profiles submitted to Coriolis.

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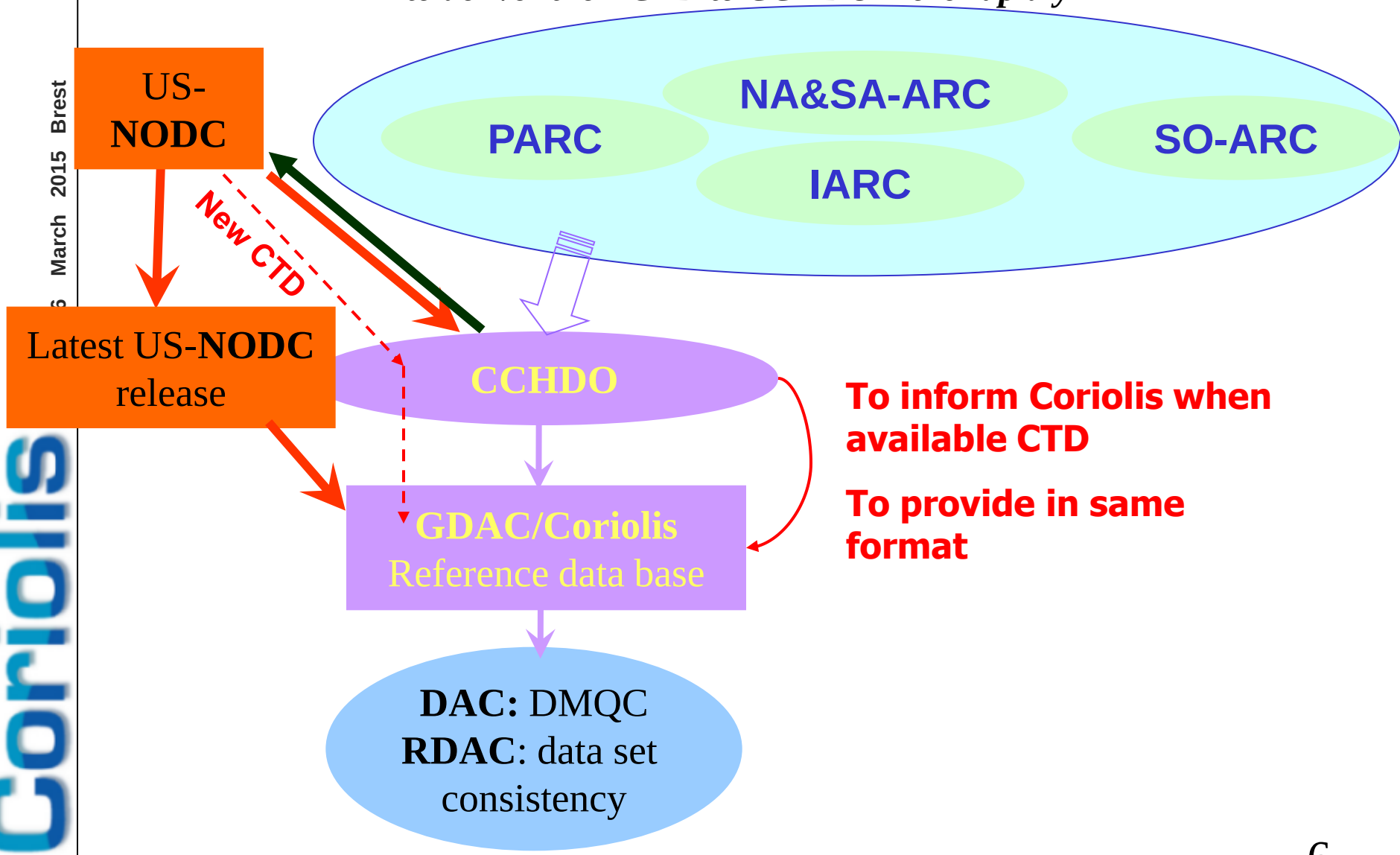
UC San Diego

Schema to remind data flow (ADMT11 – 2010)

Use the RDAC networking activities to encourage PIs to deliver their CTD to CCHDO more rapidly



Following history (main issues)

ARGO2008V01
including all the
WOD2005

July 2008

CCHDO & Coriolis : messages sent to ARCs partners and euroargo partners to try to push them to subtmit data to CCHDO

November 2008

CTD_for_DMQC_2010V0
including all the WOD2009

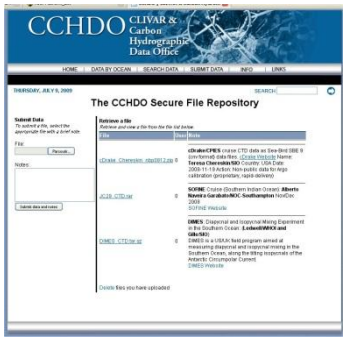
February 2010

October 2008

CTD_for_DMQC_2008V02
(temperature unit-type : ITS90 to be in agreement with the last version of OW)

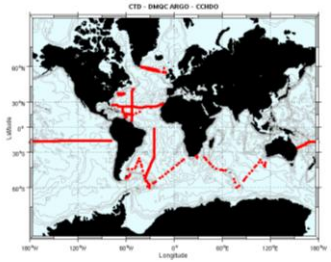
June 2009

Few CTD provided by CCHDO
Website access (login/password)



December 2011

New CCHDO dataset
zip archive (10 cruises)
cchdo_argo_ctd_update_20111130.zip
–
Mix of csv, netcdf files.



What has been done ? (main actions)

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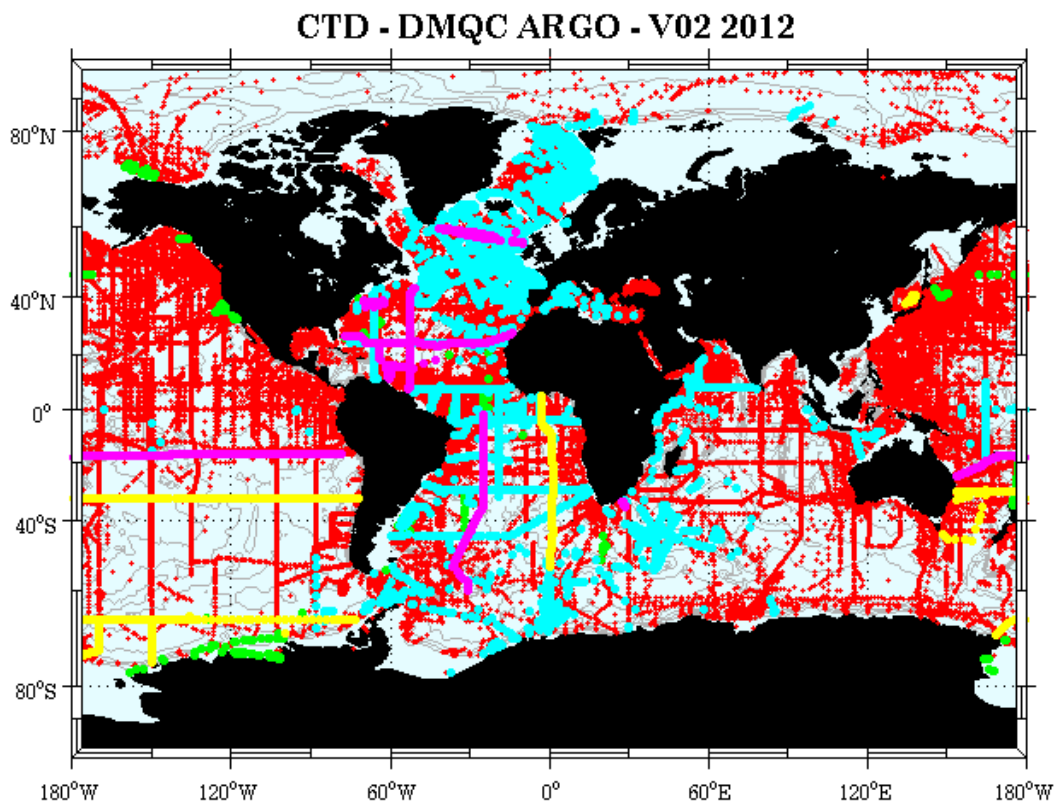
2012 – New version : CTD_for_DMQC_2012V02

OCL update + ICES + CCHDO (2 datasets)

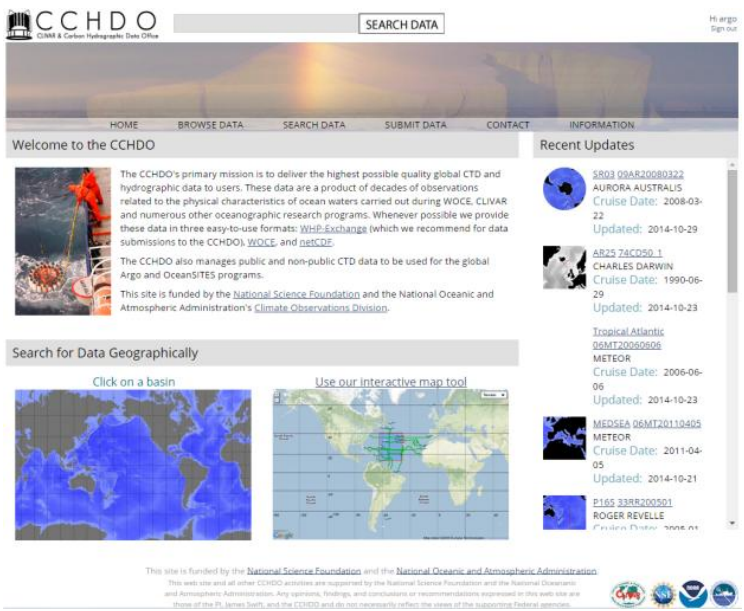


Base 2012_V01 – US-NODC – ICES – CCHDO 1 – CCHDO 2

New CTDs DOWNLOADED IN 2014 – CCHDO WEBSITE

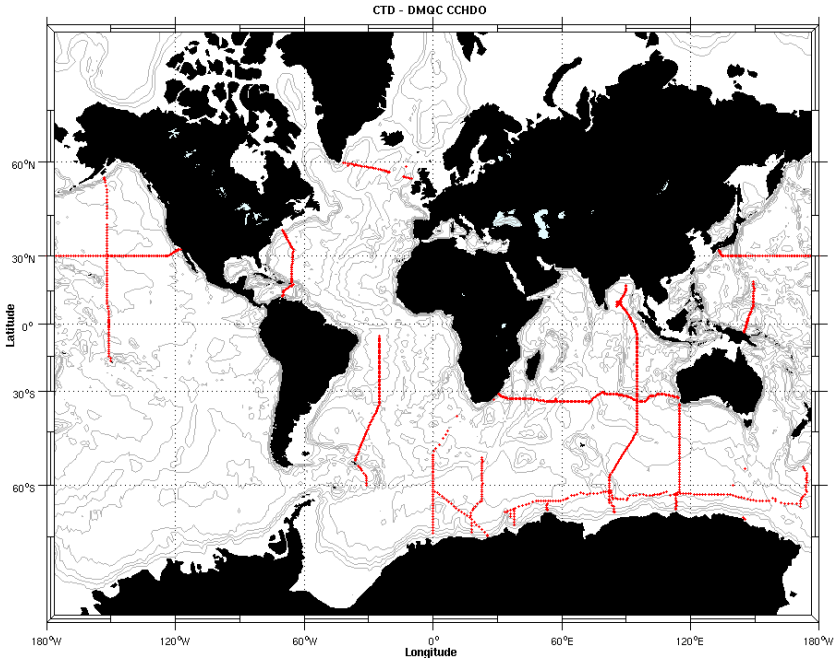
09AR20120105	2012
49NZ20111220	2011
49NZ20121128	2012
49NZ20130106	2013
64PE20050907	2005
77DN19910726	1991
A12_2002a	2002
I05_33RR20090320	2009
P06E_318M20100105	2010
s04a_06AQANTXIII	1996
S04P_320620110219	2011
A16S_33R020121223	2013/2014
A22_33AT20120324	2012
I08S_33RR20070204	2007
I09N_33RR20070322	2007
P02_318M20130321	2013

16 lines/cruises

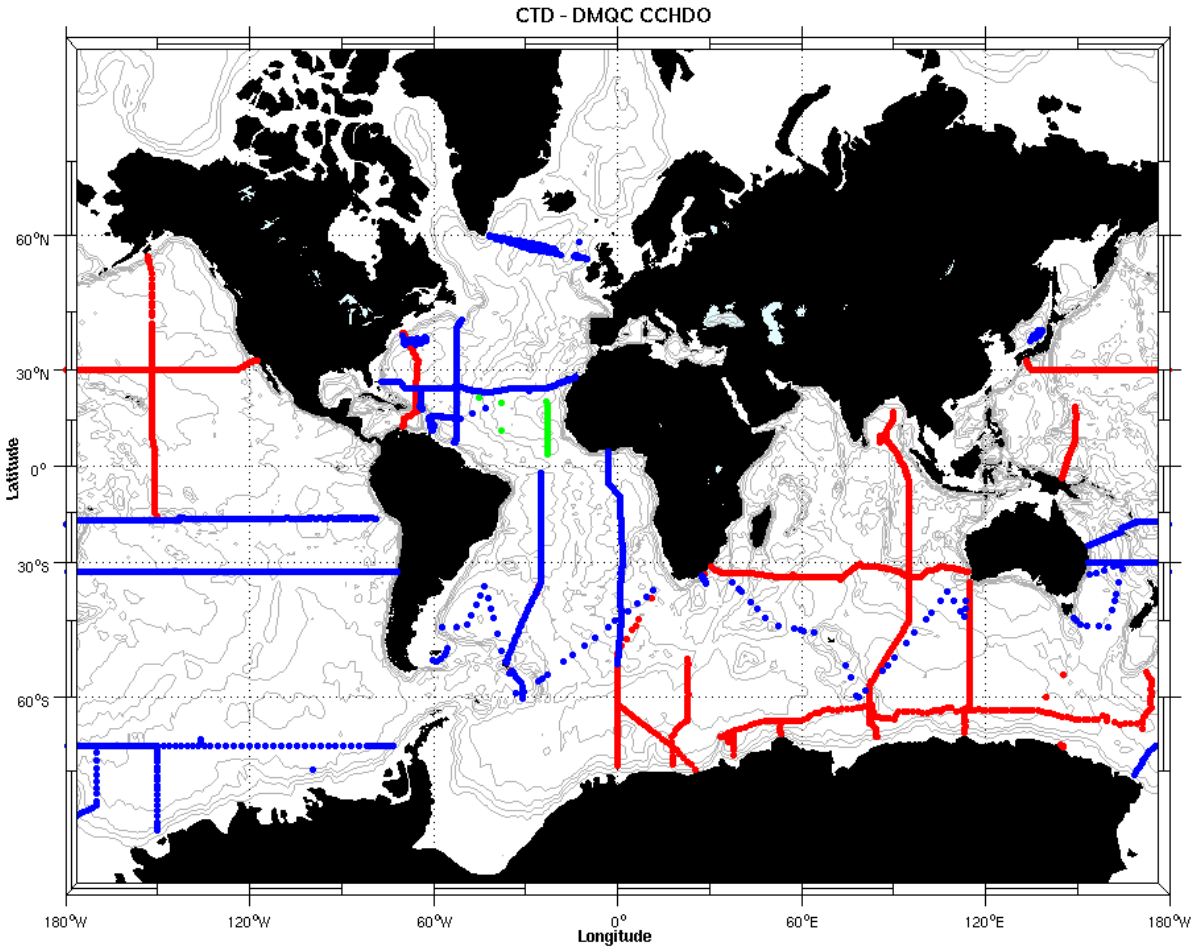


DATA DoWNloaded in 2014

Directly from website (free access)
≠ CTDs dedicated for Argo DMQC



CTDs FROM CCHDO



Loaded in Ref DB

2010

2012

2014

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Since december 2011 – no information about new CTD data – occasional connexion on website

From my side connection on the CCHDO web site : list of recent updates – but I miss other data between connections – new data ? Or updated data (already in OCL, for instance cruise with date 1991)

NetCDF Format : some dataset with only csv format

Differents versions of NetCDF - parameter name definition - QC :

09AR20120105 :QC,temperature
18HU99022 : NO QC, TEMP = CTDTMP

```
netcdf 09AR1203_1_00001_00001_ctd {
dimensions:
        time = 1 ;
        pressure = 1444 ;
        latitude = 1 ;
        longitude = 1 ;
        string_dimension = 40 ;
variables:
        double pressure(pressure) ;
                pressure:long_name = "pressure" ;
                pressure:positive = "down" ;
                pressure:units = "decibar" ;
                pressure:data_min = 2. ;
                pressure:data_max = 2888. ;
                pressure:C_format = "%8.1f" ;
                pressure:WHPO_Variable_Name = "CTDPRS" ;
                pressure:OBS_QC_VARIABLE = "pressure_QC" ;
        short pressure_QC(pressure) ;
                pressure_QC:long_name = "pressure_QC_flag" ;
                pressure_QC:units = "woce_flags" ;
                pressure_QC:C_format = "%1d" ;
        double temperature(pressure) ;
                temperature:long_name = "temperature" ;
                temperature:units = "?C (ITS-90)" ;
                temperature:data_min = -0.8527 ;
                temperature:data_max = 2.7319 ;
                temperature:C_format = "%8.4f" ;
                temperature:WHPO_Variable_Name = "CTDTMP" ;
                temperature:OBS_QC_VARIABLE = "temperature_QC" ;
        short temperature_QC(pressure) ;
                temperature_QC:long_name = "temperature_QC_flag" ;
                temperature_QC:units = "woce_flags" ;
                temperature_QC:C_format = "%1d" ;
        double salinity(pressure) ;
                salinity:long_name = "salinity" ;
                salinity:units = "PSS-78" ;
                salinity:data_min = 33.7864 ;
                salinity:data_max = 34.7462 ;
                salinity:C_format = "%8.4f" ;
                salinity:WHPO_Variable_Name = "CTDSAL" ;
                salinity:OBS_QC_VARIABLE = "salinity_QC" ;
        short salinity_QC(pressure) ;
                salinity_QC:long_name = "salinity_QC_flag" ;
                salinity_QC:units = "woce_flags" ;
                salinity_QC:C_format = "%1d" ;
        double oxygen(pressure) ;
                oxygen:long_name = "oxygen" ;
```

```
netcdf 18HU99022_1_00001_00001_ctd {
dimensions:
        time = 1 ;
        pressure = 63 ;
        latitude = 1 ;
        longitude = 1 ;
        string_dimension = 40 ;
variables:
        double pressure(pressure) ;
                pressure:long_name = "pressure" ;
                pressure:positive = "down" ;
                pressure:units = "decibar" ;
                pressure:data_min = 4. ;
                pressure:data_max = 66. ;
                pressure:C_format = "%8.1f" ;
                pressure:WHPO_Variable_Name = "CTDPRS" ;
        double salinity(pressure) ;
                salinity:long_name = "salinity" ;
                salinity:units = "PSS-78" ;
                salinity:data_min = 30.4893 ;
                salinity:data_max = 30.9305 ;
                salinity:C_format = "%8.4f" ;
                salinity:WHPO_Variable_Name = "CTDSAL" ;
        double oxygen(pressure) ;
                oxygen:long_name = "oxygen" ;
                oxygen:units = "?mol/kg" ;
                oxygen:data_min = 263. ;
                oxygen:data_max = 348.8 ;
                oxygen:C_format = "%9.4f" ;
                oxygen:WHPO_Variable_Name = "CTDOXY" ;
        double CTDTMP(pressure) ;
                CTDTMP:long_name = "CTDTMP" ;
                CTDTMP:units = "IPTS-68" ;
                CTDTMP:data_min = 1.8555 ;
                CTDTMP:data_max = 8.4183 ;
                CTDTMP:C_format = "%f" ;
                CTDTMP:WHPO_Variable_Name = "CTDTMP" ;
        int time(time) ;
                time:long_name = "time" ;
                time:units = "minutes since 1980-01-01 00:00:00" ;
                time:data_min = 10249347 ;
                time:data_max = 10249347 ;
                time:C_format = "%10d" ;
        float latitude(latitude) ;
                latitude:long_name = "latitude" ;
                latitude:units = "degrees_N" ;
                latitude:data_min = 44.6932 ;
```

?

Who must do what ?

Action	Who ?	What is actually done ?
To get CTD files	CCHDO	Not a lot of CTD provided by ARCs ? Not a lot of CTD provided to Coriolis
To provide CTD files - access from a specific site - regularly basis of diffusion	 CCHDO CCHDO	 CCHDO website but last time where files were available specifically for Argo DMQC = end of 2011 Push method or updated dataset like US-NODC
To control file format - Unique format (netcdf) - Convention parameters name	 CCHDO CCHDO	 ?? Several format : control of format at CCHDO ? ?? Different names Coriolis only takes netcdf files and need to change program in order to load the different names
To check quality control - QC on data - Good quality - Fill value (NaN, -999,..)	 CCHDO CCHDO CCHDO	 ?? ?? ?? Most of the checks are doing at Coriolis level (QC Missing for few files - With good QC – bad data – Fill Value can be different from a cruise to an other one)
To load the CTD files in box files	Coriolis	After few checking (plot of data, θS …)
To provide a new version of reference database	Coriolis	Once a year, expected twice a year

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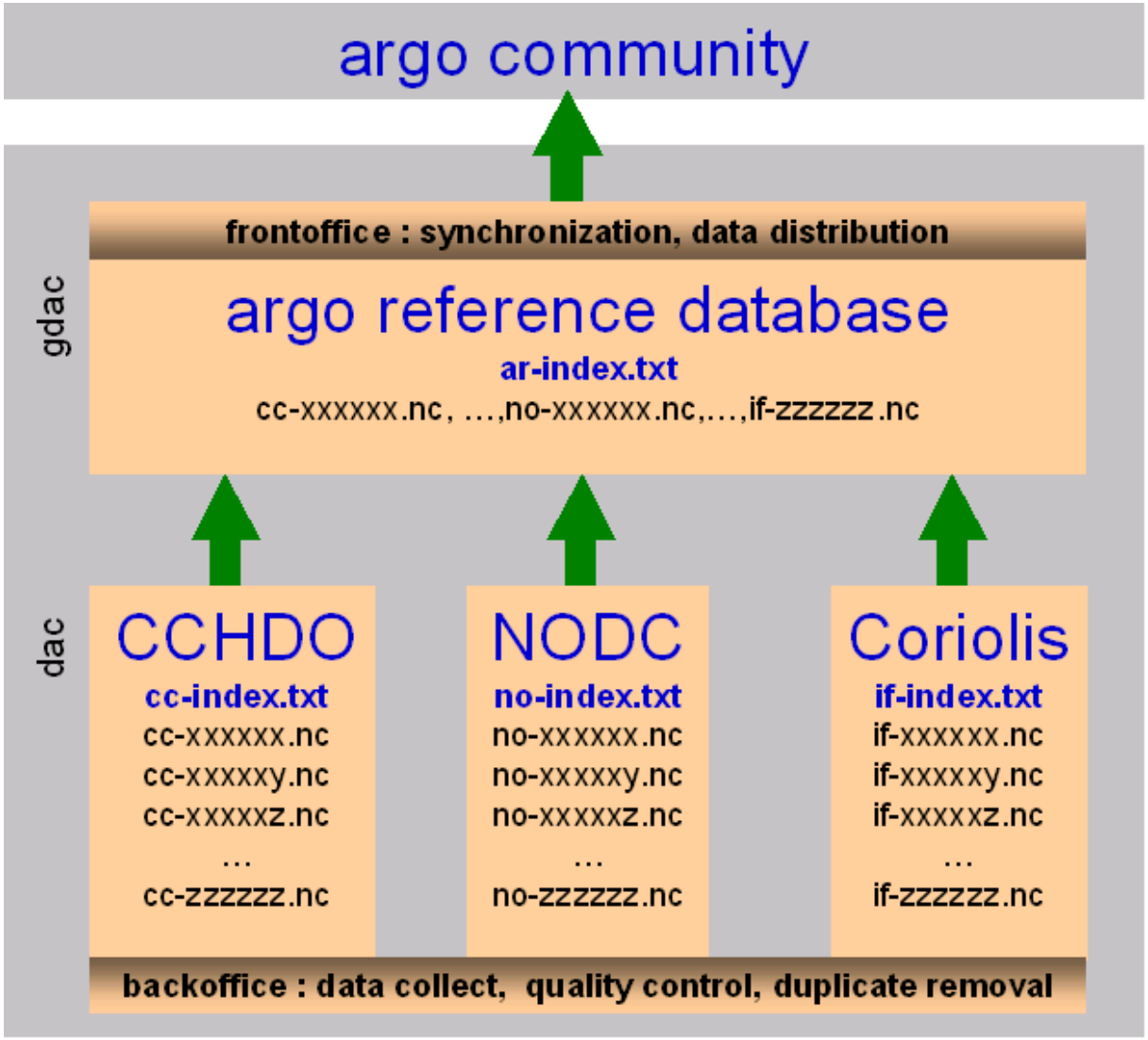
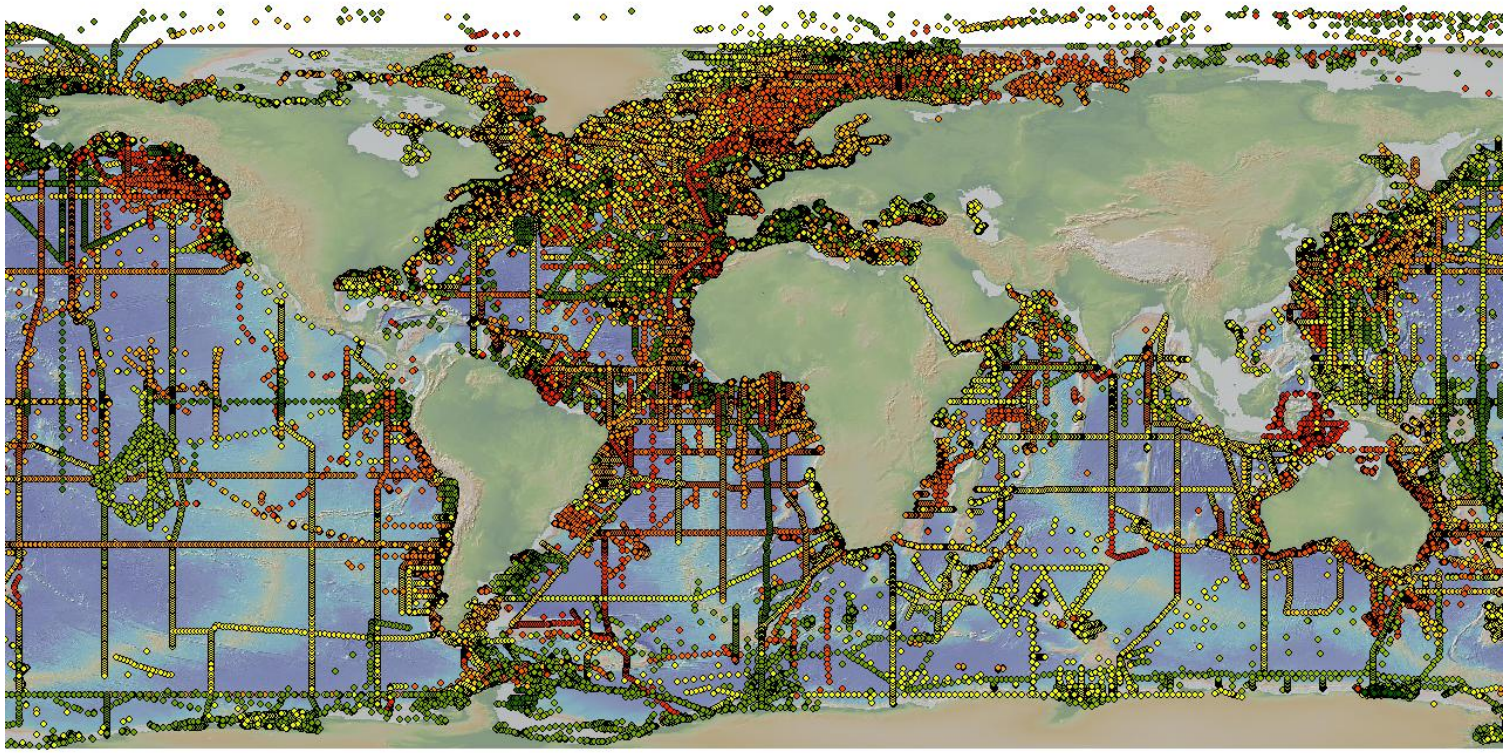
Proposition in October 2013



List and map of all CTDs available at Coriolis



What do we want ?

- To get new CTD data on a regularly basis (at least 2 weeks before AST & ADMT) from a secure site

- To have the same format of files (easier as well for Reference Database as for CCHDO users)

- To have the same convention format for the parameters and QC value scale

- To have qualified QC data (do not put good QC for no-QC datasets which have been not check) – we only want good high quality data for the reference database

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