

WP1: Global 20<sup>th</sup> century reanalysis  
and  
WP5: Service developments

Summary report

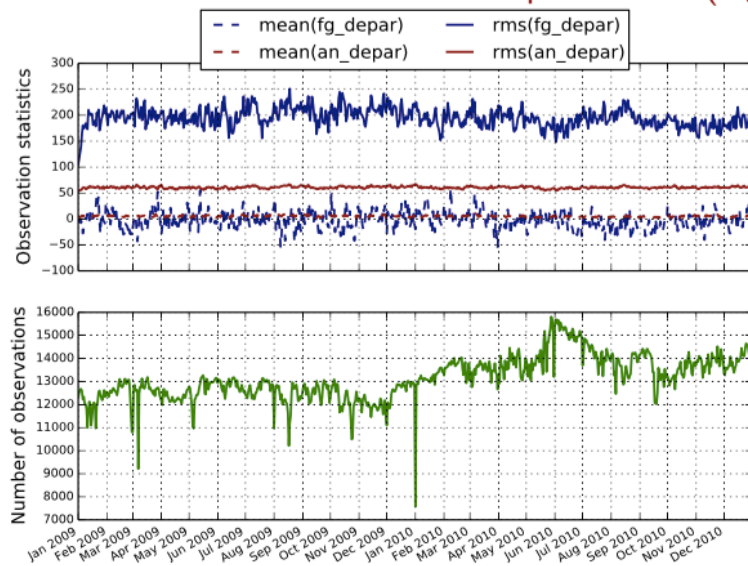
# WP1: CERA system development

## Configuration:

- 1°CERA system
- assimilation of 10-meter winds, mslp, temperature and salinity profiles
- HadISST2 for the SST nudging
- from 1900 to 2010

Test run over 2 years (2009-2010) providing forcing fields for offline CARBON reanalyses

Tools to monitor the CERA 20C production (e.g. mslp statistics from buoys)

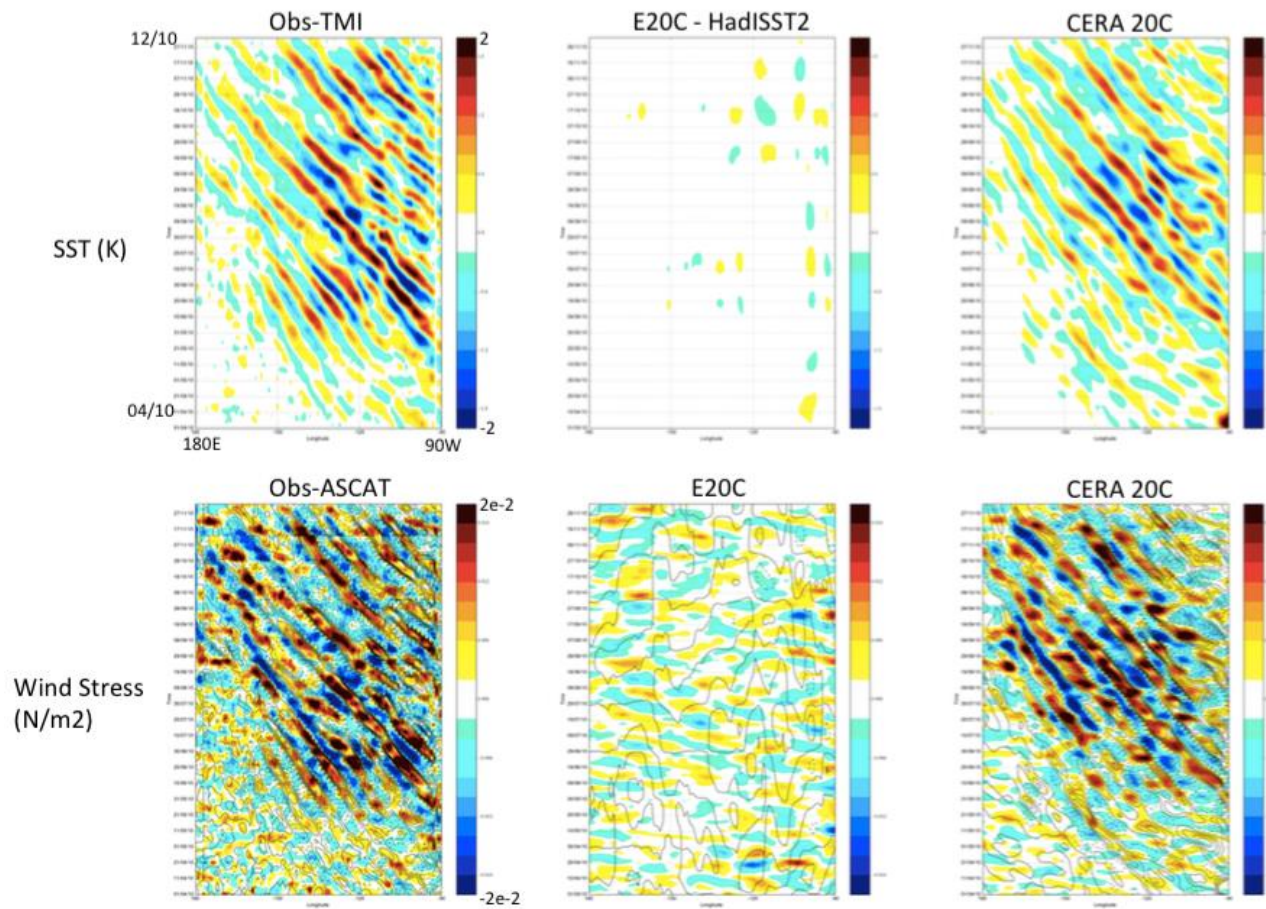


### Future steps:

- Cray migration
- Upgrade IFS to cycle 41R1
- Increase ocean vertical resolution
- Start production of CERA-20C

# WP1: CERA ocean component

Tropical Instability waves in the Pacific (1N, April-December 2010)

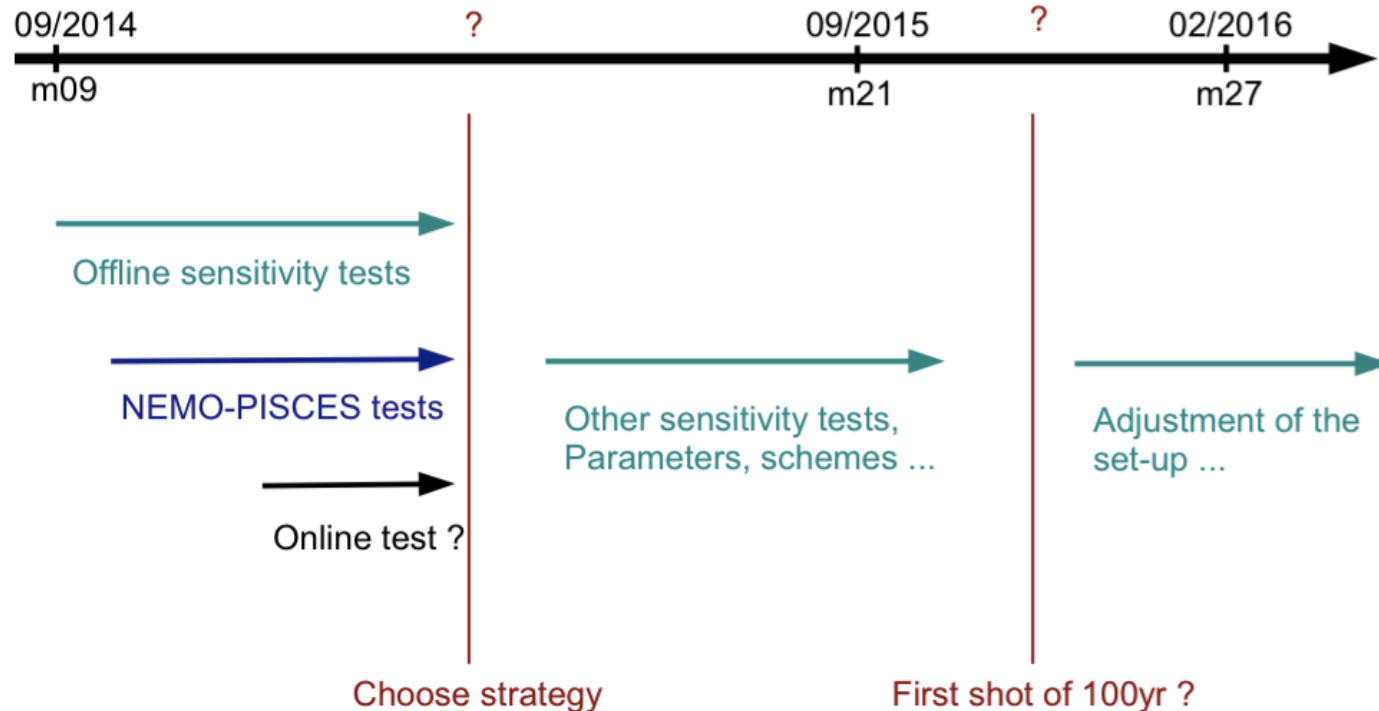


# WP1: CERA carbon component

WP1 : Global 20<sup>th</sup> century analysis

Development of the ocean carbon component

Calendar :



# Main challenges

## Start of CERA-20C production delayed by 6-9 months:

- Performance issues with ECMWF applications on new HPC installation
- Production may be slower than expected
- Priority is to produce a high-quality climate reanalysis, even if it takes longer

## Minimize impact on other project activities:

- Test data sets for carbon activities (WP1) are available, and will be updated as needed
- Integration and testing of new developments (WP2) will continue as planned

# Main challenges

## Integration of WP2 developments in CERA system:

- Successful software integration and performance assessment can be very time consuming – need to be selective
- Integration of some new methodologies may not be feasible (or desirable) in the short term

# Next steps

## Prepare CERA system for production on Cray

- Various technical issues
- Address initialisation of deep ocean
- Improve atmospheric assimilation
- Refine plans for carbon component

New target for start of production: 2015 Q3

# WP5: Service developments

## MARS support for NetCDF (D5.1):

- Workshop “Closing the GRIB/NetCDF gap” held at ECMWF September 2014
- Decided approach and implementation plan
- Prototype ready for testing in December 2014

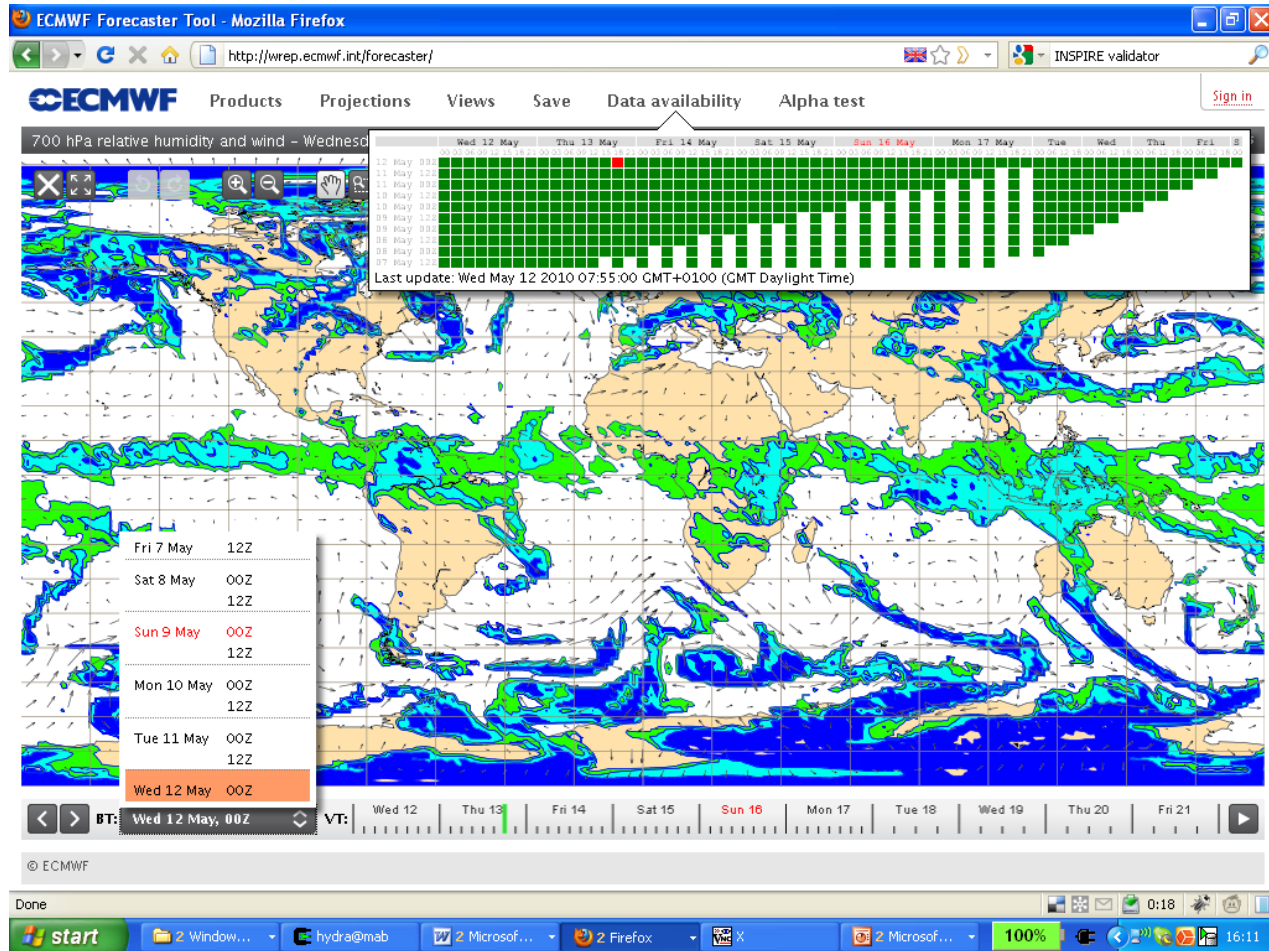


# Web Data Servers

In recent years, ECMWF has developed On-Demand Web Services under Web Re-Engineering Project (WREP):

- ecCharts, application for forecasters, to visualise real-time data
- WebApps/WebAPI, framework to provide access to the MARS archive

# ecCharts



# WebApps Data Server: Fields

The screenshot shows a Mozilla Firefox browser window displaying the ECMWF website. The page title is "netcdf" and the URL is "http://apps.ecmwf.int/webmars/request/job/546a66a313edfe51659c870b/". The page content includes a navigation menu, a request abstract, and a detailed log of the request processing.

**Request abstract:**  
Atmospheric model, Surface, 2 metre temperature, 1°, 1, 00 UTC, 2010-01-01...2010-12-31, Analysis, ERA-CLIM pilot reanalysis of the 20th-century using surface observations only

The status of the job is: **complete**

**Download (45.4MB)**

**Job output**

```
2/20100705/20100706/20100707/20100708/20100709/20100710/20100711/20100712/20100713/20100714/20100715/20100716/20100717/20100718/20100719/20100720/20100721/20100722/20100723/20100724/20100725/20100726/20100727/20100728/20100729/20100730/20100731/20100801/20100802/20100803/20100804/20100805/20100806/20100807/20100808/20100809/20100810/20100811/20100812/20100813/20100814/20100815/20100816/20100817/20100818/20100819/20100820/20100821/20100822/20100823/20100824/20100825/20100826/20100827/20100828/20100829/20100830/20100831/20100901/20100902/20100903/20100904/20100905/20100906/20100907/20100908/20100909/20100910/20100911/20100912/20100913/20100914/20100915/20100916/20100917/20100918/20100919/20100920/20100921/20100922/20100923/20100924/20100925/20100926/20100927/20100928/20100929/20100930/20101001/20101002/20101003/20101004/20101005/20101006/20101007/20101008/20101009/20101010/20101011/20101012/20101013/20101014/20101015/20101016/20101017/20101018/20101019/20101020/20101021/20101022/20101023/20101024/20101025/20101026/20101027/20101028/20101029/20101030/20101031/20101101/20101102/20101103/20101104/20101105/20101106/20101107/20101108/20101109/20101110/20101111/20101112/20101113/20101114/20101115/20101116/20101117/20101118/20101119/20101120/20101121/20101122/20101123/20101124/20101125/20101126/20101127/20101128/20101129/20101130/20101131/20101201/20101202/20101203/20101204/20101205/20101206/20101207/20101208/20101209/20101210/20101211/20101212/20101213/20101214/20101215/20101216/20101217/20101218/20101219/20101220/20101221/20101222/20101223/20101224/20101225/20101226/20101227/20101228/20101229/20101230/20101231/20101231.
```

STREAM = OPER.  
REFRES = 9H.

mars - INFO - 20141117 212035 - Web API request id: 546a66a313edfe51659c870b  
PADDING = 0  
RESOL = AUTO  
PARAM = 167\_128.  
GRID = 1/1.  
STEP = 00.

mars - INFO - 20141117 212035 - Calling mars on 'marsr', callback on 44962  
mars - INFO - 20141117 212035 - Requesting 365 fields  
mars - INFO - 20141117 212035 - Server task is 862 [marsr]  
mars - INFO - 20141117 212035 - Request cost: 365 fields, 25.0152 Mbytes online, nodes: mvr02 [marsr]  
mars - INFO - 20141117 212036 - Transferring: 2623050 bytes  
mars - INFO - 20141117 212047 - Request time: wall: 12 sec cpu: 7 sec  
mars - INFO - 20141117 212047 - 365 fields have been interpolated  
mars - INFO - 20141117 212047 - 365 fields retrieved from 'marsr'  
mars - INFO - 20141117 212047 - Writing to target file: 45.40 Mbyte(s) in < 1 sec [740.07 Mbyte/sec]  
mars - INFO - 20141117 212047 - Visiting marsr: wall: 12 sec  
mars - INFO - 20141117 212047 - No errors reported  
mars - INFO - 20141117 212047 - Read from network: 25.02 Mbyte(s) in 3 sec [7.16 Mbyte/sec]  
mars - INFO - 20141117 212047 - Post-processing: wall: 7 sec cpu: 7 sec  
Calling grib\_to\_netcdf /data/data01/netcdf-at102-20141117212035-705-20862.target -o /data/data01/netcdf-at102-20141117212047-705-20863.nc  
grib\_to\_netcdf: Version 1.12.3  
grib\_to\_netcdf: Found 365 GRIB fields in 1 file  
grib\_to\_netcdf: Creating netcdf file /data/data01/netcdf-at102-20141117212047-705-20863.nc  
grib\_to\_netcdf: NetCDF library version: 4.3.0 of Sep 10 2014 17:37:07 \$  
grib\_to\_netcdf: Done.  
grib\_to\_netcdf: Processing input file '/data/data01/netcdf-at102-20141117212035-705-20862.target'.  
grib\_to\_netcdf: Defining variable 'tm'.  
End of grib\_to\_netcdf /data/data01/netcdf-at102-20141117212035-705-20862.target -o /data/data01/netcdf-at102-20141117212047-705-20863.nc  
End of mars /tmp/mars-netcdf-705-20863.req

# Data Server: Observation Feedback

Navigation

- Datasets
- Job list
- Batch access

[Return to selection](#)

## retrieve

**Request abstract:**

Atmospheric model, DRIBU Ocean Bottle And Low Resolution Conductivity Temperature Depth CTD And XCTD ..., 1607, ERA-CLIM pilot reanalysis of the 20th-century using surface observations only, select reporttype, varno, timeseries\_index, date, time, lat, lon, obsvalue, fg\_depar, an\_depar where (source='ISPDv2.2') and (varno=110); all, 1994-04-01...2010-12-31, ODB feedback, 17

The status of the **job** is: **complete**

**Acknowledgement**

Support for the **International Surface Pressure Databank** is provided by the *U.S. Department of Energy, Office of Science Innovative and Novel Computational Impact on Theory and Experiment (DOE INCITE) program*, and *Office of Biological and Environmental Research (BER)*, and by the *National Oceanic and Atmospheric Administration (NOAA) Climate Program Office*. **The Twentieth Century Reanalysis Project** is supported by the *Earth System Research Laboratory Physical Sciences Division of NOAA* and the *Climate Diagnostics Center (CDC) of the University of Colorado's Cooperative Institute for Research in Environmental Sciences (CIRES)*.

**Download (9627.8MB)**

**Preview of the data**

reporttype	varno	timeseries_index	date	time	lat	lon	obsvalue	fg_depar	an_depar
16005	110	66	19940331	220000	52.500000	-132.699997	102270.000000	137.000000	78.300003
16005	110	1767	19940331	220000	39.290001	164.649994	101340.000000	-426.000000	-248.000000
16005	110	244	19940331	220000	-39.040001	163.289993	102440.000000	129.000000	53.299999
16005	110	2309	19940331	220000	20.639999	135.789993	101580.000000	168.000000	143.000000
16005	110	1255	19940331	220000	23.540001	141.110001	101980.000000	115.000000	88.000000
16005	110	4542	19940331	220000	9.480000	159.669998	101200.000000	57.799999	63.700001
16005	110	3745	19940331	220000	-8.140000	114.400002	101120.000000	-4.070000	-12.700000
16005	110	5060	19940331	220000	-12.380000	130.669998	101220.000000	91.900002	28.799999
16005	110	2512	19940331	220000	-11.780000	118.989998	101240.000000	55.599998	28.200001
16005	110	1751	19940331	220000	-13.360000	139.389999	101190.000000	78.500000	39.299999

# Data Access: ECMWF Web API

Simple API to services using HTTPS

Batch access to Data Servers:

- Install a simple library (eg, python)
- Install a token
- Download data via scripts

Access to new services in future, like plots on demand

# Total usage October 2014

Data downloaded by 1,800 users

- 750,000,000 fields
- 1.5 million requests
- 78 TBytes

Volume by application

- WebAPI: 70%, WebApps: 30%

Volume by dataset

- Reanalysis: 85%, rest: 15%

# Download of Reanalysis datasets in October 2014

Dataset	Fields	Requests	Volume
ERA-15	142,702	2,524	770 MB
ERA-40	14,273,735	71,313	167 GB
ERA-Interim	389,243,904	1,152,642	50 TB
ERA-20C	255,887,608	163,762	15 TB