Building Historical product for MyOcean

SeaDataNet2 annual meeting , Rhodes, 19th September 2012

Three structuring initiatives for marine information

DG ENTERPRISE & INDUSTRY

GMES

MyOcean

www.myocean.eu

DG RESEARCH & INNOVATION

FP7

SeaDataNet

www.seadatanet.org

DG MARITIME AFFAIRS & FISHERIES

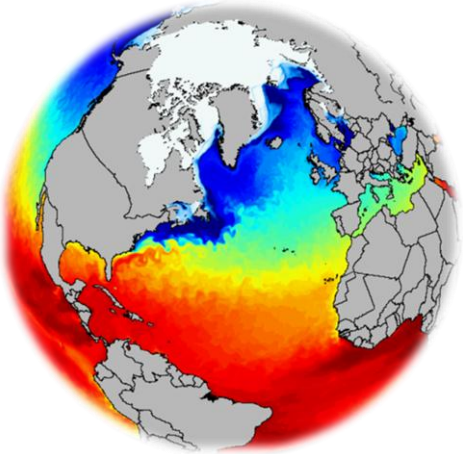
EMODNET

Emodnet-physics

www.emodnet-physics.eu

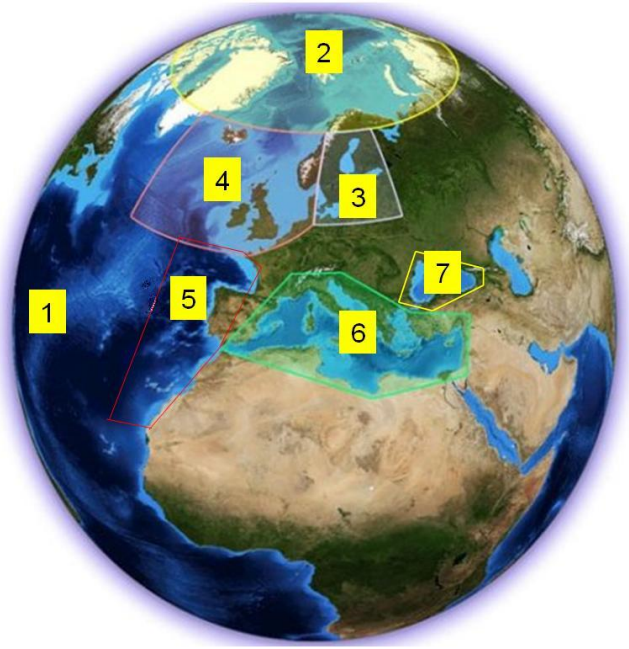
EuroGOOS

Operational oceanography community



A GMES marine service to provide free and open access to real-time and delayed mode « ocean monitoring and forecasting » information based on the combination of **satellite, in situ observations and assimilative ocean models** on the **global ocean and European seas**

A comprehensive and consistent description of the ocean



- 1. Global
- 2. Arctic
- 3. Baltic
- 4. NWS
- 5. IBI
- 6. Med Sea
- 7. Black Sea

- All areas

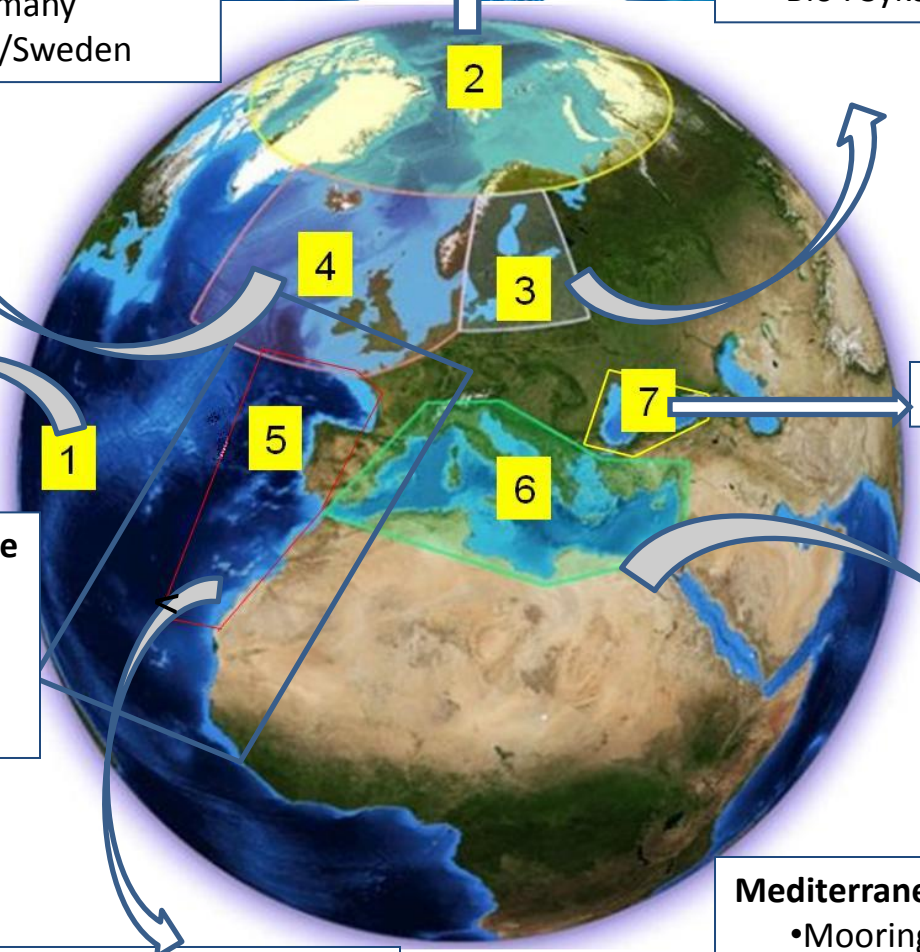
- **In Situ** Observations
- **Satellite** Observations
- Assimilative **Models**

- **Real-time**
- **Reanalyses**

Arctic: IMR / Norway

Baltic Sea: SMHI/Sweden
- Temp & Salinity : BSH/Germany
- Current & ea Level: SMHI/Sweden
- Bio : Syke/Finland

North West Shelves: BSH/Germany
- Temp & Salinity : BSH/Germany
- Current & Sea Level: SMHI/Sweden



Black Sea IOBAS/Bulgaria

Global Ocean : Coriolis/France
- Link with international network s: Coriolis/France
- European Vessels: NIVA/Norway

Mediterranean Sea : HCMR/Greece
- Mooring : HCMR/Greece
- XBT/CTD: ENEA/Italy
- Drifter & Argo: OGS/Italy
- Glider and Argo: Coriolis/France

South West Shelves: Puertos Del Estado/Spain
- Mooring : PdE
- Underway data: Coriolis/France

The role of the INS-TAC

- **Integrate** Physical (T ,S ,Current ,Sea Level) and Biogeochemical (O2, Chl, nutrients) data for assimilation and validation of models at global and regional scales

- Provide products for **forecasting , validation and reanalysis** purposes ⇒ Real-time , Near Real-Time and Delayed mode products

- Provide products for **external users**

What the In-situ Tac is and what it is not ?

☒ Is not a collection of national data centers : the processing of the individual platforms stays a national duty

☑ Is an European center integrating data from different sources for the benefit of a European community

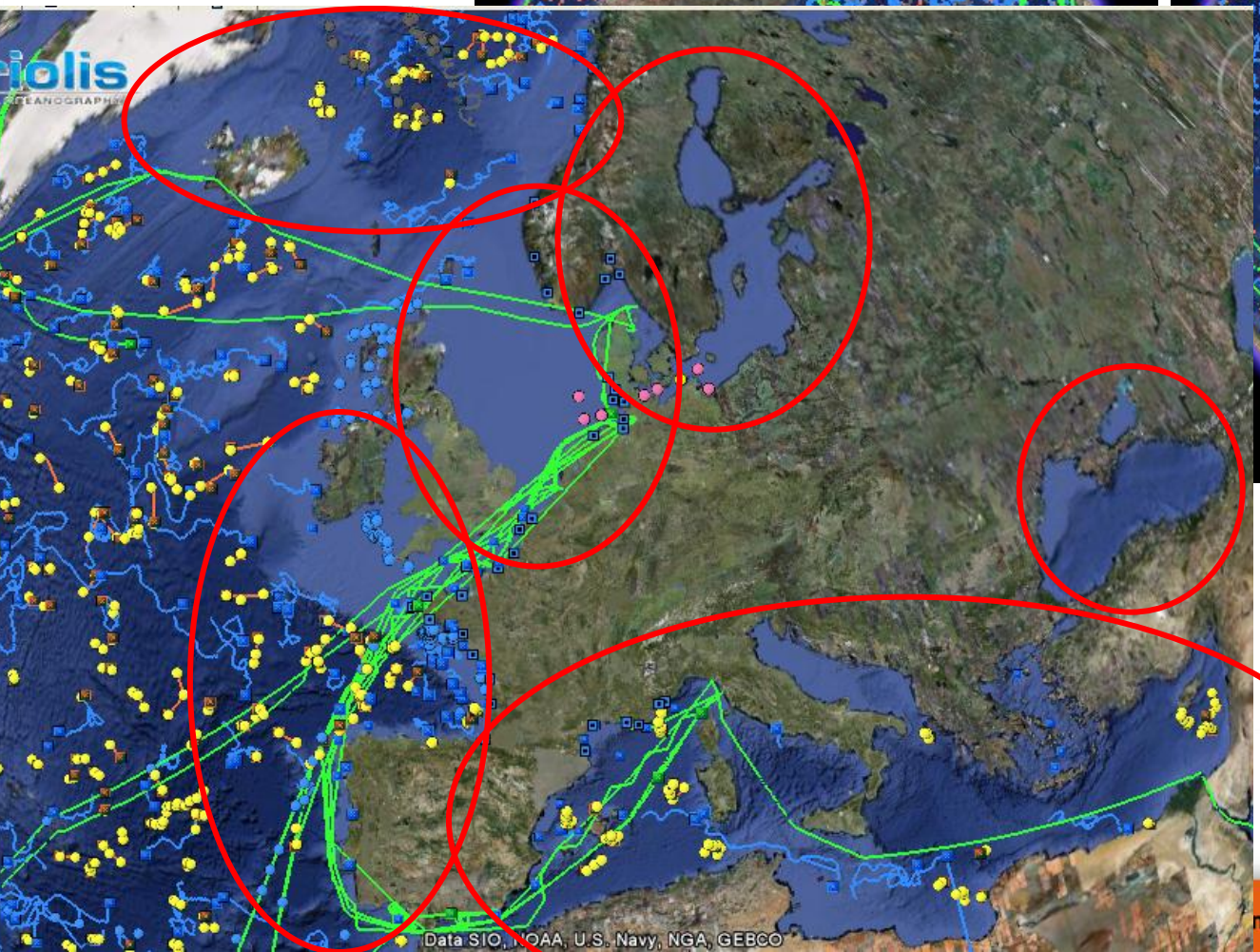
☒ Is not deploying or ensuring the maintenance of observing systems

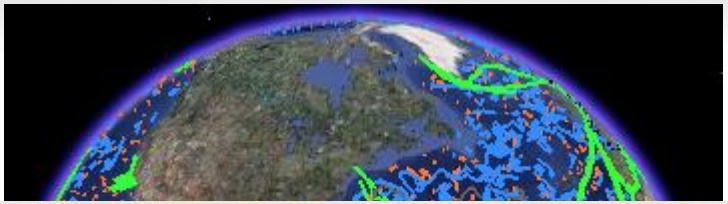
☑ Is collecting and qualifying data from outside MyOcean data providers (mainly JCOMM and EuroGOOS) to fit the need of internal and external users

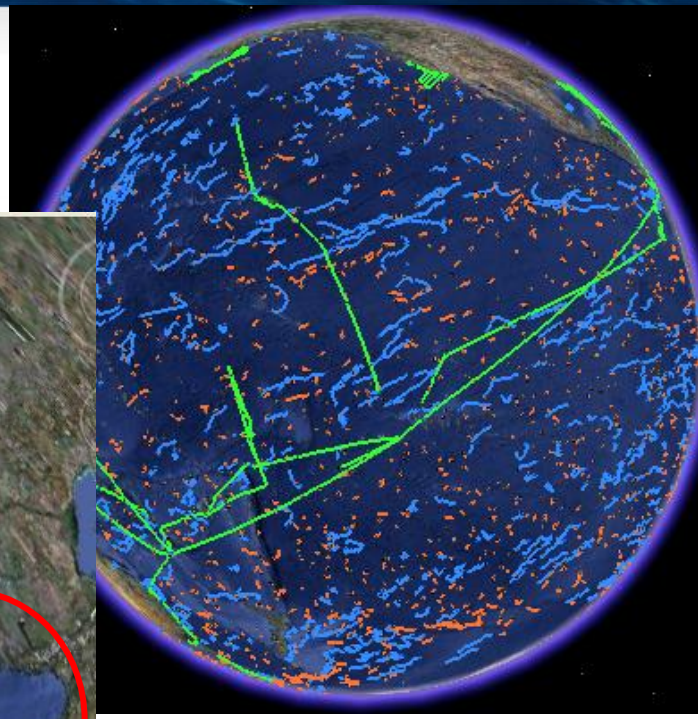
What was acheived in MyOceanI

- 6 regional and 1 global portals were set up that integrate , in a sustained manner, enough data to significantly ease the MFC and MyOcean users activities and have a real added value for the regions
- The distributed infrastructure is operated in a coherent and reliable way
- It provides both Near Real-Time in all regions
- Delayed mode Products : only the Global T&S re-analysed product has been turned into operation and regional T&S products are only prototypes due to the difficulty to set up the link with SeaDataNet

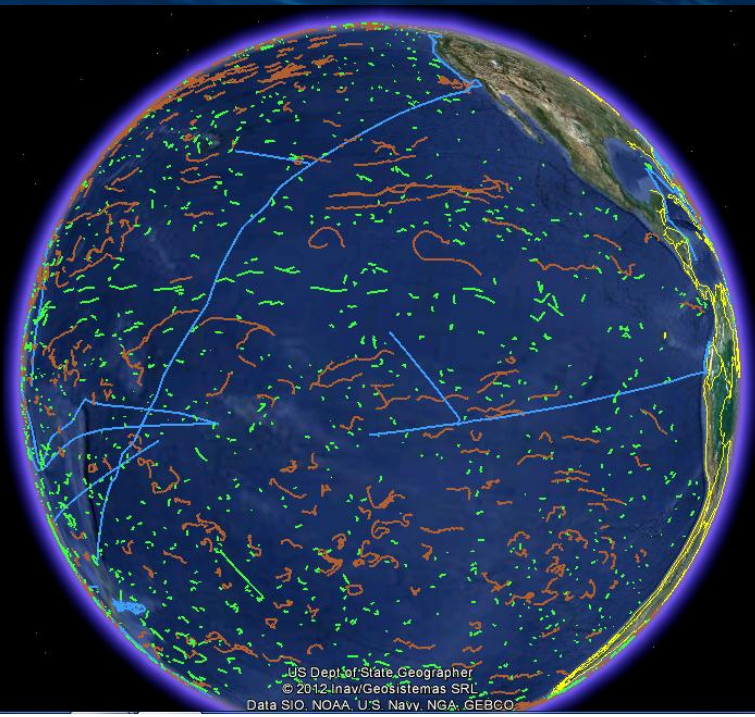
What was provided to MFC in April 2009?

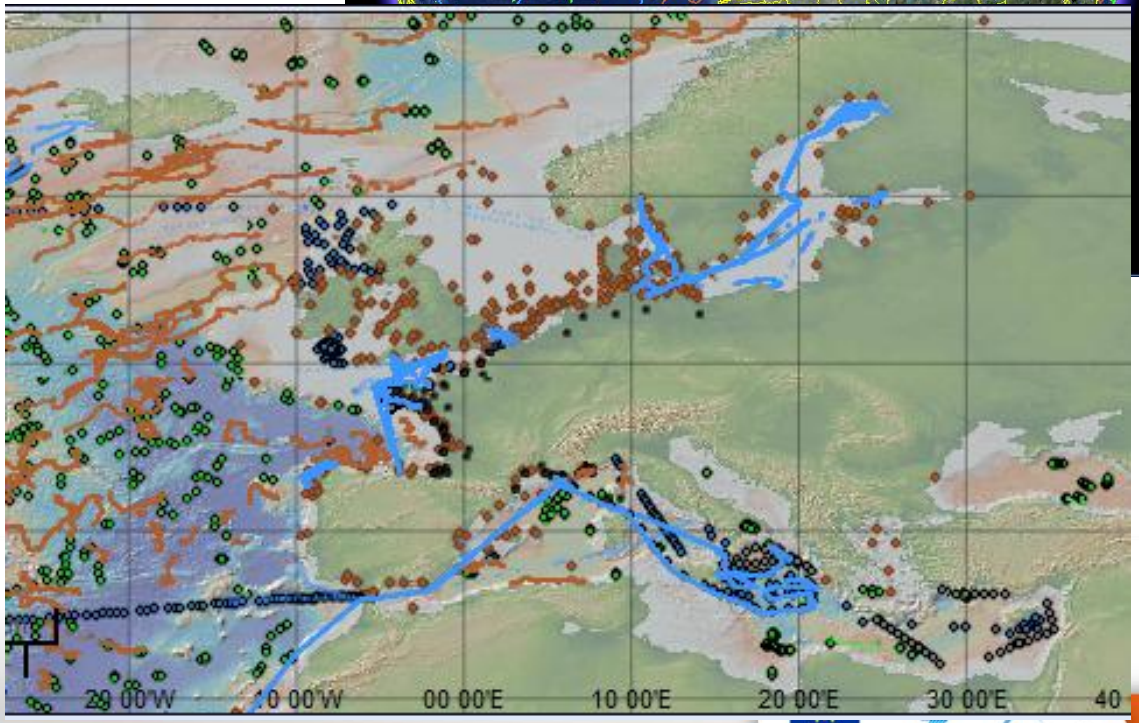




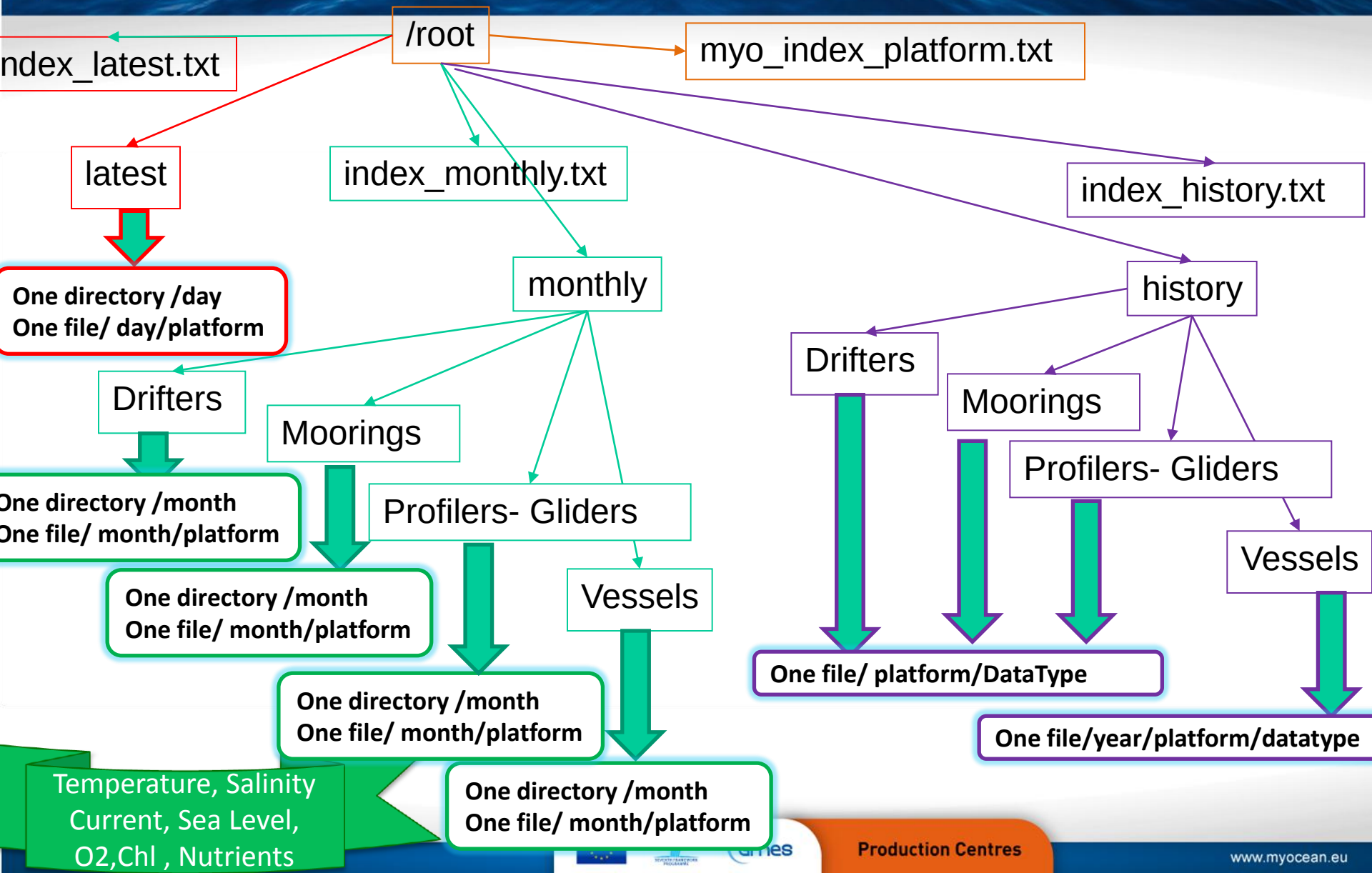


What Is provided in MARCH 2012

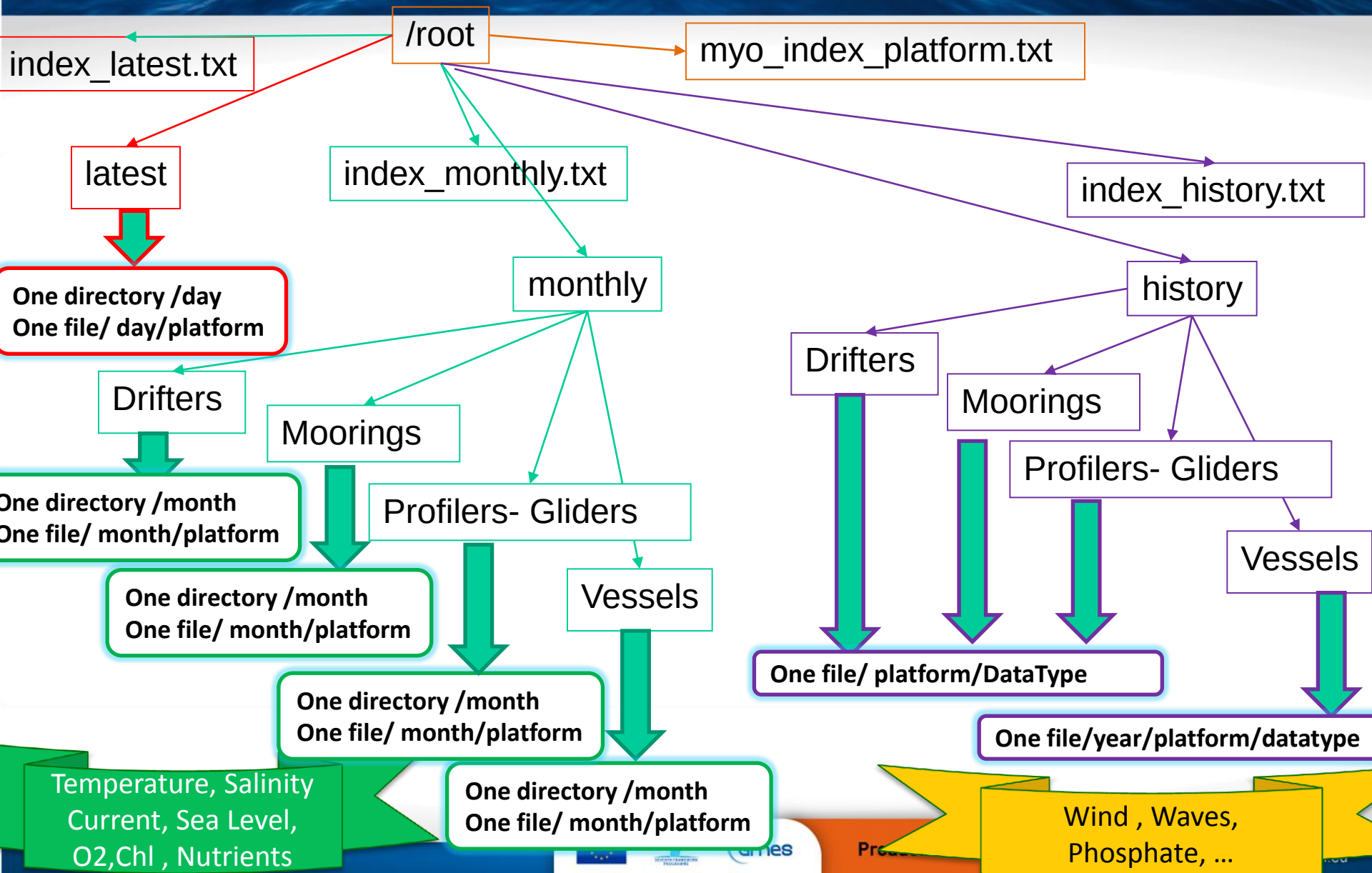




MyOcean INS TAC portals



ROOS Data portals



What is the need in term of Historical observations

MY OCEAN

Marine Core Service

The use and requirements

- For Assimilation :
  - Temperature and Salinity
- For Validation
  - Sea Level
  - Biogeochemistry (Chla or Fluorescence, Oxygen and nutrients)
- Time coverage: first priority from 1990-now
- Spatial coverage:
  - Global ocean
  - 6 European Seas : Arctic, North Sea, Baltic, Iberia-Biscay-Ireland Seas, Mediterranean Sea, Black Sea

The Use and requirement

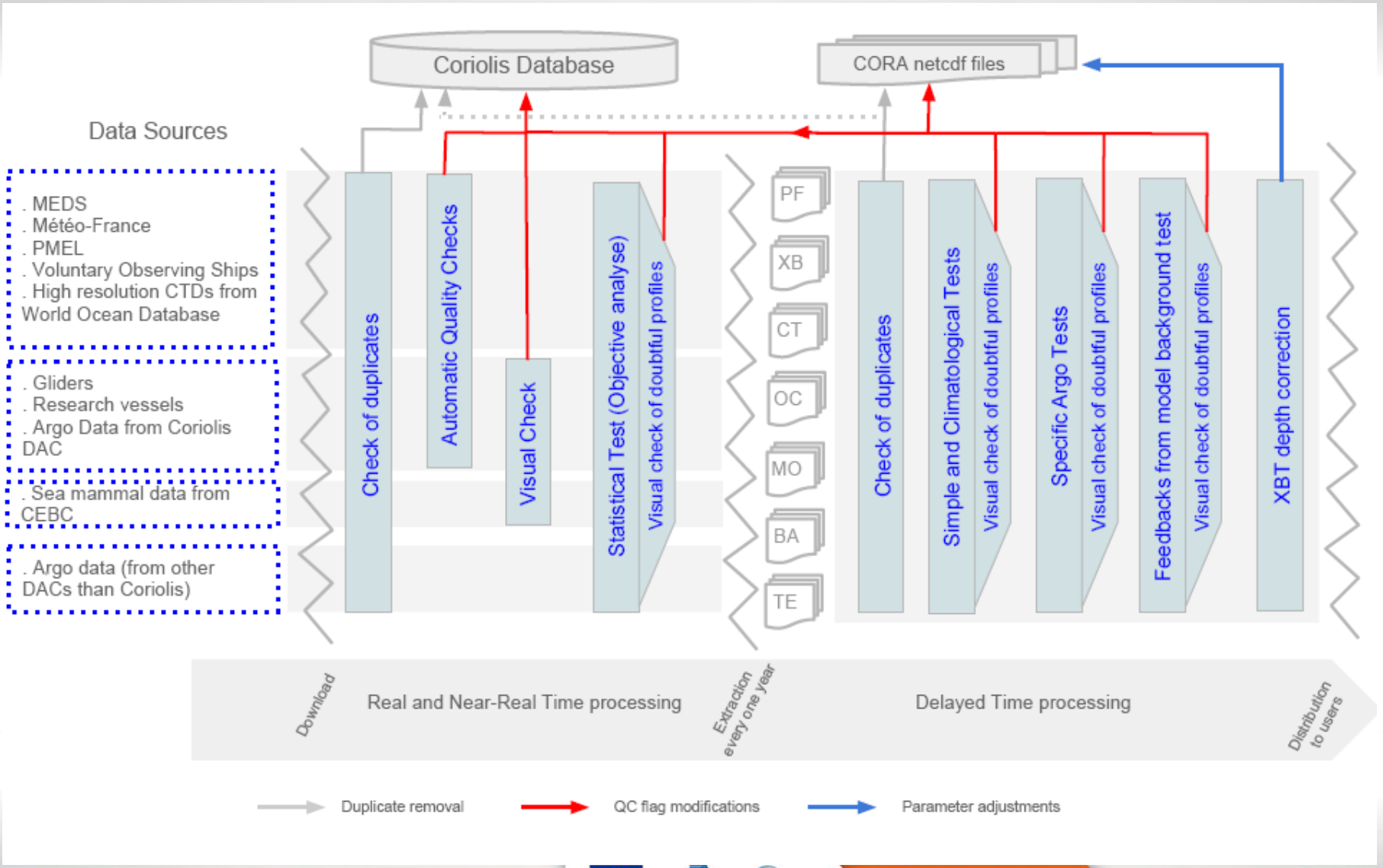
- Aggregated raw data , full depth with quality flags
- Consistent dataset over an area provided with an estimation of the error on the observation
- Consistent with Real-time product (for recent years)
- Updated regularly :
  - Every year : add the latest complete year
  - Every 2 years perform addition of new data on the whole period with complete diagnostics

Elaboration of the Global T&S Historical product in MyOceanI

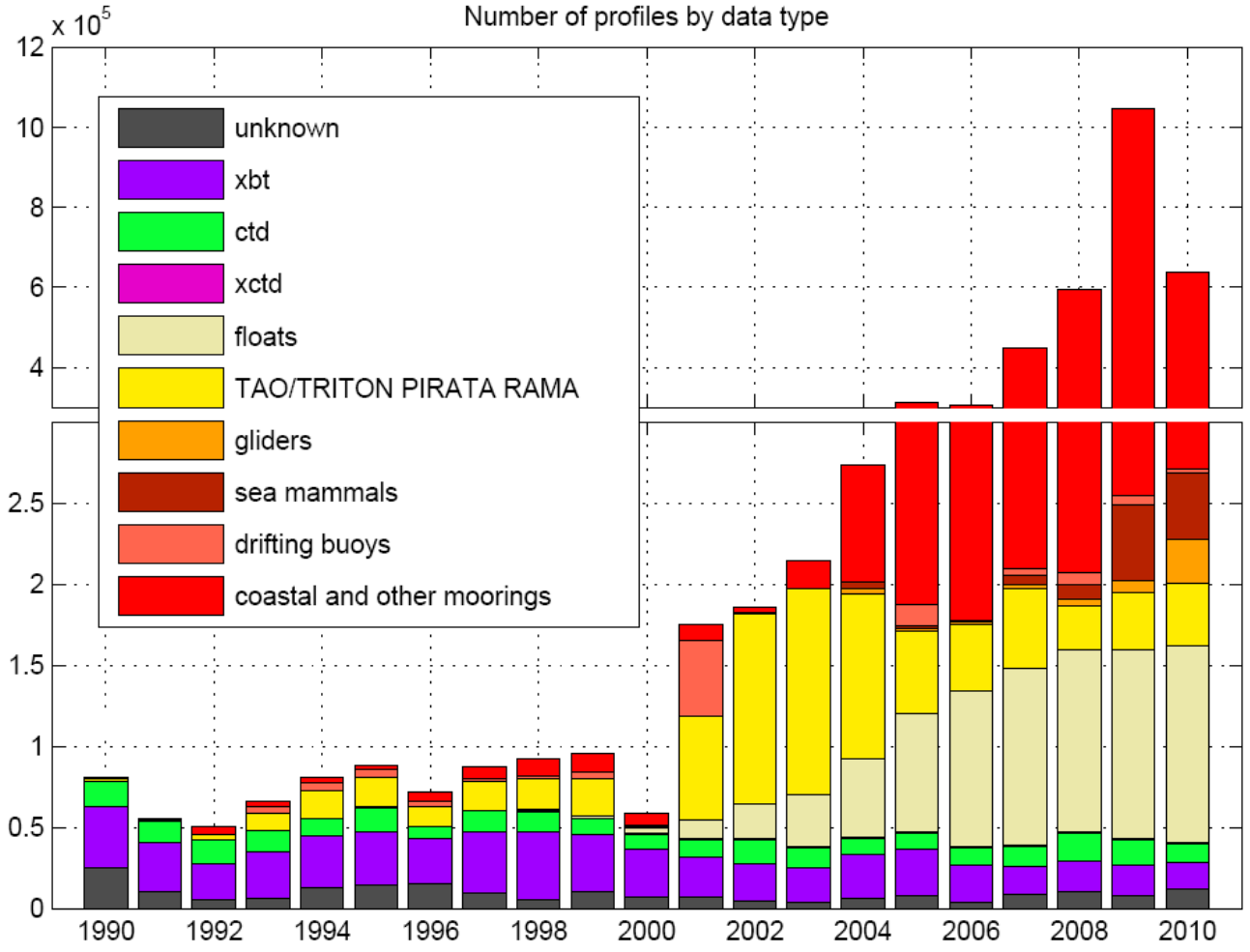
Main Data Sources

- Coriolis DataBase since 1990
- Historical data from Argo GDAC, GTSPP data Base
- WOD09 CTD data
- European data collected from EuroGOOS ROOS partners In SEPRISE, Mersea, MyOceanI projects
  - ➢This is the 3rd version of the product named CORA

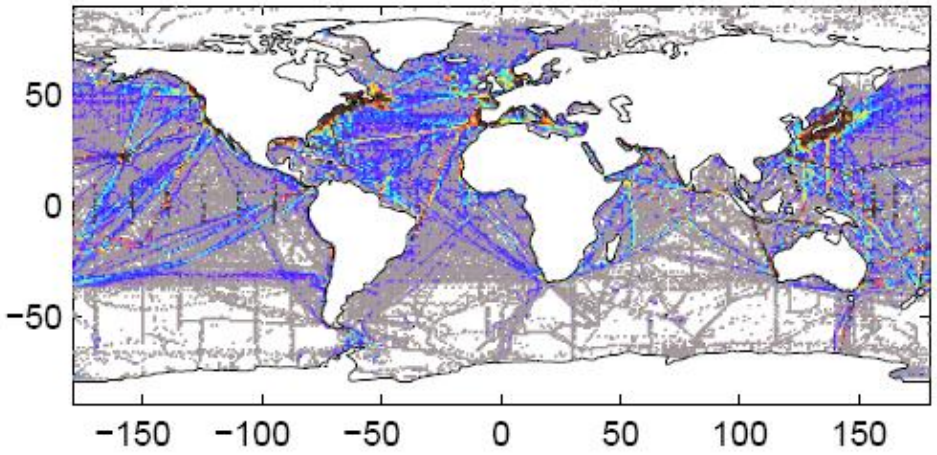
Update processus

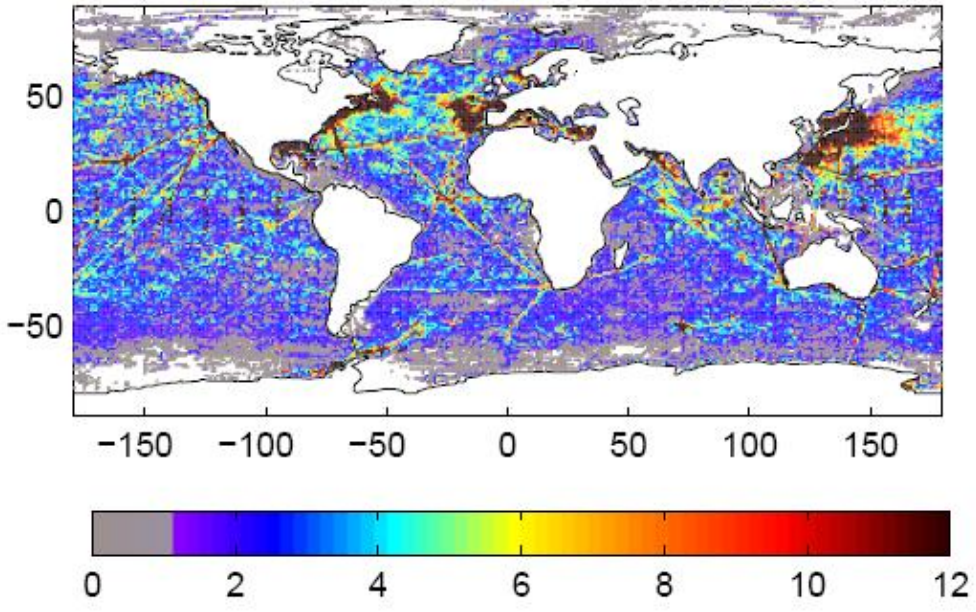


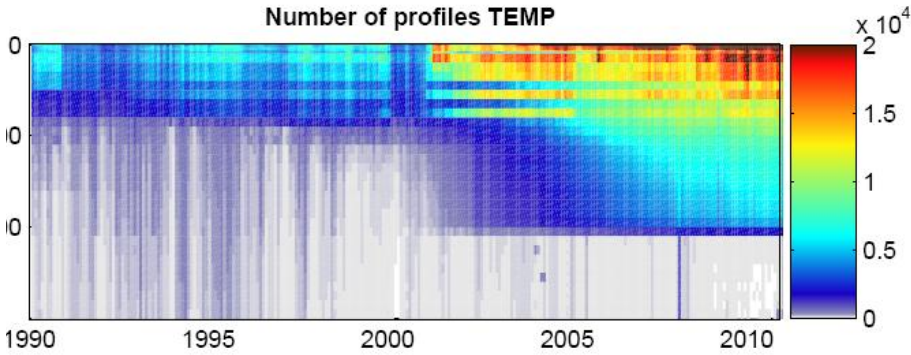
Coverage in Time

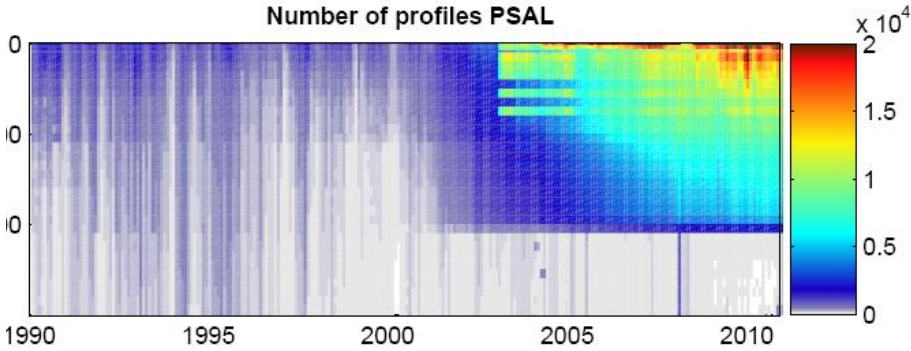


Coverage in space









LESSONS LEARNED

- Even Delayed mode data can have problems (Pb on CTD from WOD09)
- Necessity to define rules to determine the best version of a data (Many copies of the same observation exist)
  - Delayed mode replace Real Time data
  - Real Time data can't replace Delayed mode ones
  - Delayed mode data can only replace previous delayed mode after visual check
  - Data provider replace GTS if higher sampling
- Important to define the update process to facilitate the next version of the product

Next step in MyOceanII

MyOCEANII REANALYSIS

Global

- Physical: - 1992-present, ¼ NEMO - DAS: NEMOVar, OceanVar, SEEK altimetry, SST, in situ T,S prof., sea-ice
- Biogeochemical: - 1992-present, ¼ NEMO+PISCES and NEMO+BFM- DAS: none, forced by physical reanalysis

Arctic Sea

- Physical: - 1992-present, 12km, HYCOM - DAS: EnKF - altimetry, SST, in situ T,S prof., sea ice, IPY data
- Biogeochemical: -5 years,25 km, HYCOM + NORWECOM -DAS: EnKF -Chl-a, altimetry, SST, in situ T,S prof., sea ice

Baltic Sea

- Physical: - 1992-present, 5 km, NEMO/RCO - DAS: 3DVAR or EnsOI - SST, in Situ T, S profiles
- Biogeochemical: 1992-present,5 km,NEMO/RCO+SCOBI - DAS: 3DVAR or EnsOI - Chl-a, nutrients, oxygen

NWS region

- Physical: a) -1985-present, 7 km, NEMO - DAS: NEMOVAR (SST, maybe T, S prof.) b) 25 years, 10km, ROMS -
- DAS: 4DVAR (SST, maybe T, S prof.)
- Biogeochemical: - 25 years, 10 km, ROMS+NORWECOM - DAS: none, forced with the physics of b)

IBI region

- Physical: - 2002-present, 7km, NEMO - DAS: SEEK - altimetry, SST, in situ T,S prof.
- Biogeochemical: - 2002-present, 7km, NEMO+PISCES - DAS: none, forced by physical reanalysis

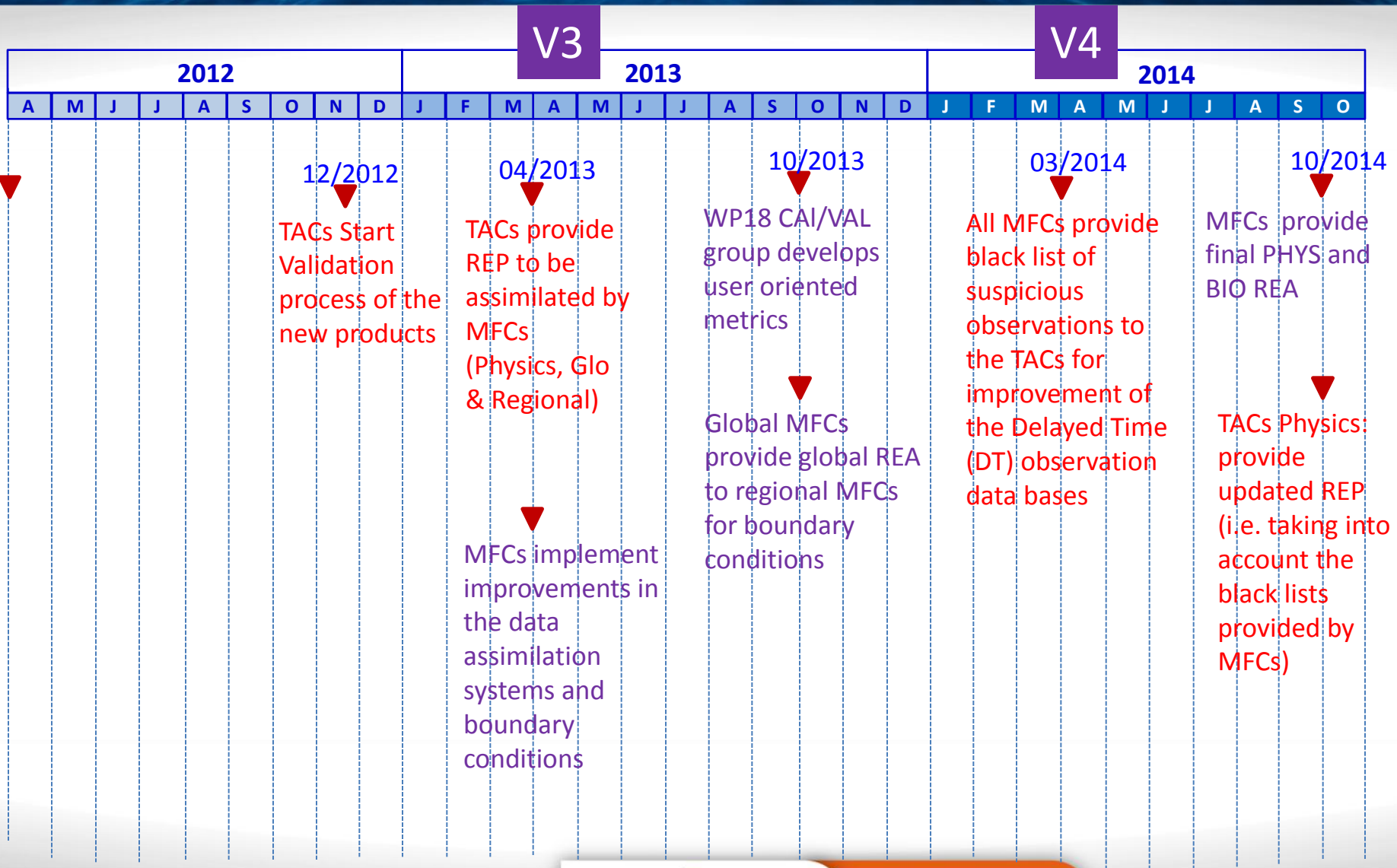
Med Sea

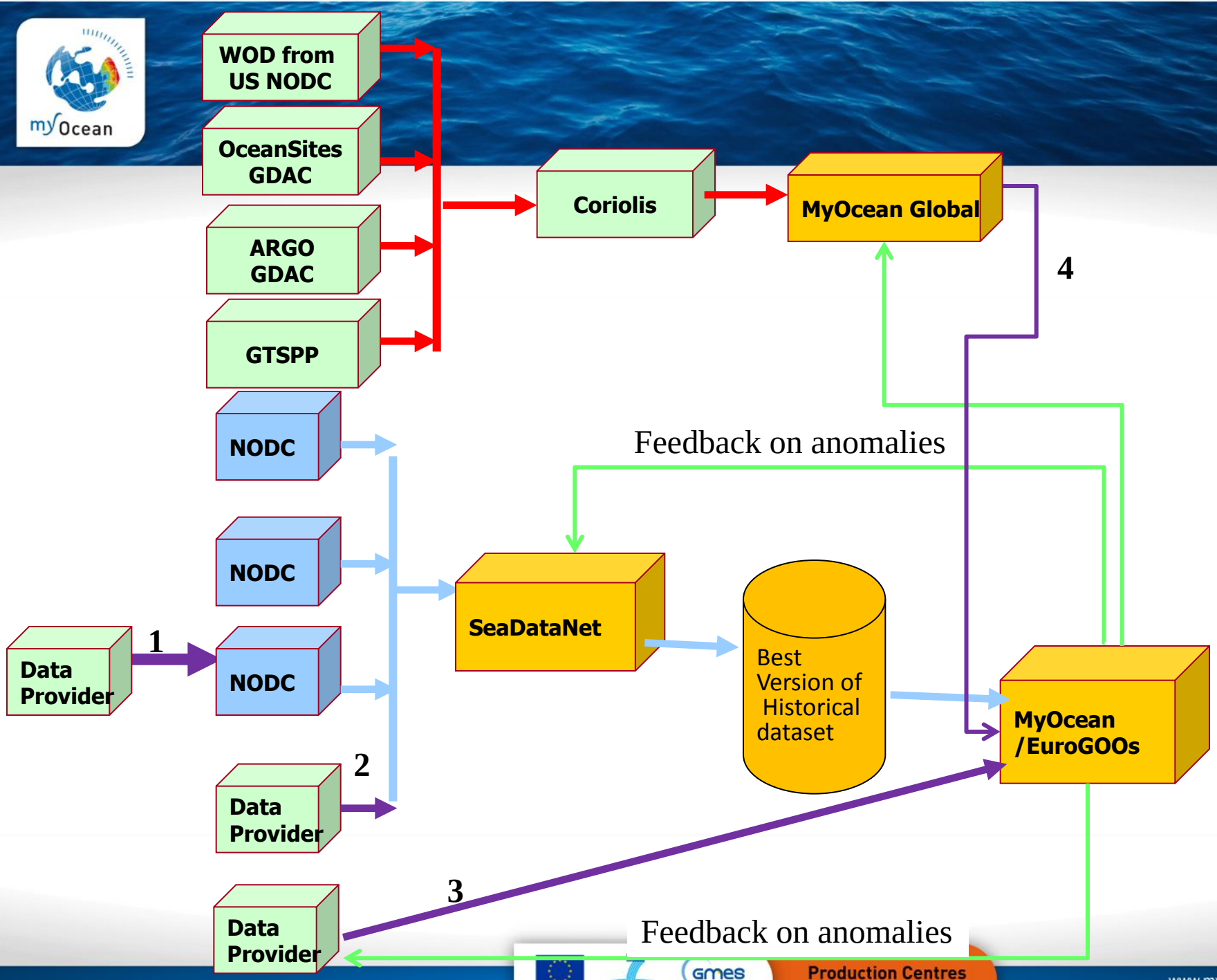
- Physical: -1985-present, 5 km, NEMO - DAS: OceanVar - Altimetry, SST, in situ T, S prof., traject.
- Biogeochemical: - 2002-present, 10 km, NEMO+OPATMBFM - DAS: OceanVar with Chl-a

Black Sea

- Physical: -1985-present, 5 km - DAS: not yet decided - altimetry, in situ T and S prof.
- Biogeochemical: -1985-present, 5 km - DAS: not yet decided - Chl-a, nutrients, phytoplankton

Master Schedule:REP, REA and REG Production




WOD from US NODC
OceanSites GDAC
ARGO GDAC
GTSPP
Coriolis
MyOcean Global
4
NODC
NODC
NODC
Feedback on anomalies
SeaDataNet
Best Version of Historical dataset
MyOcean /EuroGOOs
Data Provider
1
2
Data Provider
3
Data Provider
Feedback on anomalies
Production Centres

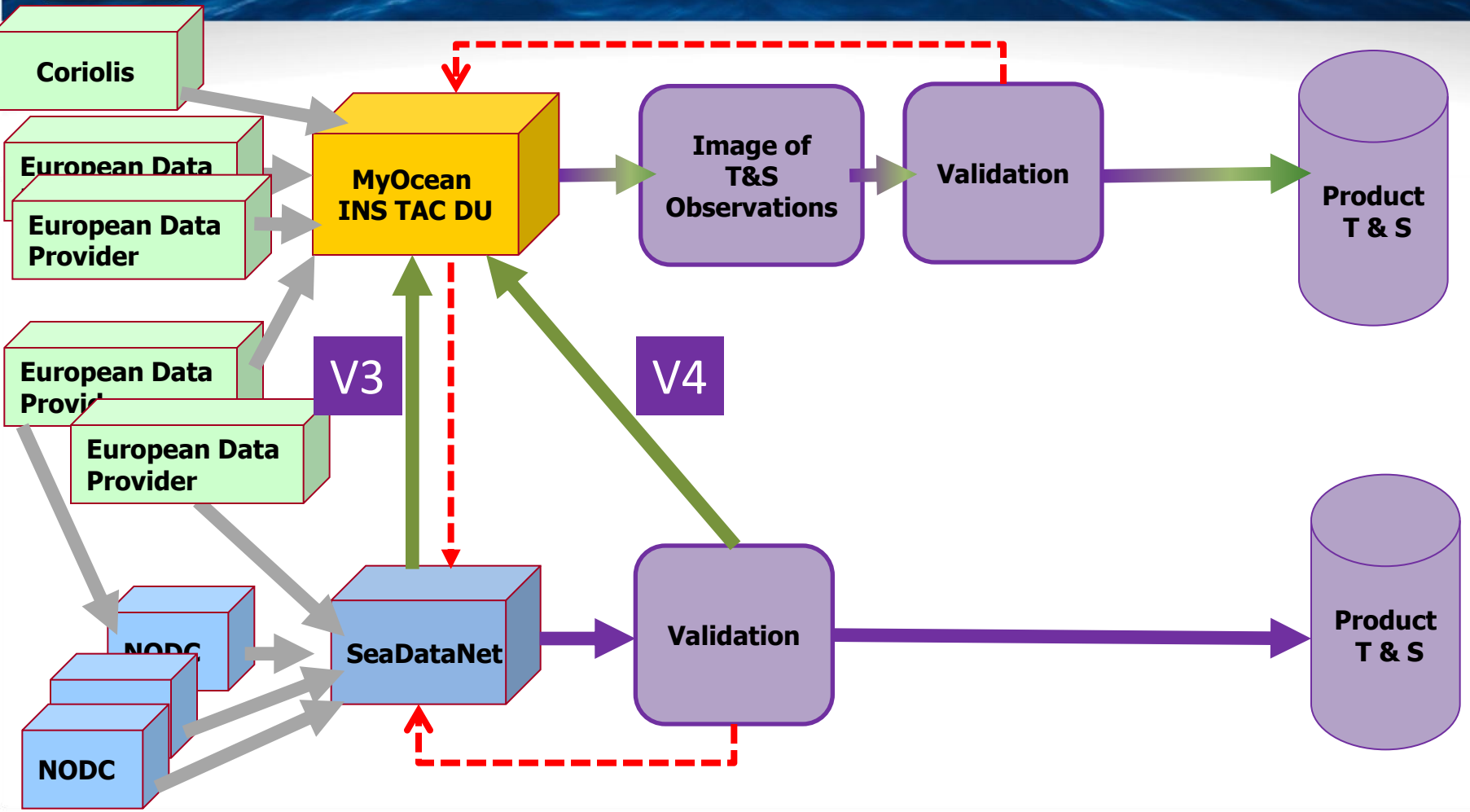
Priorities for MyOceanII

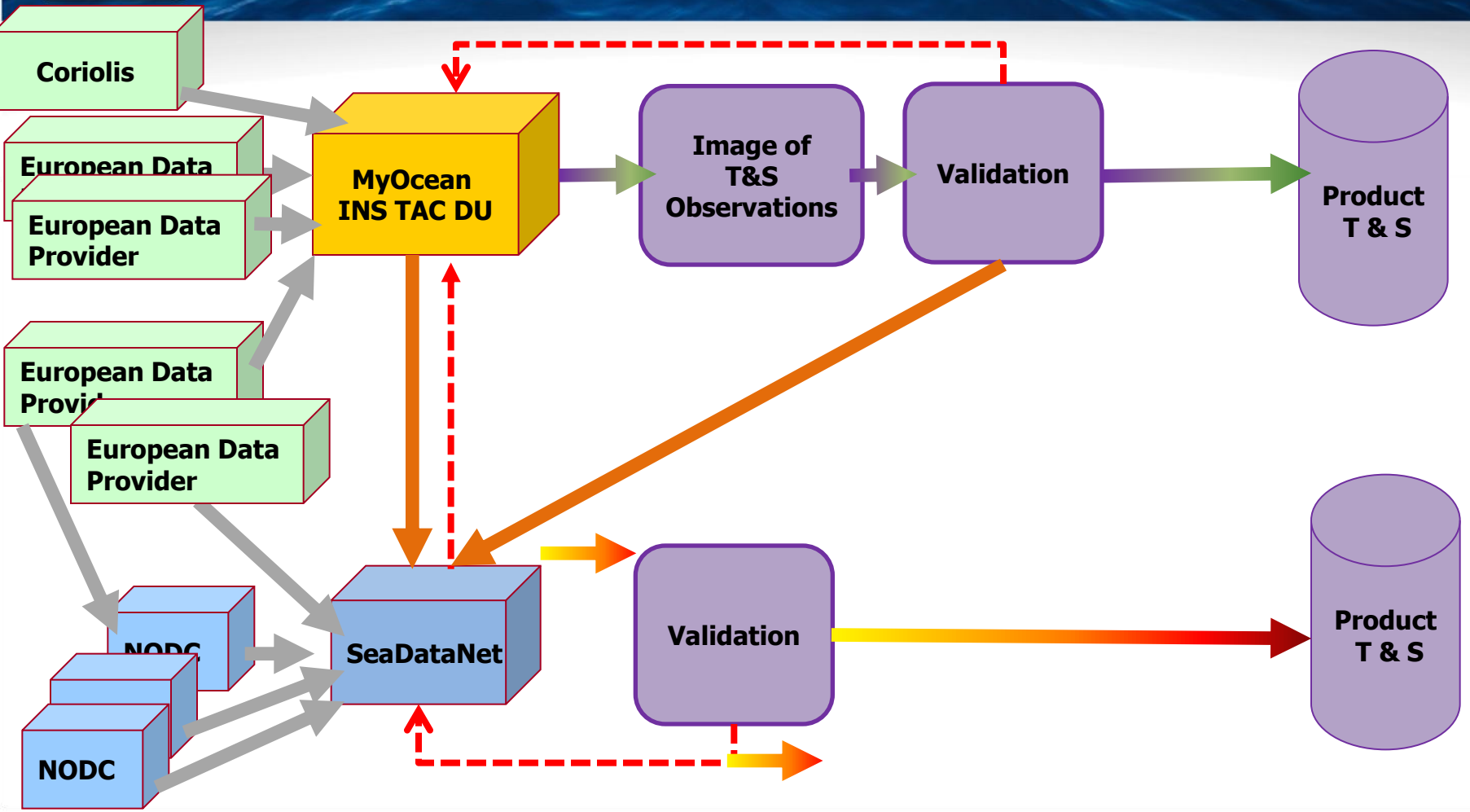
1. Focus on Temperature and Salinity free access to registered users observation
   - Restricted access data are distributed only by SeaDataNet
2. Focus on regional European seas : put priorities in unlocking data in areas where data gaps have been identified
3. First priority profile (CTD , XBT) or timeseries at depth (Fixed point stations) , second priority surface data (Ferrybox)
4. Provide Raw QCed observations freely to Registered MyOcean Users
5. Set up feedback from Model -> TAC -> Provider (in particular SDN) on anomalies

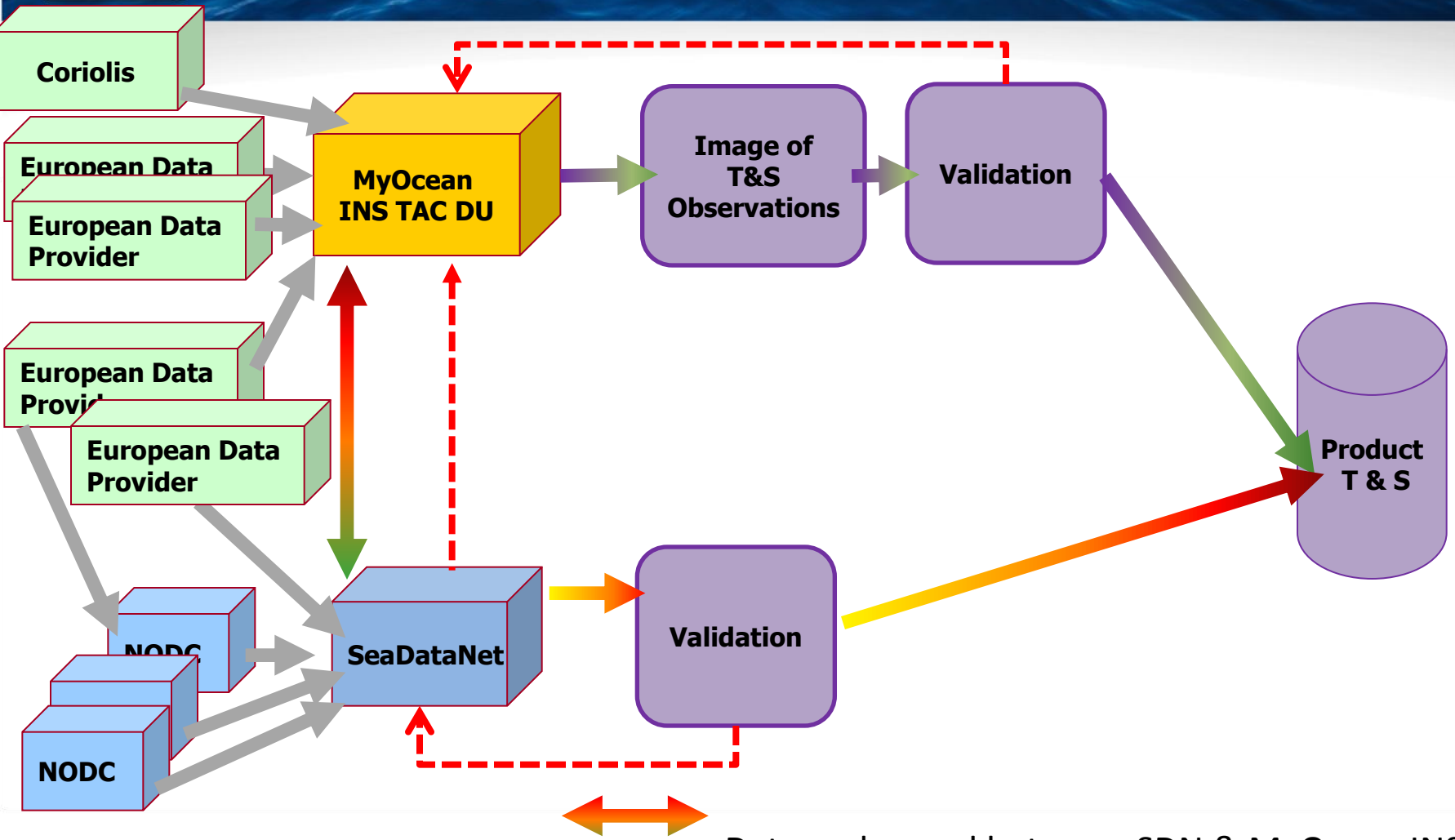
Priorities for MyOceanII

1. Set up the data flow to allow easy updates between SDN et MYO:
   - Define a process that could be used for update annually or every 2 years
   - Can be extended to other parameters such as Chl, nutrient, oxygen
2. Build the product as a join product that can be distributed both by MyOcean and SeaDataNet if desired with the ad hoc monitoring process

Collaboration with SDNII




Coriolis
European Data
European Data Provider
European Data
European Data Provider
MyOcean INS TAC DU
Image of T&S Observations
Validation
Product T & S
SeaDataNet
NODC
NODC
Validation
Product T & S
Data provided to SDN by MyOcean INS TAC
Anomalies detected by SDN


Coriolis
European Data
European Data Provider
European Data Provid
European Data Provider
NODC
NODC
MyOcean INS TAC DU
SeaDataNet
Image of T&S Observations
Validation
Validation
Product T & S
Data exchanged between SDN & MyOcean INS TAC
Anomalies detected by SDN

We shouldn’t miss this opportunity to join our efforts for the benefit of the two projects