The EU-GDAC and related SST activities at Ifremer

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Review of activities | GHRSST XIX | Eumetsat | 4th June 2018

Ifremer Producer / (G)DAC

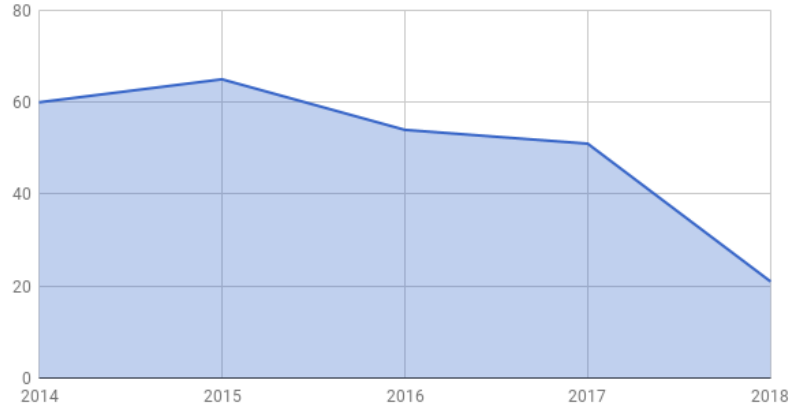
- Ifremer Satellite Data Center (CERSAT) operates a Producer / DAC center since Medspiration (2005)
- As a **producer (L3/L4)**
  - Medspiration products (L4) – continued (but project ended) over Mediterranean Sea, South Africa, Brazil/Tropical Atlantic
  - CMEMS products : only distributed by CMEMS Dissemination unit
    - L4 Europe North Western Shelves (extended to Iberian/Biscay/Irish seas and canary islands), Global multi-sensor L3S
- as a **DAC (**form. **EU-GDAC)**
  - Distribution of O&SI SAF, push to PODAAC mirror
  - Mirror some datasets from US-GDAC or other DACs
    - support projects requiring combination of multiple source of data, microwave data, etc...
    - Multi-sensor match-ups
  - Central Repository of In situ Radiometer Network Data (cf: W. Wimmer)

Service evolution

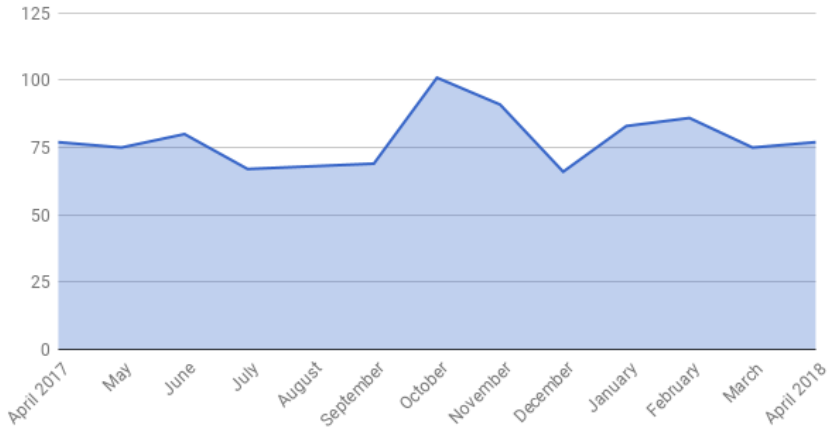
- Service migrated to new Petascale infrastructure at Ifremer
  - OSI SAF data archive migrated
  - Migration to be completed by next Summer
    - Medspiration production and distribution
    - CMEMS production
    - Mirrored GHRSST datasets distribution
- Access
  - More robust and sustained infrastructure
  - Full history of data available
  - Standard HTTPS (requested by US agencies), FTP, Thredds, OpeNDAP and WMS protocols
  - More advanced access taking advantage of storage and computation capabilities
    - Remote processing with Jupyter (registration)
    - SSH access to cluster (registration)
    - Planned visualization tools (e.g. syntool, http://ovl.oceandatalab.com)
    - Planned to run interactive analysis tools (big data)

Dissemination statistics

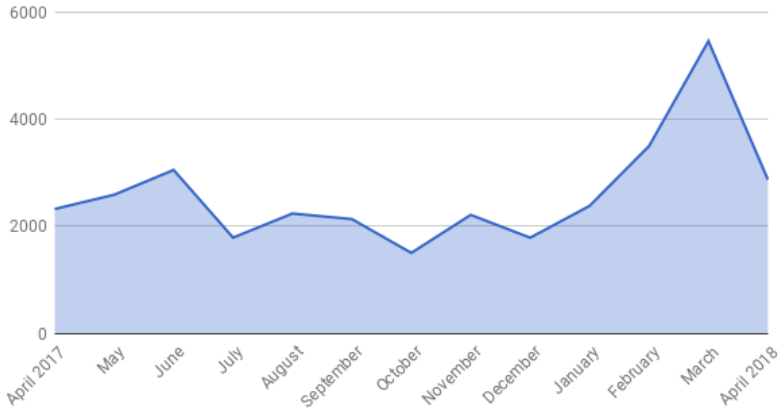
New registered users every year



Number of unique visitors



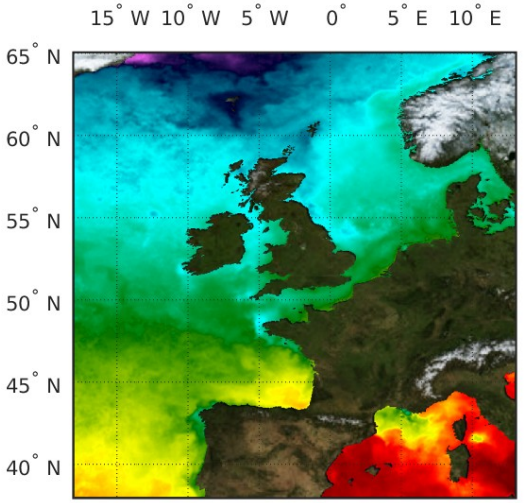
Volume distributed, in TB

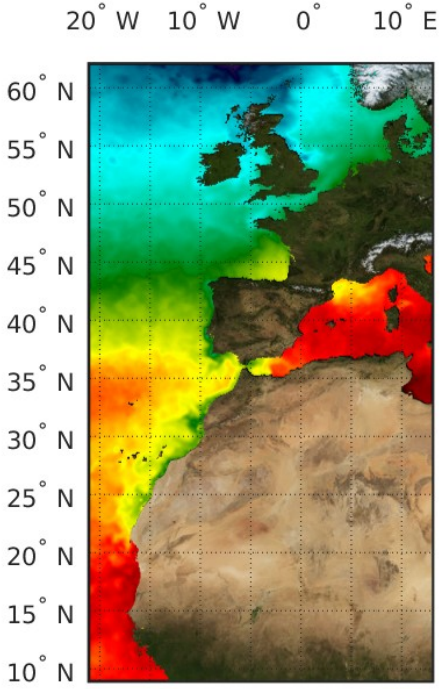


New reanalysis

European North West Shelf (NWS) 1982-2017
Reprocessing for Copernicus Marine environment Monitoring Service (CMEMS)

- **Input observations** : AVHRR Pathfinder Version 5.3 (PFV53) L3C (1982-2014), extended to 2017 by including the real time AVHRR18-19G data
- **Method** : Kalman smoother (Tandéo et al., 2011)





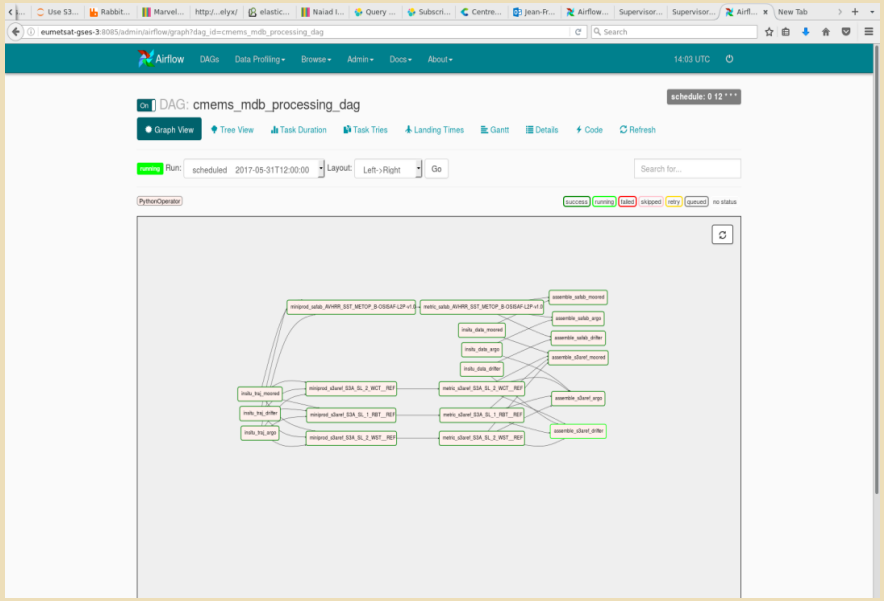
New area in October 2018 :
- “ATL” : NWS + Iberian-Biscay-Irish (IBI) areas
- Will supersede NWS product
- Real time
- 1982-2017 reprocessing for CMEMS

Cf: Emmanuelle Autret’s poster

Felyx

- Usage
  - Runs at Ifremer for NRT SLSTR MDB (OSI SAF)
  - Runs at Eumetsat for SLSTR MDB (other configurations, reprocessed datasets) and some OSI SAF sensors (Metop AVHRR & IASI)
  - New activities ongoing or planned
    - Usage in CDAF context for CDR assessment (tested on Pathfinder v5.3, see poster group D)
    - International Sea Surface Temperature (SST) Fiducial Reference Measurement (FRM) Radiometer Network (ISFRN) : match-ups vs SLSTR and Metop
    - Sea Ice Temperature (DMI)
- Evolutions
  - Developments ongoing for better management of in situ data and processing errors
  - Taking advantage of integration with “big data” analytics tool and production workflow/control tools
  - Python MDB helper functions, example of analysis, demonstrated with jupyter notebooks

Processing / integration into operation

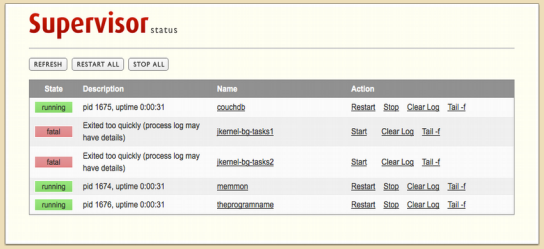


Airflow (https://airflow.incubator.apache.org) is a task scheduler

Processing workflow, from in situ data ingestion to match-up assembling, can be integrated in such system for automated MDB production

Provides automation, control and monitoring

Routine processing



Felyx daemons supervised and run by **supervisor**

http://supervisord.org

supervision

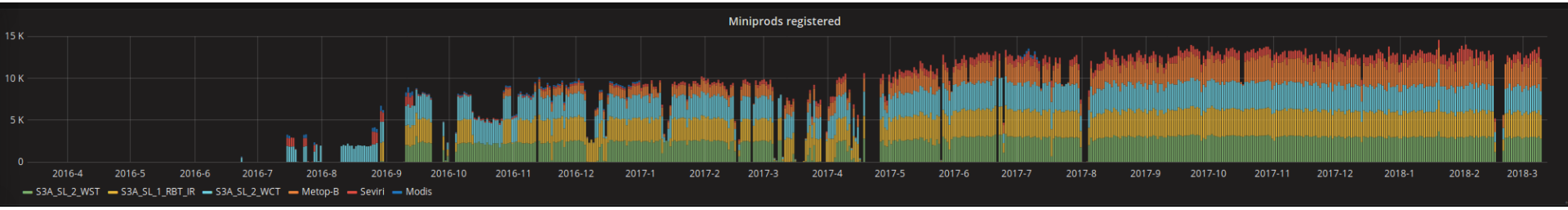
```
felyx-run-mdb  --miniprod --metric
--ancillary --assemble  -t all -c
cmems_mdb.cfg -v --backlog 0 -l
20180306.log --date 20180306
```

Command-line script to run the complete MDB process for a time range

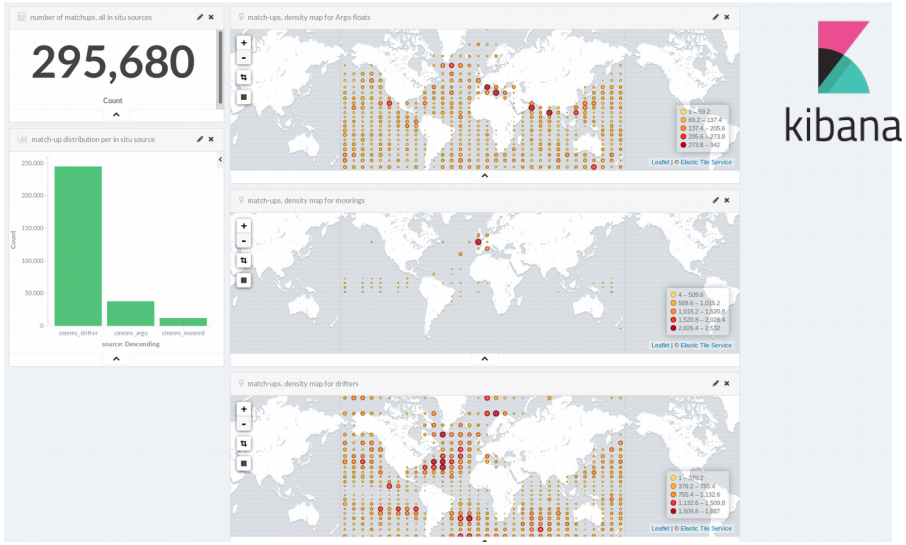
Several options to run specific steps or configurations

On-demand processing

Felyx - integration with analytics



Kibana or Grafana analytics for dashboards, investigation of temporal and spatial distribution of in situ data and measurements



Typical match-up distribution for SLSTR, all weather conditions :

- About 40.000 in situ measurements per day
- About 1.500.000 match-ups

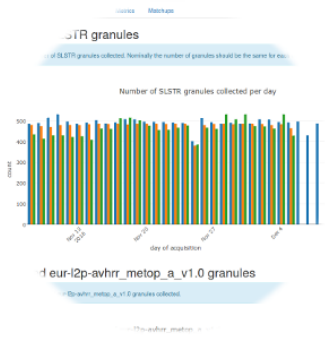
- ~2000 match-ups / day for buoys
- ~350 match-ups / day for moored buoys
- ~600 match-ups / day for argo floats

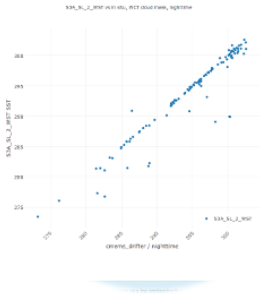
Sentinel-3A SLSTR Match-Up Database

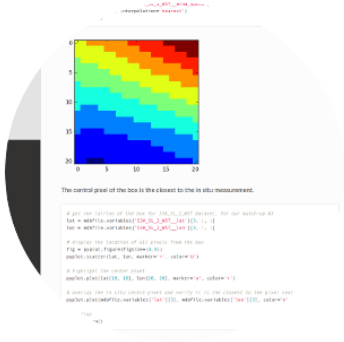
Homepage of Ocean and Sea-Ice Satellite Application Facility (OSI SAF) match-up database for Sentinel-3A SLSTR instrument

This site gives access to colocations between all level SLSTR products and various sources of reference in situ measurements, completed with other third party mission measurements when close enough to SLSTR measurements. It is used for the validation and monitoring of SLSTR products. This project if funded by Eumetsat. The access to these data is restricted and must be requested to jfpiolle@ifremer.fr.

Note: interative plots are best viewed with Chrome navigator.







Production reports

Statistics on the production of the match-ups with respect to input satellite and in situ data, to monitor completeness of match-up production and processing errors.

View latest >>

Analysis reports

Basic daily comparison statistics between SLSTR and in situ sea surface temperature measurements, as computed from the match-ups

View latest >>

Data access

How to access the data, python tools and tutorial to start with the match-up files.

View details >>

The S3A SLSTR MDB is produced at Ifremer / CERSAT for OSI SAF project funded by Eumetsat, using felyx ESA tool.