SeaDataNet

PAN-EUROPEAN INFRASTRUCTURE FOR OCEAN & MARINE DATA MANAGEMENT

Riga on November 30th 2016

SeaDataCloud Kick-off meeting

CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE

French National Center for Scientific Research

Activities and links with SeaDataCloud

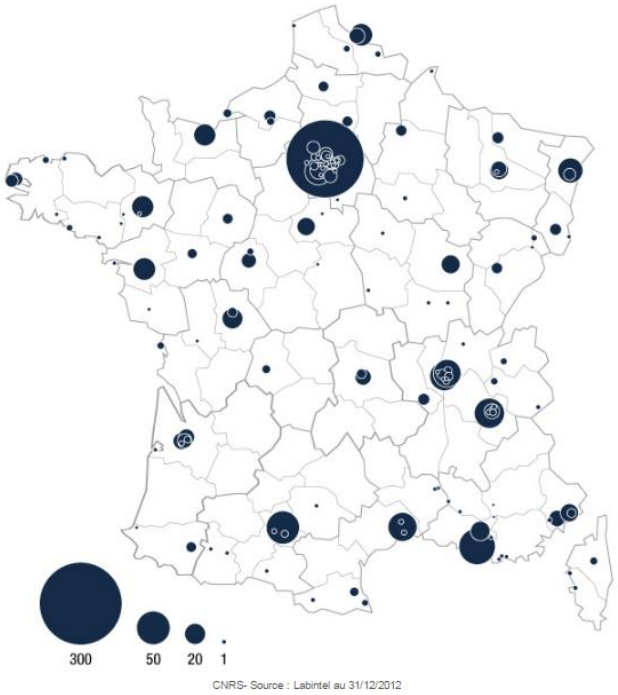
Team work: Benoit Sautour, Philippe Bertrand, Arnaud Caillo, Fabrice Mendes, Vincent Hanquiez, Gérald Grégori, Melilotus Thyssen, Maurice Libes, Mark Hoebeke, Nathalie Simon, Fabienne Rigaut-Jalabert, Pascal Claquin, Franck Delalee and **Soumaya Lahbib**

I. Presentation

- The principal organization for fundamental scientific research in France (MENESR)

- Through its 1100 Research unities and services, it carries out research in all fields: Biology, Chemistry, Ecology, Engineering, Social Sciences, Information Sciences, Mathematics, Nuclear, Physics and **Earth Sciences & Astronomy (INSU)**.

- **CNRS-INSU** elaborates, develops and coordinates research and projects in astronomy, earth and planetary science, space sciences and **ocean and atmosphere sciences**.



PAN-EUROPEAN INFRASTRUCTURE FOR OCEAN & MARINE DATA MANAGEMENT

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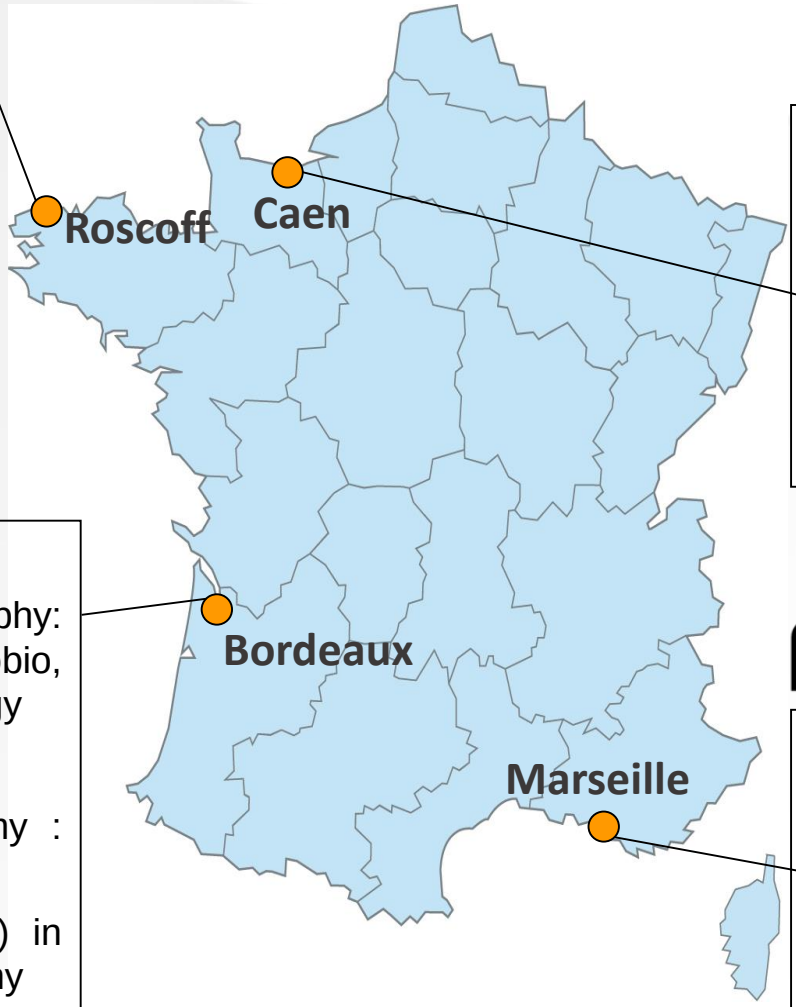
cnrs

CNRS UPMC
Station Biologique Roscoff

Activities:

- Researches on marine biology and ecology
- Monitoring and observation of the pelagic and benthic environment (time-series)



BOREA

Activities:

- Researches on evolutionary biology and ecology of aquatic organisms.
- Participation in monitoring and observation of the pelagic and benthic environment in several marine stations

Observatoire Aquitain des Sciences de l'Univers

Activities:

- Researches on oceanography: Physics, Chemistry, Microbio, Biogeochemistry and Ecology
- Researches on astronomy : Physics, Chemistry
- Monitoring Services (SO) in oceanography and astronomy

mio Institut Méditerranéen d'Océanologie

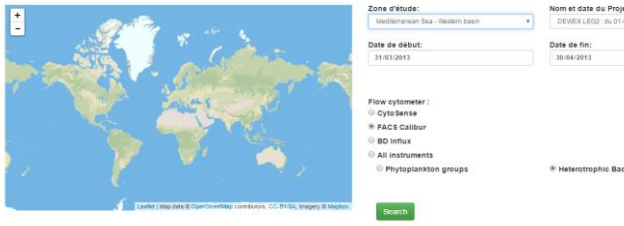
Institut Pythéas Observatoire des Sciences de l'Univers Aix-Marseille Université

Activities:

- Researches on oceanography: Physics, Chemistry, Microbio, Biogeochemistry and Ecology
- Monitoring Service (SO) of marine environnent.

- **MIO team**: World leaders in H/L frequency observation using FLOW CYTOMETRY (single cell level recording sensor)
  - MIO hosts the regional FCM platform "PRECYM" (2005) which is the only cytometry platform certified by the GIS IBISA
  - High frequency automated flow cytometry is successfully implemented on O/V (Marseille Tunis, Genova, Plymouth and Roscoff), Scientific Cruises and fixed stations (buoys).
- **CYTOBASE** database is dedicated to **Flow Cytometry datasets** acquired by either automated or conventional flow cytometer instruments.
  - Autotrophic and heterotrophic microorganisms related to functional groups. **Cytobase** keeps abundances, fluorescences, Size estimation per functional group , (and images)
  - FCM Data accessibility / a user-friendly web interface and helpful tool for understanding several measurements at time.

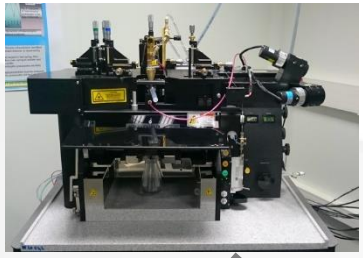
FLOW CYTOMETRY DATABASE



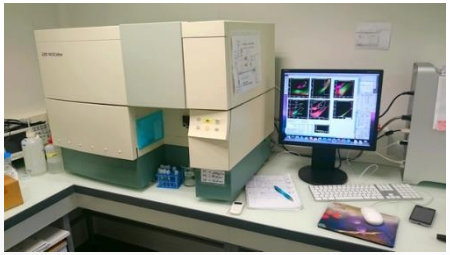
FCM Data management Workflow

In situ **automated cytometer**

Bentchtop flow cytometers



BD Influx



FACS Calibur

CytoSense

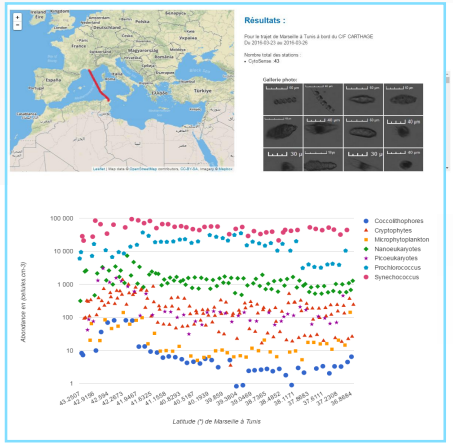
CytoClus

Conversion tool

M. Dugenne, 2015

ASCII Data Table & Pictures

Acquisition | **Analysis** | **Consolidation** | **Expert QC (visual)**



Accessibility

Integration

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FCM Data management Workflow

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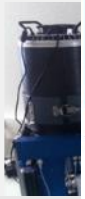
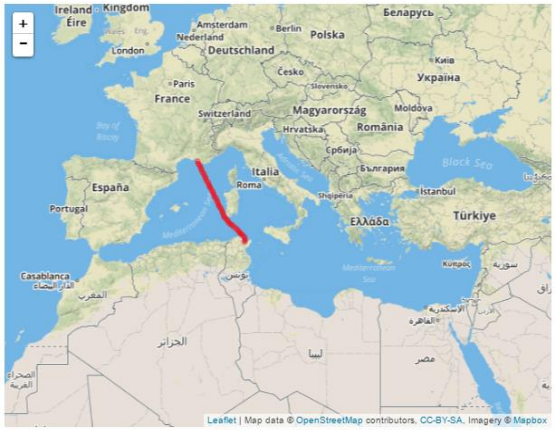
cytom



CytoSense

Acqui

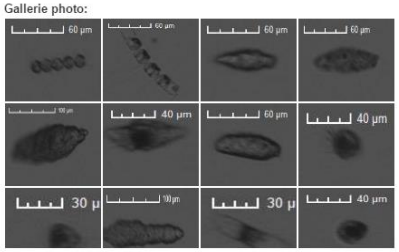


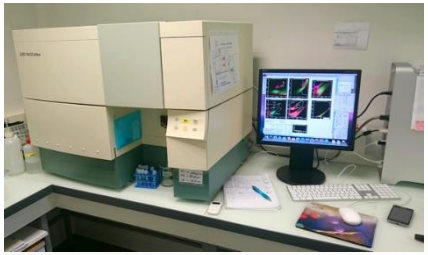
Résultats :

Pour le trajet de Marseille à Tunis à bord du C/F CARTHAGE
Du 2016-03-23 au 2016-03-26

Nombre total des stations :
- CytoSense :43

Gallerie photo:

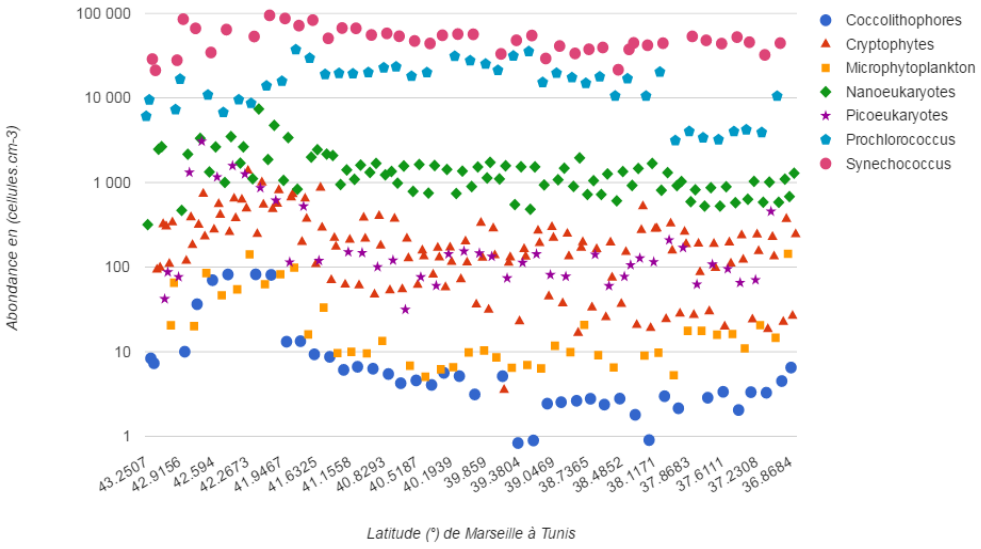




FACS Calibur

Table

https://chrome.mio.univ-amu.fr/chrome-cytobase/



Expert QC (visual)

Integration

Accessibility

SeaDataNet

FCM Data management Workflow

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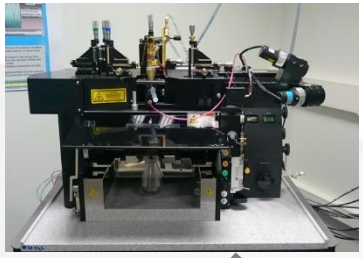

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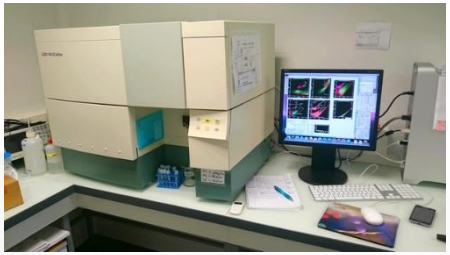

FACS Calibur

CytoSense

CytoClus

R

Conversion tool

M. Dugenne, 2015

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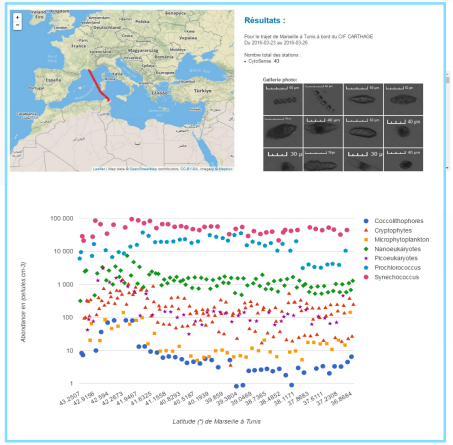


Accessibility

Integration

Cytobase Input Processor (Mathilde Dugenne, 2015)

mathilde.dugenne@mio.osupytheas.fr

Parcourir... 11 fichiers sélectionnés.

Upload complete

Warning:

Upload successful

CYTOBASE

Create Inputs folder

Metadata

Project and samples context | Raw data | Size conversion

Project	Project date	PI	Cytometer ID
Enter project name	2015-08-18	Enter PI name	Enter cytometer ID
Station	**Depth**	**Latitude**	**Longitude**
Filename	**Filename model** BERRE_082013_3F_FLR9 2013-12-17 13(		
Samples operator	**Standards reference**	**Clustering method**	**Observation type**
Enter name of operator	Enter standards beads ref	Automated	In situ

Data

2013-12-17T14:17:00Z	2013-12-17T14:17:00Z	16,056.60	Synechococcus	BERRE_082013_12S_FLR9 2013-12-17 14u17.cyz	1.99	FL Red	10	
2013-12-17T14:17:00Z	2013-12-17T14:17:00Z	16,056.60	Cryptophytes	BERRE_082013_12S_FLR9 2013-12-17 14u17.cyz	1.99	FL Red	10	
2013-12-17T14:43:00Z	2013-12-17T14:43:00Z	16,056.61	Beads 2 mu	BERRE_082013_16F_FLR9 2013-12-17 14u43.cyz	2.04	FL Red	10	
2013-12-17T14:43:00Z	2013-12-17T14:43:00Z	16,056.61	Microphytoplankton	BERRE_082013_16F_FLR9 2013-12-17 14u43.cyz	2.04	FL Red	10	
2013-12-17T14:43:00Z	2013-12-17T14:43:00Z	16,056.61	Picooeukaryotes 2	BERRE_082013_16F_FLR9 2013-12-17 14u43.cyz	2.04	FL Red	10	
2013-12-17T14:43:00Z	2013-12-17T14:43:00Z	16,056.61	Picoeukaryotes 1	BERRE_082013_16F_FLR9 2013-12-17 14u43.cyz	2.04	FL Red	10	

Please associate each selection set to trigger, PMt's amplification and standardized phytoplankton category

NB: All incompatible entries will be removed

Expert name	Trigger	PMT's amplification	Standardized name	
Cluster	Channel/Level	SWS	Cluster	
Beads 2 mu	FL Red 10	0 50 100	Standard beads	Associate
		FLO 0 50 100		

Continuous and High Resolution Observation of the MEditerranean Sea

© mathilde.dugenne@mio.osupytheas.fr

Picture selection

Project and samples context | Raw data | Size conversion | Image-In-Flow pictures | Stations explorer

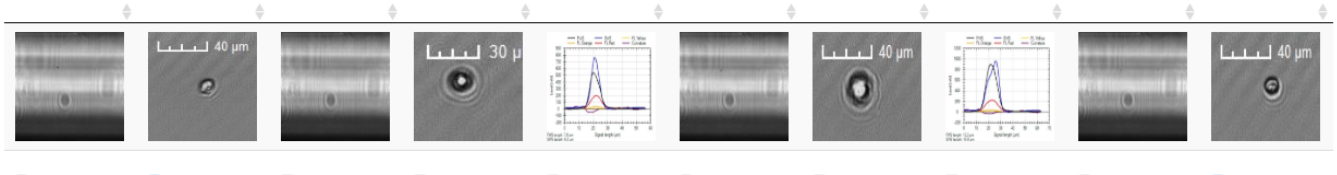
Add samples pictures

Select file: DEWEXL2FLR10 2013-04-05 15u04.cyz

Add pictures: Choisir les fichiers | 15 fichiers | Upload complete

Check all

Show 4 entries Search:



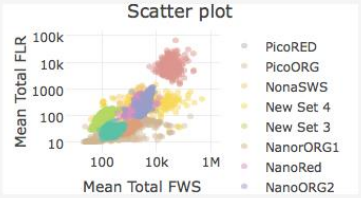
Stations Explorer

Project and samples context | Raw data | Size conversion | Image-In-Flow pictures | Stations explorer

Select station: S1

X axis: Mean Total FWS

Y axis: Mean Total FLR

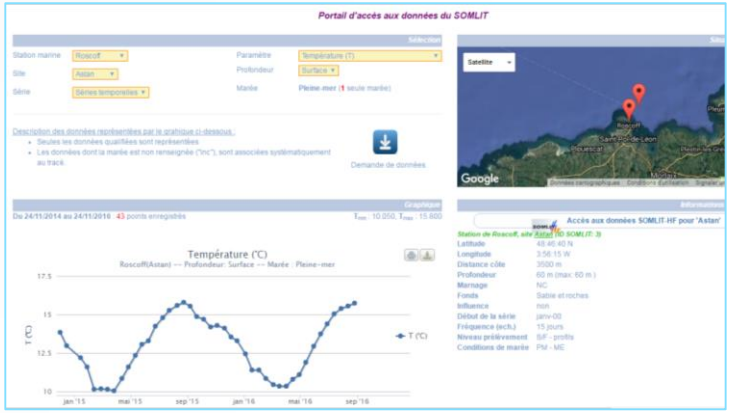


Download Table

Data Table

Picture Table

- The OASU team hosts **SOMLIT** Database for coastal monitoring (LHR) from 10 target *in-situ* stations.
- Instruments: CTD Seabird and Niskin bottle.
- Datasets: Physico-Chemical and Biological (Chlorophyll and benchtop Flow cytometry)
- Accessibility / web-based interfaces : High resolution, Low resolution for time series and CTD profiles.



SOMLIT for CTD measurements

http://somlit.mio.univ-amu.fr/#/accueil

http://somlit-db.epoc.u-bordeaux1.fr/bdd.php?serie=ST

http://somlit.epoc.u-bordeaux1.fr/fr/bdd.php

SOMLIT Data management Workflow

Integration to SOMLIT DB

Format control

Quality control

Data entry

Data analysis

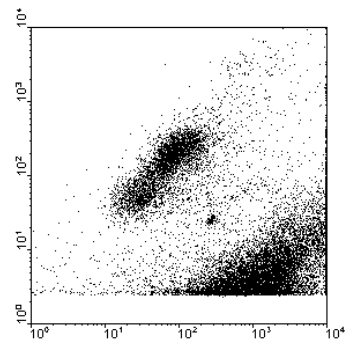
Data Acquisition

SOMLIT

Quality flags

- 0 Below detection limit
- 1 Not measured
- 2 Good
- 3 Questionable
- 4 Bad
- 5 Not reported
- 6 Good (mean of replicate measurements)
- 7 Good (not SOMLIT protocol)
- 8 No QC
- 9 Not sampled

- **PELAGOS** database is a collaborative work of the RESOMAR (*National network of Marine Stations*)
- Instruments: Niskin Bottle and CTD Seabird
- Datasets: Coastal planktonic biodiversity (mostly time-series), microscopic counts and benchtop Flow cytometry (with raw files)
- Area: mostly SOMLIT stations
- Management of species names in coherence with WoRMS
- Access /user-friendly web interface for data uploading and downloading



RESOMAR-PELAGOS Data management Workflow

RESOMAR laboratories
Data producer (human)

Data acquisition
- Microscopic counts
- FCM dataset

Data entry and qualification
(.xls file, PELAGOS format)

UPLOAD

in PELAGOS

PELAGOS web-based application

Automatic Feed-back
Detection of errors
Format controls

BDD **PELAGOS**

Taxa names linked to WoRMS AlPhia ID

DOWNLOAD

(Login, password)

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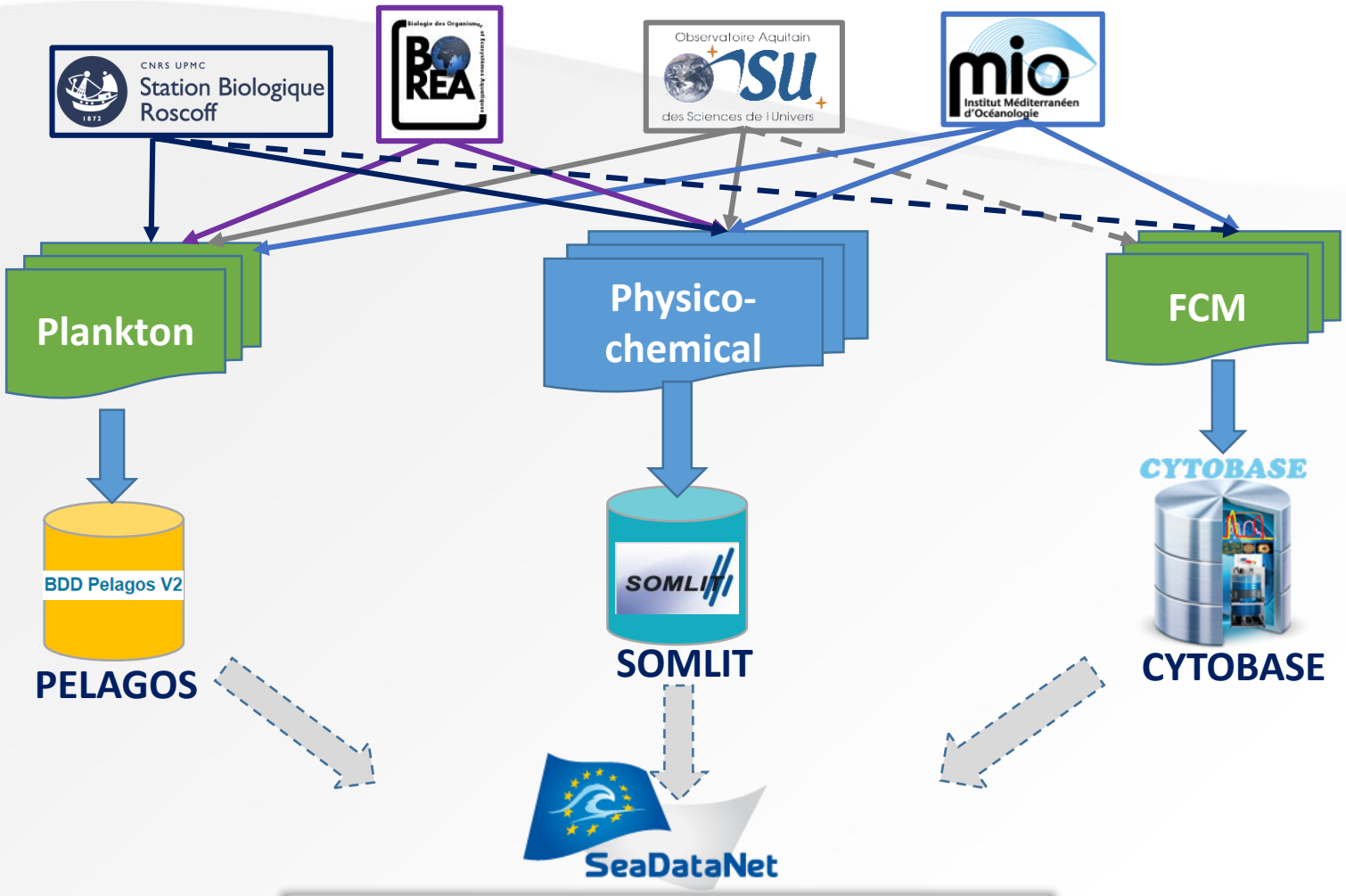
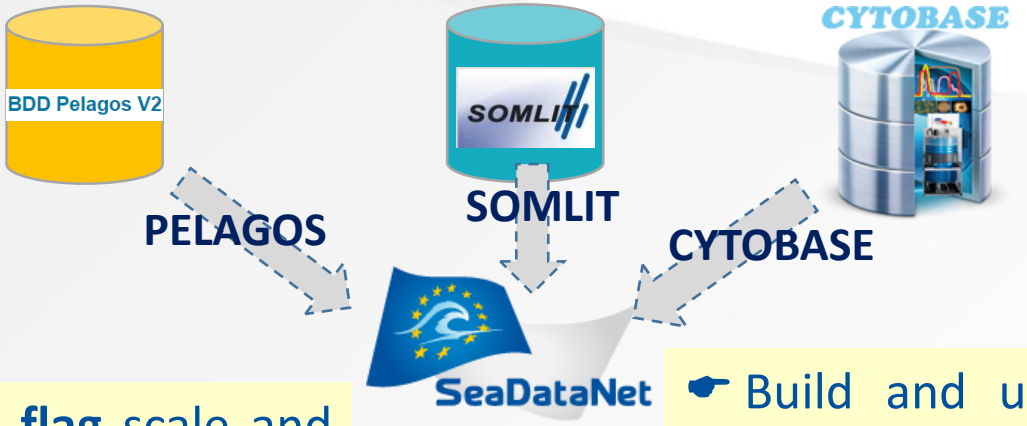


Distribution to Pan-European SDC Portal of marine data management infrastructure

II. Links with SeaDataCloud



- Adopt **SDN QC flag** scale and **standard vocabulary**

Use SDC Best practices to generate standardized metadata and data : NEMO, Mikado, etc..

- Build and update **FCM new common vocabularies**
- Set up a **common data management protocol** and methods for FCM with a **special focus on QC**

Work with a large FCM Community.

➔ CNRS involvement

	Partner	WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8	WP9	WP10	WP11
1	IFREMER	X	X	T	X	X	X	X	X	X	X	X
2	MARIS	X	X	T	X	X	X	X	X	X	X	
3	NERC-BODC		X	T	X	X	X	X	X	X	X	X
4	BSH-DOD		X	T		X	X		X	X	X	X
5	SMHI		X	t		X			X	X	X	X
6	IEO		X	t		X						X
7	HCMR-HNODC		X	T	X	X	X	X	X	X	X	X
8	OGS		X	T	X	X	X		X	X	X	X
9	RIHMI-WDC		X	t		X			X	X	X	X
10	ENEA		X	t	X	X			X	X	X	X
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55	CNRS		X	t		X		X	X	X	X	X

X	WP Leader
X	Task leader
X	Involved in a sub-Task
X	Participation to the WP
T	Participation to WP3 as trainer
t	Participation to WP3 as trainee

➔ **WP9.5.2 of the next SeaDataNet (VLIZ, CNRS,NERC-BODC and ICES):**
Ingesting, validating, long-term storage and access of Flow Cytometer data

Thank you for your attention

Any questions?

PAN-EUROPEAN INFRASTRUCTURE
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MANAGEMENT

SeaDataNet

cnrs
dépasser les frontières