

# SeaDataCloud Kick-off meeting



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.











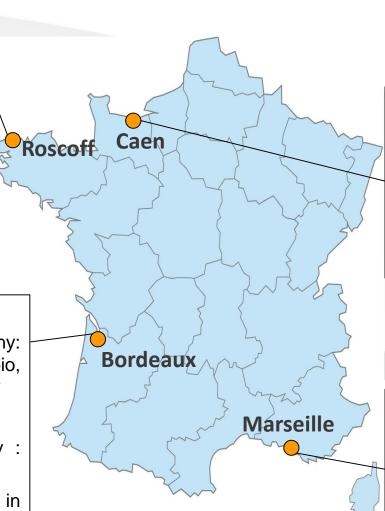
#### **Activities:**

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



#### **Activities:**

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





#### **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



#### **Activities:**

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









- 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.













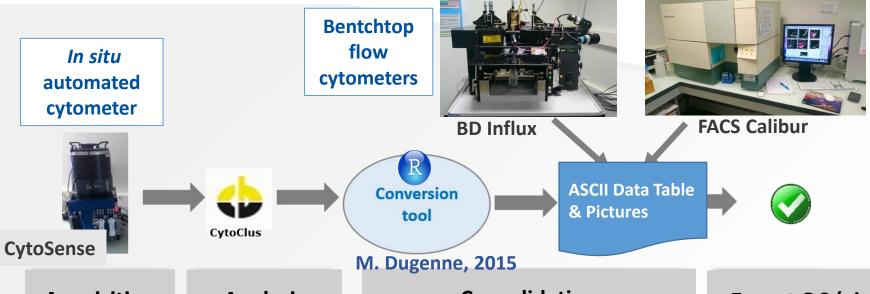








#### **FCM Data management Workflow**

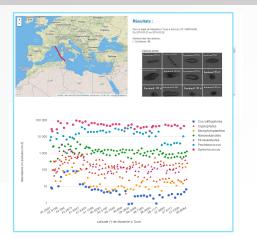


**Acquisition** 

**Analysis** 

#### Consolidation

#### **Expert QC (visual)**





PAN-EUROPEAN INFRASTRUCTURE FOR OCEAN & MARINE DATA MANAGEMENT





#### FCM Data management Workflow

In si autom cytom





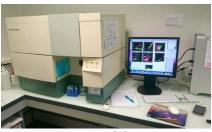
#### Résultats:

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 • CvtoSense :43

100

Gallerie photo:			
<b>└</b> ∫ 60 μm	L	60 µm	<b>∟</b> 60 pm
L. J.W.	40 µm	60 μm	<b>L</b> 40 µm
30 р		30 р	40 µm



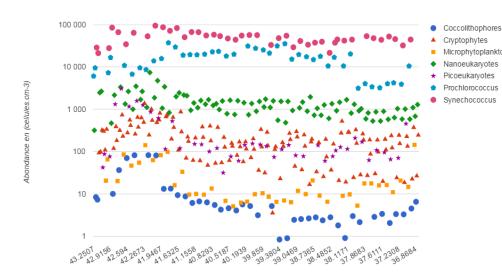
**FACS Calibur** 





CytoSense

Acqui



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

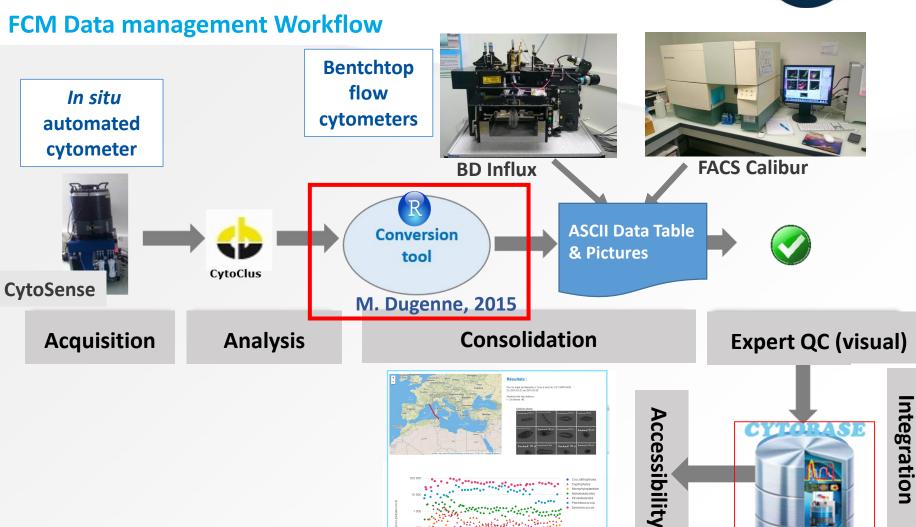
# Expert QC (visual) Accessibility

Latitude (°) de Marseille à Tunis











#### Continuous and High Resolution Observation of the MEditerranean Sea













### Cytobase Input Processor (Mathilde Dugenne, 2015)

#### mathilde.dugenne@mio.osupytheas.fr

arcourir 11 fichiers sélectionnés.	Warning:	CYTO	BASE					
Upload complete	Upload successfu							
Project and samples context Raw data	SIZE CONVENSION						<b>≛</b> Crea	te Inputs folder
Project	Project date		ı	Pl	(	Cytometer ID		
Enter project name	2015-08-18		) (	Enter PI name		Enter cytometer ID		
Station	Depth		ı	atitude	ı	Longitude		
		A. Y	) [	A			<b>*</b>	
	Filename model							
Filename ▼	BERRE_082013_3F_	FLR9 2013-12-17 13L	)					
Samples operator	Standards reference		(	Clustering method	(	Observation type		
Enter name of operator	Enter standards bead	ls ref	) (	Automated •		In situ	•	
2013-12-17T14:17:00Z 2013-12-17T14:17:00				_082013_12S_FLR9 2013-12-17 14u17.cyz				
2013-12-17T14:17:00Z 2013-12-17T14:17:00				_082013_12S_FLR9 2013-12-17 14u17.cyz				
2013-12-17T14:43:00Z 2013-12-17T14:43:00 2013-12-17T14:43:00Z 2013-12-17T14:43:00				_082013_16F_FLR9 2013-12-17 14u43.cyz				
2013-12-17T14:43:00Z 2013-12-17T14:43:00				_082013_16F_FLR9 2013-12-17 14u43.cyz 2.04 FL R				
2013-12-17T14:43:00Z 2013-12-17T14:43:00								
Please associate each selection set to NB: All incompatible entries will be removed	trigger, PMt's amplifica	tion and standardized p	hyt	oplankton category				
	Trianas	DMTIs seemist 4:-	_	Chandardinad nave-				
Expert name	Trigger	PMT's amplificatio	n	Standardized name				
Cluster	Channel/Level	SWS	3	Cluster				
Beads 2 mu ▼	FL Red 10 ▼	50		Standard beads		→ Associate		

Data

Metadata





Project and samples context

#### Continuous and High Resolution Observation of the MEditerranean Sea



Image-In-Flow pictures

Size conversion



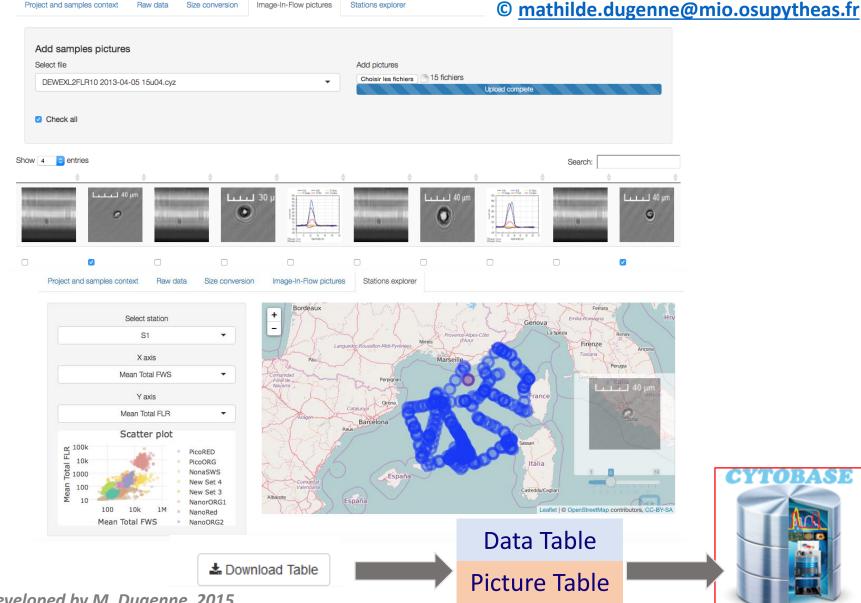
Stations explorer











Tools developed by M. Dugenne, 2015



Observatoire Aquitain

SU

des Sciences de l'Univers

Claudin Sul Jacob Sul

- The OASU team hosts <u>SOMLIT</u> 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.

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





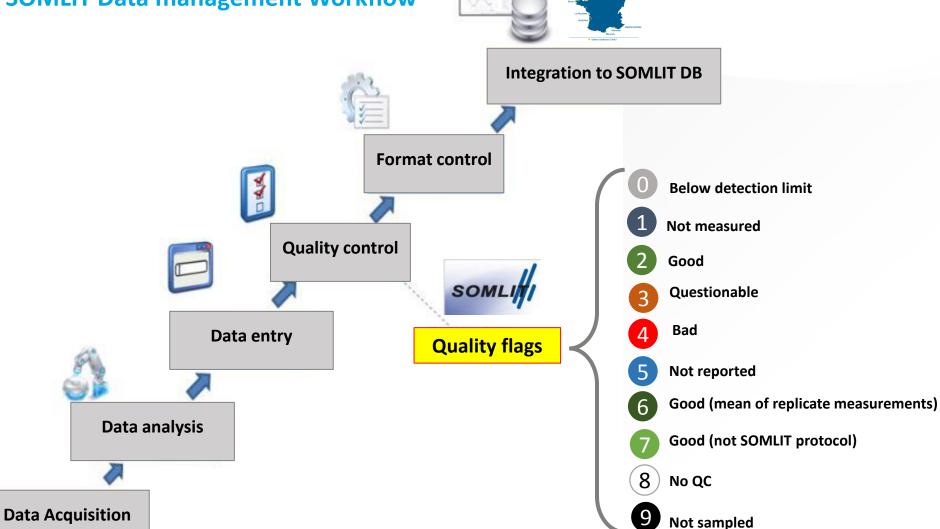
**SOMLIT for CTD measurements** 

PAN-EUROPEAN INFRASTRUCTURE FOR OCEAN & MARINE DATA MANAGEMENT





#### **SOMLIT Data management Workflow**









- 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



#### Pelagos - BDD Pelagos V2

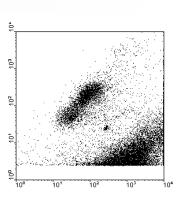


s de la base de données		La base de données PELAGOS
ise à jour	16/07/2014	

#### The PELAGOS database

The PFLAGOS database results from a collaborative work of the RESOMAR (Réseau National des Stations

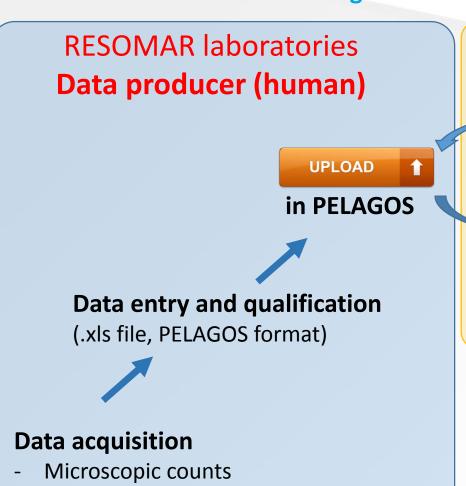




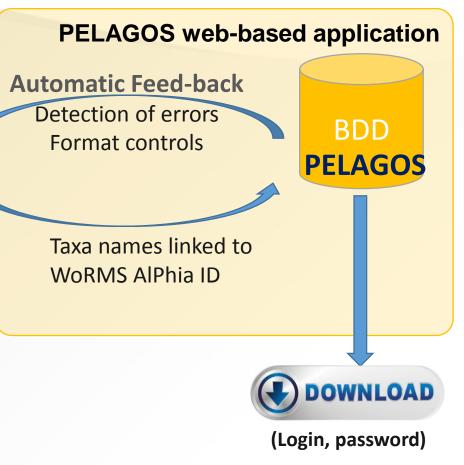




#### **RESOMAR-PELAGOS Data management Workflow**

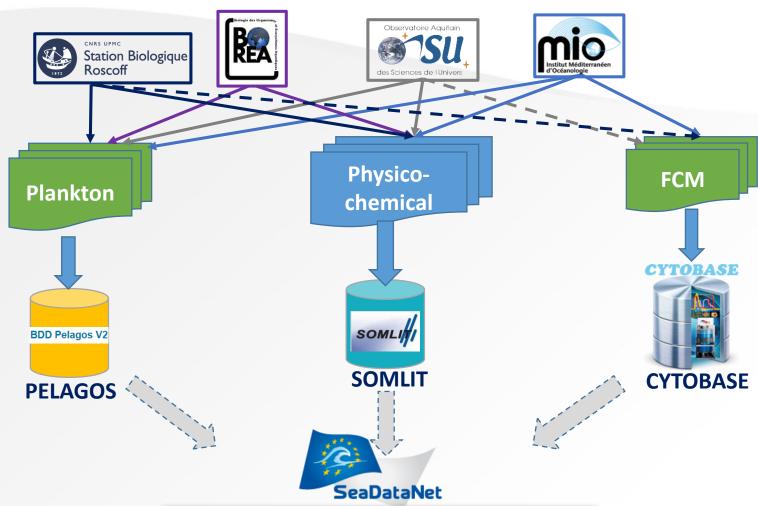


FCM dataset









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





## II. Links with SeaDataCloud



SOMLIT

 Adopt SDN QC flag scale and standard vocabulary



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

- - Set up a common data management protocol and methods for FCM with a special focus on QC









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

	<del>-</del>
<u>X</u>	WP Leader
X	Task leader
X	Involved in a sub-Task
X	Participation to the WP
Т	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 FOR OCEAN & MARINE DATA MANAGEMENT



									_													_		_			-				_
	ud Project Planning		281 8	STS TS		ear 1	Da La	T on To	18	I SO LA			Year !			_	Salt 2a	Late		Year 3	and the second	2012	o Feeder		Take In	as I was I	Year		Local In	or Person	
WP	Activity description	1	2	4 5	6	7 8	9 10	11 1	12 13	14 1	5 16	17 18	19 2	0 21	22 23	3 24	25 26	27	28 29	30 3	1 32	33 3	4 35	36 37	38 3	39 40	41 42	43 44	45	46 47	48
	JRA3 – Developments of upstream services										2 0			500	4 45	8 3	5 6	3 3	- 20 3				3 3	110	35 35	200	- 1	- 538	4 35		
	Upgrading the CDI service making use of the cloud						8 8		100	(c. 1)	10		2 1	8	9 AS		8 2	3- 3	- (0.0	9.3	4	5 16	3 3	_	45 S		2 18 3	-2	Q 45	- 5	
	Specification of the SeaDataNet European cloud environment	4	-						100	- 4	+ +	100	<u> </u>	9 -		+	5 8	-	-		-	-	-		-			. 9	9	-	Ш
	Enhancing the EUDAT B2SAFE replication software		- 55		4				-		-	100	<del>-</del> -	S	9	+1	5 5		-		-		-	-	-			- 8			ш
	Integrating and adapting the EUDAT B2HOST software		100						-			- 100	<u> </u>	-	W -		× W	9 54	180	. 4			4 24	-	1	20		-	W -	-54	-
	Configuring the upgraded CDI service		100	-	× -		4	9-4	9	-			2 - 2 - 1	*	W -	-	s w	9	- 85	. 4	- I	× 6	4 9	-		2		- 20	W	58	2
	Deploying the upgraded CDI service		- 0	-		-	-	8 4	-	8 10			-		× 1	+1	2 1/4	1 3	- 82		-	-	3 25	+	+ +			- 20	20	29	
	Deploying additional services in the cloud for ensuring integrity and conformity	3 3	185	18 /3	8 8	5 85 3	3 8	8 8:		82 28			g /	3111	8 8		e 185	8: 27	88 3	8 8:	20	3 18	80 3/1		10.00	3 1	8 8 8	3	8 8	201	9
9.3	Upgrading existing maintenance services and tools		35	10.0	9 8	- 8 -	1 13	23 S		te le				0	y 1		8 8	8 9	- 82 2	8 8	20	3 12	8: 3/	5.0	10.00	9 1	8 8 8	- 91	8 8	7.	0
	Developing online services for ingesting autonomous observatory data	3 2	- 1	18 3						0.00	3	-	2 3 E	1				30 33		9 96		1 18			45 34		V 45 3	- 22	0 18		
	Development of online service for observatory descriptions	2 2		8 3	20				11				<u>'</u>							9 9.		1 18	30.00		15 35		V 46 15	- 22		-	
	Development of the ingestion service		- 100	100									La La		10-1		3. d.		100			9	1						0.00		┙
	Expanding SeaDataNet capability for handling different data types								3800			100									2										
0.5.4			- 100						360																						
	Ingesting, validating, long-term storage and access of Flow Cytometer data					-		0.00		2 4	4 5	W >										4 8	4 9			V-1				54	Ш
	Ingesting, validating, long-term storage and access of Glider data			40.00					-			- 0											201 22								
9.6	Integration of external datasets from international programmes & organisations																				0										
9.6.1	Identify a list of relevant and possible external data sets																							T							
9.6.2	Ensure external data sets are made available to SeaDataCloud	- 2	- 1/2	1			1		V C		7 - 1										77		2 - 3			1		3	2 8	27	8
	Discard redundancy between external data sets and SeaDataCloud data sets		200	-																				1		N E		X.	W	25	
- 2	Upgrading existing maintenance services and tools		154			-			1				10 /A					4 4	000		15		e 19		3			S	100	vil.	$\vdash$
550000000000000000000000000000000000000	Upgrading existing maintenance services and tools  Upgrading CMS and update procedures of metadata calalogue		- 15	1		-										+1	S 19	++	-		1	-	+	+	++			- 9		-4-	$\vdash$
	Upgrading CMS and update procedures of metadata calalogue  Upgrading MIKADO and NEMO software tools		100	+ + -		4-4					-			**	W	+1	5 1/2	4 4	200	4	7	* 1	4 4	+	++	2		- 20	W -	54	-
	Develop a preconfigured and pre-built virtual appliance system (CDI)		30	1		+	-		-		1			100	-		9 14	4 4	- 2	- 4	4	2 6	4 4	+	+ 1	*	* * 9	70	N/ 1	-24	$\vdash$
	Develop a preconfigured and pre-built virtual appliance system (CDI)  Development of a coordinated distributed DataCite DOI minting service		- 10	+ +		+++	+ 10	8 4	4-	8	4 29	W 4					2 W	+ +	- 8	4		-	4 19	+	++	*	-		× +	29	
	JRA4 – Developments of downstream services																		- 25 3												
	Development of the Virtual Research Environment (VRE)	-	-						100		4 4			1							4		4-4	-		11 -		- 1		4	
	Specification of the VRE architecture in the cloud		-	1						e je	100			8				100	-		4	9	4 4	+	1 3				2	4.5	$\vdash$
	Development of the VRE		- 12	1 1		-			-	0	9 19	- 2	0 6						- 27			9 4	1 1	+					22 - 1	41	
	Development of the VRE Deployment, testing and taking into operation of the VRE		+	12.3		+		10, 14	-	S. 16.	1 5						-			8 3	4	8 10	1 3	+	10	8	100	8	1	9	$\vdash$
	Deployment, testing and taking into operation of the VKE Advanced services for search, processing, analytics, quality, visualisation				2		8		- 10	S - 5	* 4										9	8 6	3 9	-				2	1	9	
	Enable sub-setting (search on the cloud database at data level)			1 3																					10 B	4	-1.5	- 9		-	
0.50	Development of Ocean Data View online	- 8					8		V										.0.0				7 2			9 1		3	2 2	23	-
	Development of DIVA online								V S										- 55 - 5		8							- 3		- 1	
	Development of Biology Data QC online																													0	
	Development of visualization services																												2		
	Further development of the Oceanotron services					+																			45 5		1 5			-	$\Box$
	Development of SOS viewing services for operational data streams		+			+			×		3 - 43 -														6 0					Ť	
	Developing MySeaDataCloud					7		15 3		EE 185																	9 8 8	-8		7	
	JRAS – Development, update and publication of data products																														
	Production of "best aggregated observational data sets"		-	-																											
	Production of standard climatological data products		100	1				1			11												1		1				1 11	- 2	
	Development of new products		- 100	1		-		+ +			1	-						1					1		1					-38	
	Publication of data products and documentation		90	++							2 / W								30.						+				-	- (8	
-	Training on data products and documentation	7	100	+		-	1 19	0.0	1			100	- 3	20	700	7	- W	1	10	-		2	4 24		7 7		- 1	-9	2	10	
11.2	Training on data products generation		_					4					_										4						-	-	بسير