BOUSSOLE STATUS

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21-23 February 2017 – FRM4SOC

OUTLINE

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At the END of 2016

	Αςτινιτγ	Ν	DAYS AT SEA	Start	
At me for the	mooring rotation	8	()	2000	
	buoy rotation	22	03	2000	
	monthly cruises	178	460/645*	2001	
	on-demand cruises	115	115	2000	

1.75 years

* 71 % of the scheduled cruises, the rest was canceled either due to bad weather, military restrictions or ship related issues

BUOY DEPLOYMENTS

YEAR	N DAYS WITH A BUOY AT SEA	N DAYS WITH DATA ACQUISITION	DEPLOYMENT RATE	Меа <mark>ѕ. </mark> Вате (%) ^[2]	
2003	91	90	100[3]	99	
2004	303	241	83	79	
2005	365	288	100	79	65 %
2006	365	328	100	90	
2007	344	303	94	88	
2008	207	133	57	64	
2009	365	254	100	69	- 72 %
2010	365	289	100	79	
2011	365	347	100	95	
2012	366	351	100	96	
2013	365	328	100	90	04.0/
2014	365	365	100	100	94 %
2015	365	336	100	92	
2016	366	335	100	92	
TOTAL	4277	3699	95	86	

^[1] First table raw divided by 365

^[2] 2nd table raw divided by 1st table raw

^[3] With respect to the project start in September 6, 2003

MONTHLY CRUISES

YEAR	Cruises	CRUISE DAYS	WORKING DAYS	RADIOMETRY PROFILES	CTD IOPs	HPLC	Secchi	CIMEL	TSM	CDOM
2001	6	16	10	51	21	9	0	33	0	0
2002	12	36	22	93	34	19	0	49	0	0
2003	11	31	19	114	66	17	0	95	0	0
2004	8	51	44	140	150	31	0	43	0	0
2005	11	42	32	61	110	28	9	79	3	7
2006	11	40	33	96	108	28	15	23	18	2
2007	11	40	32	74	92	25	14	33	14	4
2008	12	49	33	89	103	33	27	40	22	10
2009	11	41	28	83	67	31	26	5	27	4
2010	12	43	28	113	86	25	20	20	21	11
2011	13	47	39	133	118	35	25	18	30	13
2012	12	46	29	81	106	35	19	0	30	11
2013	12	43	26	65	85	25	20	3	23	11
2014	12	44	31	71	101	37	22	6	27	11
2015	12	43	33	60	112	33	28	18	28	12
2016	12	33	22	42	39	21	21	10	19	4
TOTAL	178	645	460	1366	1398	432	246	475	262	100

2016

- > Reduction of scheduled cruise days due to staff reduction
- > Better coordination with DYFAMED program



SVC

MERIS 4TH REPROCESSING (*N. Lamquin ACRI-ST*)



www.obs-vlfr.fr/Boussole/

						Contacts	Links	Site map
	1	-	Buoy fo	BOU , r the acquisition of	SSOLE	cal time	series)
Home	Project or	verview	News	Cruises	Data			People
Technological o	levelopment	Instrumentation	Calibration/	validation operations	Image gallery	Reports	& publicat	tions
NEWS : FROM TH	EBUOY							

Daily data summary from the BOUSSOLE buoy.

The plot below shows the last 5 days of data acquisition by the buoy, as they are transmitted nearly hourly via the ARGOS satellite system. **These data have not been quality controlled**. They are just used as a near-real time rapid check of what's happening on the measurement site. In addition, **the resolution of the data is degraded** as compared to the full data set that is downloaded during the monthly buoy servicing cruises.



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BUDGET 2000-2016







CONSOLIDATED BUDGET (%)



* Various include: lab levy, cruise instruments, instrument shipping and custom fees, external divers, buoy paint, publications, lab consumable, insurance...

STAFF

RESEARCH STAFF	PROJECT RESPONSIBILITIES	%
David ANTOINE	Project PI	20
Annick BRICAUD	CDOM measurements, IOPs expertise	10
TECHNICAL STAFF		
Vincenzo VELLUCCI	Project Management, buoy deployments, data processing	100
Melek GOLBOL	Responsible for monthly cruises, AOPs & IOPs acquisition and processing	100
Eduardo SOTO	CTD monthly cruises, technical support	25
Céline DIMIER	HPLC, a _p measurements	5
Josephine RAS	HPLC, a _p measurements	5
Vincent TAILLANDIER	CTD maintenance and post-processing	5
Edouard LEYMARIE	Montecarlo simulations	5
Guillaume DE LIEGE	Management of diving operations on the buoy, technical support	10
David LUQUET	Diving operations on the buoy	5
Didier ROBIN	Diving operations on the buoy	5
Розтрос		
Marco BELLACICCO	Phytoplankton photo-adaptation and diel cycles	50
EXTERNAL EXPERTISE		
Agniezska Bialek (NPL)	Uncertainty Budget	30
Satlantic, Wetlabs, Hobilabs, Seabird	Calibrations	25/30?
Various	Buoy revision, divers for buoy rotation	15

About 4.25 FTE

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IN CHRONO-PHAGE ORDER

- > Sea going (including pre- and post-cruise activities)
- > Management (reports; proposal submission; local, national and international project animation...)
- > Data QC
- > Buoy preparation and deployments
- > Lab analyses
- > Data processing
- > Support to data users
- > ...

IN PRIORITY ORDER

- > Buoy preparation and deployments
- > Sea going (including pre- and post-cruise activities)
- > Support to data users
- Management (reports; proposal submission; local, national and international project animation...)
- > Data processing
- > Data QC
- > Lab analyses
- > ...

PUBLICATIONS AND MEETINGS ARE SOMEWHERE IN THE CLOUD

2008 SIGNIFICANT DATA LOSS

- Rotation of only two systems is a risk (other than leaving a little time for radiometer characterization)
- > Take a good insurance (other accidents occurred in BOUSSOLE history)





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2008-2010 MEASUREMENT RATE REDUCTION

- > Introduction of hyperspectral instruments and bio-shutters
- > If it works in the lab it does not mean it will work in experimental conditions



INCREASED DURATION OF DEPLOYMENTS

- > Increased number of instrument (from 7 to 13 radiometers)
- > More characterization (cosine scans, pre-launch characterization)
- > Aging instrument require more pieces replacement
- > Longer return time from factory
- > Weather sometime does not help



WHAT WE AIM TO

DATA PROCESSING

- > Provide data with associated uncertainty
- > Include corrections for bidirectionality (tilt)
- > Improve the QC procedures (hyperspectral)

PLATFORM

- > Reduce buoy weight
- > Better distribution of weights
- > Increase energy availability
- > Articulated arms to ease deployments

INSTRUMENTATION

- > Replacement of multispectral instruments and data loggers (fresh news no more maintenance by Satlantic from this week!)
- > Improve the QA procedures (more standardized pre- and post-deployment, golden sensor for intercalibration)
- > Real time data transmission
- > Re-introduce bio-shutters
- > Triplicate essential radiometers (*Es*, *Lu*) to insure regular 6-months rotations

OPERATIONAL CHALLENGE

> Repeated deployment/recovery of ProVal float near BOUSSOLE

OPERATIONAL ASPECTS

- > You need a reasonable distance from your facility for operational activities
- > ...and a reasonable distance offshore to limit anthropic perturbation/damage
- > Take care of details (not obvious on the long-term)
- > ...

MANAGEMENT ASPECTS

- > Involvement of motivated people in long term activities is crucial, feeding motivation over time too
- > Cruises are mandatory for buoy maintenance and auxiliary data collection, they are also a terrific vehicle for collaboration, science, inter-comparison exercise...
- > Ideally set-up a team with high dynamic range of capabilities of individuals, practically try to fit tasks and responsibilities to people expertise and will

> ...

CONTINUOUS FEEDBACK BETWEEN OPERATIONAL ACTIVITIES AND SCIENCE IS A KEY FACTOR TO SUCCEED OVER THE YEARS

Would I do it Again ? Bonus Question?



THANKS FOR ATTENTION

D. Antoine – PI V. Vellucci – Project Manager M. Golbol, E. Soto, E. Diamond – Cruises V. Taillander – CTD processing C. Dimier, J. Ras – HPLC B. Gentili – Code development A. Bialek – Uncertainties E. Leymarie – Montecarlo simulations Bricaud – CDOM G. De Liege, D. Luquet, D. Robin – Diving S. Marty – Calibrations J. Uitz, H. Claustre, F. D'Ortenzio – Expertise L. Fere, C. Poutier, I. Courtois – Administration