INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (OF UNESCO)

DATA BUOY COOPERATION PANEL

TWENTY-NINTH SESSION

PARIS, FRANCE
23-27 SEPTEMBER 2013

WORLD METEOROLOGICAL ORGANIZATION

DBCP-29/ DOC 13
(11-sept.-13)

ITEM: 6

ENGLISH ONLY

NATIONAL REPORTS

(*Submitted By Members/Member States*[1]*)*

Summary and purpose of the document

This documents provides for the reports on national activities during the last intersessional period

ACTION PROPOSED

The Panel will review the information contained in this report and comment and make decisions or recommendations as appropriate. See part A for the details of recommended actions.

Appendices: National reports for:

A. Australia
B. Brazil
C. Canada
D. Chile
E. China
F. Ecuador
G. Finland
H. France
I. India
J. Japan
K. Republic of Korea
L. New Zealand
M. Saudi Arabia
N. South Africa
O. Sweden
P. UK
Q. Ukraine
R. United States

[1] The content of national reports included in this document is the sole responsibility of the authors of the reports, and not of the Secretariat. Please be informed that “Sea of Japan” is the standard geographical term used by the Secretariat of the United Nations, in its own documents, for the body of water separated from the Pacific Ocean by the Japanese Archipelago and Sakhalin.

APPENDIX A

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	AUSTRALIA
Year	2013

1. CURRENT PROGRAMME:

A. Agency or programme:	**Australian Bureau of Meteorology (ABOM)**		
Number and type of buoys:	(a)	Deployed during the year:	18
		0 SVP	
		18 SVP B	
	(b)	Operational at 31 July:	10
	(c)	Reporting on GTS at 31 July:	10
Purpose of programme:	To support the Bureau's operational forecasting and warning service.		
Main deployment area:	Southern and Indian Oceans in support of: - International Buoy Programme for the Indian Ocean - Southern Ocean Buoy Programme - International Programme for Antarctic Buoys.		

2. PLANNED PROGRAMME:

B. Agency or programme:	ABOM Barometer Upgrade Program		
Number and type of buoys:	(a)	Deployed during the year:	0
		0 SVP-B (Bureau sponsored upgrades)	
	(b)	Operational at 31 July:	0
	(c)	Reporting on GTS at 31 July:	0
Purpose of programme:	To increase the number of pressure buoys in the Indian Ocean and to support the Bureau's operational forecasting and warning service.		
Main deployment area:	Southern and Indian Oceans in support of: - International Buoy Programme for the Indian Ocean - Southern Ocean Buoy Programme		

C. Agency or programme:	ABOM deployments for the Global Drifter Program		
Number and type of buoys:	(a)	Deployed during the year:	15
	(b)	Operational at 31 July:	0
	(c)	Reporting on GTS at 31 July:	0
Purpose of programme:	To support the Global Drifter Program through the IBPIO, and to support the Bureau's operational forecasting and warning service.		
Main deployment area:	Southern and Indian Oceans in support of: - International Buoy Programme for the Indian Ocean - Southern Ocean Buoy Programme		

D. Agency or programme:	Australian Antarctic Division (AAD)		
Number and type of buoys:	(a)	Deployed during the year:	2
		2 Stress-gauge buoys	
	(b)	Operational at 31 July:	22
	(c)	Reporting on GTS at 31 July:	14
Purpose of programme:	To assist AAD's research program, especially the investigation of sea-ice motion and deformation off East Antarctica, as well as the exploration of internal ice physics		
Main deployment area:	Southern Ocean, also contributing to the International Programme for Antarctic Buoys.		

PLANNED PROGRAMMES ***(for period 1 July 2013 – 30 June 2014)***

A. Agency or programme:	Bureau of Meteorology	
Number and type of buoys planned for deployment in next twelve months:		21
	SVP-B	21
Purpose of programme:	To support the Bureau's operational forecasting and warning service.	
Main deployment area:	Southern and Indian Oceans.	

B. Agency or programme:	Barometer Upgrade Program	
Number and type of buoys planned for deployment in next twelve months:		8
	SVP-B (Bureau sponsored upgrades)	8
Purpose of programme:	To increase the number of pressure buoys in the Indian Ocean and to support the Bureau's operational forecasting and warning service.	
Main deployment area:	Indian Ocean	

C. Agency or programme:	Global Drifter Program	
Number and type of buoys planned for deployment in next twelve months:		40
	SVP-B	40
Purpose of programme:	To support the Global Drifter Program through the IBPIO, and to support the Bureau's operational forecasting and warning service.	
Main deployment area:	Indian Ocean	

D. Agency or programme:	Australian Antarctic Division (AAD)	
Number and type of buoys planned for deployment in next twelve months:		17
	Stress-gauge buoy	2
	Various sea-ice buoys	7
	SVPs (AAD-US IPAD collaboration)	8
Purpose of programme:	To assist AAD's research program, especially to explore the internal ice physics and sea-ice motion and deformation. We will continue our deployments of stress-gauge buoys on the East Antarctic fast ice. The major deployment planned for 2013/14 will be part during a German-led cruise deep into the Weddell Sea.	
Main deployment area:	Southern Ocean, also contributing to the International Programme for Antarctic Buoys.	

TECHNICAL DEVELOPMENTS

(a) Buoy design:

(b) Instrumentation:

(c) Others:

PUBLICATIONS *(on programme plans, technical developments, QC reports, etc.)*

The deployment plans for Bureau-owned buoys will be published on the JCOMMOPS website under deployment opportunities < http://www.jcommops.org/depl_opport/australia.html >.

SPECIAL COMMENTS (if any)

(a) Quality of buoy data:

(b) Communications:

(c) Buoy lifetimes:

(d) Others:

APPENDIX B

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	BRAZIL
Year	JULY 2012 TO JULY 2013

1. CURRENT PROGRAMME:

Agency or programme	Brazilian National Buoy Program (PNBOIA), part of the Brazilian GOOS Programme, that includes PIRATA and Coastal Waves Network	
Number and type of buoys	(a1) deployed during the year 2012	• 16 SVP drifters • 32 SVP-B drifters • 2 SVP-BWIND drifters
	(a2) deployed during the year 2013	• 10 SVP drifters
	(b) operational as of 31 July	• 08 PIRATA buoys • 04 moored buoys of Platform type • 01 moored buoy of Costal type • 02 wave sensors • 10 drifters
	(c) reporting on GTS as of 31 July	• 08 PIRATA buoys • 04 moored buoys of Platform type • 01 moored buoy of Costal type • 02 wave sensors • 10 drifters
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Brazilian EEZ (South and Topical Atlantic Ocean)	
Vandalism incidents	(a) Number of incidents: one (01)	

(repeat table above as often as necessary)

2. PLANNED PROGRAMMES:

Agency or programme		
Number and type of buoys	planned for deployment in the next 12 months	
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[ ]
	(c) developmental	[ ]
Main deployment areas		

(repeat table above as often as necessary)

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	• Brazil has two projects to build Brazilian moored buoys, one is Atlas-B and another COPPETEC project for a polypropylene buoy, with 2.9 m of diameter.
(b) Instrumentation	• accelerometer
(c) Others	• system integration

4. PUBLICATIONS (on programme plans, technical developments, QC reports, etc.):

Ref	*Title*	*Type*[2]
1		
2		
3		
4		

(repeat rows in the table above as necessary)

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	• • •
(b) Communications	• • •
(c) Buoy lifetimes	• • •
(d) Other	•

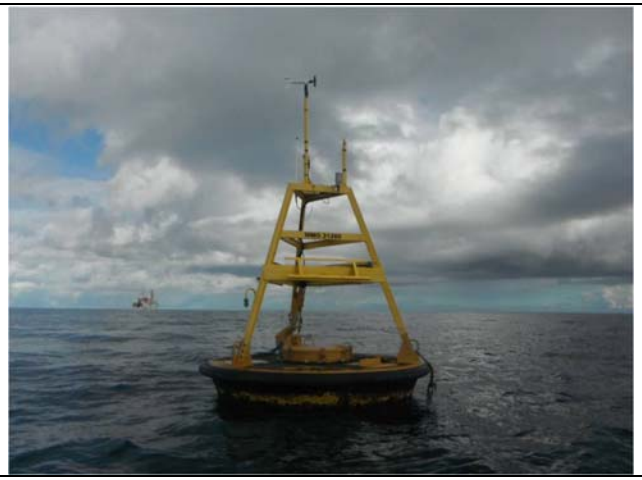
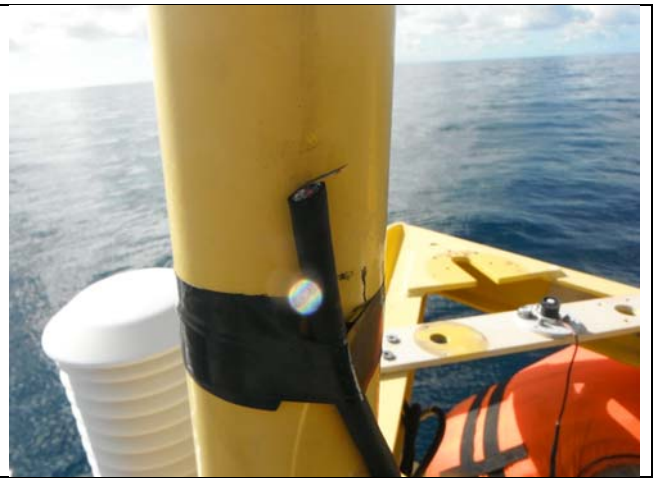
Note: It is recommended that this form is filled in electronically and returned also electronically to the Secretariat. A template of the form can be downloaded from the following ftp site:

ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-National-Reports.doc

[2]: Types of publications: (1) Implementation, (2) Operations, (3) Instrumentation, (4) Quality Management, (5) Data Management, (6) Data collection and/or location, (7) Data use, (8) Other

ANNEX - FORM FOR REPORTING INCIDENTS OF VANDALISM ON DATA BUOYS

Country			BRAZIL					
Contact person e-mail			felipe.santos@chm.mar.mil.br (Lt Cdr Felipe Santos)					
Year	**Buoy Location**		**Type of Buoy (e.g. Tsunami / Met - Ocean Buoy/Drifter/ARGO floats/ Other)**	**Type of damage to buoy**	**Buoy id/WMO id**	**Number of days of transmission lost**	**Cost of replacement**	**Remarks (e.g. whether photos have been taken)**
	Latitude	**Longitude**						
2013	16º 17,0' S	037º 54,5' W	Met-Ocean Buoy	All sensors were stolen or damaged	Argos ID: 69007 WMO: 31260	Since june 2013		Photos have been taken
Efforts taken against vandalism			None					
Awareness meeting Organised			None					
Suggestions (if any)			Raising awareness of fishing colonies					

Photos on Vandalism		

Note: It is recommended that this form is filled in electronically and returned electronically also to JCOMMOPS (support@jcommops.org). A template of the form can be downloaded from the following ftp site: ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-Buoy-Vandalism-Reports.doc

APPENDIX C

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	CANADA
Year	2013

1. CURRENT PROGRAMME:

Agency or programme	Moored and drifting buoys in the **Northeast Pacific Ocean** Pacific and Yukon Region of Environment Canada	
Number and type of buoys	(a) deployed during the year	• **17** moored buoys maintained • **2** drifting buoys deployed • **16** GDP Barometer Upgrade buoys deployed (Upgraded funded by EC, not counted in GTS totals) • **1** waverider operational, retrieved in May 2013.
	(b) operational as of 31 August	• **13** - 3 M Discus • **3** - 6 M NOMAD • 0 – 0.7 M waverider • **1** – SVP-B drifters
	(c) reporting on GTS as of 31	**17**
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	Coastal waters of British Columbia, as well as open	

	ocean deployments of moored buoys (NOMADS) and drifting buoys.

Agency or programme	Moored buoys on the **Great Lakes and other interior lakes** Prairie and Northern Region and Ontario Region of Environment Canada	
Number and type of buoys	(a) deployed during the year	**19** (seasonal) moored buoys
	(b) operational as of 31 August	• **10** - 3 M Discus • **9** - 1.7 M watchkeeper
	(c) reporting on GTS as of 31	**19**
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Canadian waters of the Great Lakes, and large interior lakes in central Canada. 2013 deployments include new buoy in Lake Ontario just south of Toronto, ON. Buoy deployed in support in support of PanAM Games sailing venue, which will be hosted in 2015 in Toronto. Note that all deployments are seasonal.	

Agency or programme	Moored buoys in the **Northwest Atlantic Ocean and Gulf of St. Lawrence** Atlantic Region and Quebec Region of Environment Canada	
Number and type of buoys	(a) deployed during the year	• **8** moored buoys maintained (7 NOMADs and 1 3MD in NW Atlantic) • **2** seasonal deployments (Gulf of St. Lawrence in support of science project) • 1 waverider (Gulf of St. Lawrence) • 1 GDP Barometer Upgrade buoy

		deployed (not counted in GTS totals) • 0 SVP-B drifting buoys deployed.
	(b) operational as of 31 August	• 1 - 3 M Discus • 7 - 6 M NOMAD • 0 - 1.7 M Watchkeeper • 0 - 0.7 M waverider • 0 - SVPB
	(c) reporting on GTS as of 31	8
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Northwest Atlantic Ocean and Gulf of St. Lawrence	

Agency or programme	Ice buoys deployed in the **Arctic Basin and Eastern Arctic** - in collaboration with International Arctic Buoy Program (IABP) and also to meet operational requirements of the Canadian Ice Service and new METAREA obligations.	
Number and type of buoys	(a) deployed during the year	**13**
	(b) operational as of 31 August	**8**
	(c) reporting on GTS as of 31	**8**
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	Beaufort Sea, Canadian Archipelago, Eastern Arctic and Labrador Sea	

2. PLANNED PROGRAMMES:

Agency or programme	Moored and drifting buoys in the **Northeast Pacific Ocean** Pacific and Yukon Region of Environment Canada	
Number and type of buoys	planned for deployment in the next 12 months	• **17** moored buoys maintained • **1** waverider buoy redeployed • **20** drifting buoys, including mix of MSC funded buoys and GDP barometer upgrade buoys.
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	Coastal waters of British Columbia, as well as open ocean deployments (North Pacific Ocean) of moored buoys (NOMADS) and drifting buoys. Drifting buoy deployments will be coordinated with GDP/AOML.	

Agency or programme	Moored buoys on the **Great Lakes and other interior lakes** Prairie and Northern Region and Ontario Region of Environment Canada	
Number and type of buoys	planned for deployment in the next 12 months	• **21** (seasonal) moored buoys
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Canadian waters of the Great Lakes, and large interior lakes in central Canada. Note that all deployments are seasonal. Hope to deploy Churchill buoy in James Bay pending availability of suitable logistical support.	

Agency or programme	Moored buoys in the **Northwest Atlantic Ocean and Gulf of St. Lawrence** Atlantic Region and Quebec Region of Environment Canada	
Number and type of buoys	planned for deployment in the next 12 months	• 8 moored buoys • 2 seasonal moored buoys • 1 waverider buoy • 6 SVP-b drifting

		buoys
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	Northwest Atlantic Ocean and Gulf of St. Lawrence. Note EC also provides logistical support for a number of E-SURFMAR drifting buoy deployments each year via the port of Halifax.	

Agency or programme	Ice buoys deployed in the **Arctic Basin and Eastern Arctic** - in collaboration with International Arctic Buoy Program (IABP) and also to meet operational requirements of the Canadian Ice Service and new METAREA obligations.	
Number and type of buoys	planned for deployment in the next 12 months	**18 to 20** • include 4 Polar SVP-B, 4 ICEX-Air, 2 Polar SVP-B (air), 5 AXIB, and 3 to 5 ICALIB
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	Northwest Atlantic Ocean and Gulf of St. Lawrence, Beaufort Sea, Canadian Archipelago, Eastern Arctic and Labrador Sea. Note that the METAREA project will facilitate a significant increase in number of deployments in the Arctic, and the MSC will benefit from air deployment support from Royal Canadian Air Force for planned deployment of up to 4 ICEX-Air.	

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	• **Integration of Iridium SBD modem Moored Buoy Payload:** Over the past year, EC the EC has worked with AXYS Technologies to integrate an Iridium short burst data (SBD) modem into the existing moored buoy “payload”. A prototype was been designed and built during 2012. The prototype uses GOES transmission, as well as the Iridium 9602 SBD modem). The advantage of using the WM500, was that all new software development could be done externally to the operational system onboard the buoy. The Iridium SBD modem now allows for bidirectional communication with the moored buoy, allowing MSC Technicians and Engineers to

	interface with the system, to send commands for the following type of actions; • Power resent • Reset of SUTRON GOES transmitter • Configuration change • Sensor suppression • At current (as of July 2013) – Iridium /GOES units at have been deployed in North Pacific (off coast of British Columbia): o 46205 (IMEI: 300234011121810) o 46183 (IMEI: 300234011466200) o 46206 (IMEI: 300234011465190) o 46036 (IMEI: 300234011467200) • **Evaluation of AXIB Buoy:** In summer of 2011, EC successfully deployed our first Air Deployable Expendable Ice Buoy (AXIB) from LBI Corp. AXIB buoy in the southern Beaufort Sea. The buoy was deployed in open water October, and survived freeze-up into the first year ice pack later in the fall. The buoy continues to operate, with only a failure of the temperature sensor, and has now reported for more than 650 days (as of July). An additional AXIB was ship deployed in the summer of 2012 in the Beaufort Sea but failed after only 4 days. EC is presently planning on deployment for up to 5 AXIB buoys via C-130 aircraft support from the Royal Canadian Air Force in the summer of 2013 in Southern Beaufort Sea. • **Integration of SUTRON SatLink2 GOES transmitters on moored buoys:** All EC moored buoys have not been equipped with SUTRON SatLink2 GOES transmitter. The SatLink2 with a 40W linear signal amplifier was selected to allow EC buoys to transmit at higher baud rate, to meet NESDIS requirements. The performance of the transmitters have been good, however we have suffered from increased parity errors when operating at higher baud rate. The shorter transmission window is problematic during high states, meaning a larger % of missing data (still less than 3-5% per station).
(b) Instrumentation	• **Transition to sonic anemometers for moored buoy network:** Continue evaluation of ultrasonic anemometers

	(Vaisala ws425 and equivalent) on EC 3 m and 6 m buoys, a number of buoys have ultrasonic as secondary wind. We are awaiting results from our Engineering Test/Evaluation group as part of EC procurement process for new wind sensors, which will inform the type (make/model) of sensors which will be used in future, with the expectation that EC will migrate to using sonic anemometer in both wind one and wind 2 positions throughout the moored buoy network.
(c) Others	**Challenges with Ship-Time** EC presently depends on the Canadian Coast Guard to provide buoy tender services, which includes transportation of EC Buoy Technicians and Contractors (from AXYS Technologies) to service and repair offshore moored buoys. CCG has been impacted by budget reductions, as well as capacity issues with an aging fleet of buoy tenders. EC has observed a year-over-year decrease in days of ship time of 40%, which has directly impacted data availability, especially on Canada's Atlantic Coast. There are three buoys in Atlantic Canada (44138, 44140, and 44141) which have not been inspected for over 22 months. In the case of 44140, the mooring failed and the NOMAD buoy has been lost (perhaps on the shores of Europe by now?) The reduction in ship time has impacted the network on the Pacific Coast as well as Great Lakes, with a reduction on data availability, along with lack of repair of malfunctioning sensors. **Development of specification for next generation buoy system** EC has completed work on updated requirements and specification for future moored buoy and ship-board automatic weather stations. EC's moored buoy and AVOS (automated VOS) both utilize the WatchMan100 system provided by AXYS Technologies. While this system has proven to be very reliable, there is a requirement to upgrade the buoy network with updated systems that can be supported into the future. We are also looking for a system that will more easily support functionality such bi-directional communications, as well as varied modes of operation (i.e. activation of "storm" mode with more frequent sampling and data transmission). An RFI was completed in spring of 2013, and a competitive RFP will be posted by end of summer or

	early fall 2013. The intention of the RFP will be to secure a technical solution which can be easily integrated into existing network, along with technical field and engineering support for next 8-10 years. The competitive bid will be posted to Canadian Federal Government procurement web site http://buyandsell.gc.ca **Routing of Third Party Drifting Buoys to GTS:** As highlighted at the previous sessions of DBCP, Environment Canada has entered into a data sharing agreement with Jou Beh Technologies Inc. and Scotia Weather Services to facilitate the routing of buoy data to the GTS. Jou Beh is an Iridium value added reseller (VAR), and has identified a requirement from their clients working in the met/ocean field for end-to-end data management of their buoy data, including broadcast of data to the GTS. With the advent of Iridium buoys offering more timely data, and lower communication costs than the ARGOS system, a need was identified to ensure there was a cost-effective means of relaying Iridium equipped buoy data to the GTS. Scotia Weather Services provide the required 24/7/365 operations to process data received from the Iridium buoys and generate the required FM18 messages for distribution to the GTS. Scotia Weather has implemented a quality control system to validate each element of the buoy observation prior to transmission of the data. Environment Canada has provided a means to receive the FM18 messages at the Canadian Meteorological Centre in Montreal, and now routing the messages from non-MSC buoys to the GTS under the header: ***SSVX02 CWAO***. Earlier this year, Scotia Weather has developed and tested the functionality to generate and disseminate buoy messages in BUFR format. To date, there have been over 85 buoys routed through this new system. Buoy operators include a number of University researchers, as well as two National Met Services. The majority of the buoy data routed to the GTS have been deployments in the Canadian Arctic, which would not have been broadly available without this new system to route Iridium buoy data to the GTS. **Contribution to PP-WET** The EC Contribution to pilot project on wave measurement evaluation and test (PP-WET) project was hampered by access to ship-time. The intention

	in 2013 was to deploy a Datawell wave rider in the North Atlantic, collocated with SW Grand Banks NOMAD buoy. This did not occur, and buoy remains in St. John's Newfoundland. We are hopeful that this buoy can be deployed in August or September of 2013. On the west coast, the Datawell buoy (46139) which was deployed at La Perouse Bank (46206) was retrieved in May 2013 (following nearly 12 months on station). The raw data from the buoy has been downloaded and delivered to SCRIPPS CDIP for evaluation. In addition, a TriAXYS sensor was installed on the La Perouse 3MD, and this time-series will also be included in the PP-WET contribution from EC. Finally, in May 2013, EC was able to install the SCRIPPS GPS wave sensor onboard the 3MD buoy at East Dellwood (46207). The GPS sensor will log data onboard. Drifting GPS sensors were also deployed nearby the 3MD buoy. Finally, and TriAXYS directional wave sensor was installed on the 3MD (46207) allowing for another round of multi-sensor intercomparison on the west coast of Canada.

4. PUBLICATIONS (on programme plans, technical developments, QC reports, etc.):

Ref	***Title***	***Type[3]***
1	Monthly moored and drifting buoy status reports at http://thetis.pyr.ec.gc.ca/a-buoyestat.phtml	2, 3 ,6
2	Buoy data available at http://www.weatheroffice.ec.gc.ca/marine/index_e.html (real-time) http://www.meds-sdmm.dfo-mpo.gc.ca/isdm-gdsi/waves-vagues/index-eng.htm (DFO - ISDM archive of wave and atmospheric measurements from EC moored buoys)	8
3	Detailed network performance reports are available by contacting EC-MSC Marine Networks - Chris Marshall National Manager of Marine Network - chris.marshall@ec.gc.ca 1 (416) 739-4468	8
4	*Buoy wind inhomogeneities related to averaging method and anemometer type: application to long time series* --- B.R. Thomas	3, 4, 5

[3]: Types of publications: (1) Implementation, (2) Operations, (3) Instrumentation, (4) Quality Management, (5) Data Management, (6) Data collection and/or location, (7) Data use, (8) Other

	and V.R. Swail - Environment Canada Science and Technology Branch, Climate Research Division International Journal of Climatology 31: 1040-1055 (2011)	
5	Initial Findings of MINIMET (Surface Velocity Program Buoy with a Sonic Anemometer) CMOS Congress 2012 --- C. Gallage https://www1.cmos.ca/abstracts/session_detailsByYear.asp?session_id=5071&nYear=127#	3

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	• For 2nd half of 2012 (July to December) Data availability from moored buoys was **82%** of expected observations received and delivered to clients. • For 1st half of 2013 (January to June) Data availability from moored buoys was **83%** of expected observations received and delivered to clients. ***This is a **significant reduction** related to reduction in ship-time from Canadian Coast Guard, and is most pronounced on the Atlantic coast, where data availability has fallen to **71%** of expected data returned.
(b) Communications	• GOES is primary communication for moored buoys • ARGOS used as back-up for moored buoy, and primary for SVP-B and Ice buoys • Iridium is now utilized for new SVP-B deployments, as well as moored buoy position beacons. • Iridium has been deployed to 4 operational moored buoys as back-up communications to primary GOES system.
(c) Buoy lifetimes	• 2-4 years at which time they are refurbished (weld/leak tests, sandblasting, painting etc.) Experience has shown that extending maintenance period beyond 18 months results in loss of data (missing winds), and degradation quality and reliability of other parameters. • Drifting buoys 12-24 months --- Average over past 2 years (all buoy types) is 393 days, with ~10% failures on deployment, or within 45 days. • ICEX-Air buoys up to 48 months • AXIB buoy deployed in 2011, now over 650 days.

Note: It is recommended that this form is filled in electronically and returned also electronically to the Secretariat. A template of the form can be downloaded from the following ftp site:

ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-National-Reports.doc

APPENDIX D

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	CHILE
Year	2013

1. CURRENT PROGRAMME:

Agency or programme	Hydrographic and Oceanographic Service of the Chilean Navy (SHOA)	
Number and type of buoys	(a) deployed during the year	1
	(b) operational as of 31 August	3
	(c) reporting on GTS as of 31 August	0
Purpose of programme	(a) operational	[**X**]
(check/uncheck boxes using	(b) met / ocean research	[_]
[_] or [x] as appropriate)	(c) developmental	[_]

2. PLANNED PROGRAMMES:

Agency or programme	Hydrographic and Oceanographic Service of the Chilean Navy (SHOA)	
Number and type of buoys	(a) deployed during the year	1
	(b) operational as of 31 August	3
	(c) reporting on GTS as of 31 August	0
Purpose of programme	(a) operational	[**X**]
(check/uncheck boxes using	(b) met / ocean research	[_]

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	1.- DART II manufactured by PMEL-NOAA and more recently by SAIC 2.- Watchkeeper manufactured by Axys Technologies
(b) Instrumentation	1.- Tsunameter

4. PUBLICATIONS (on programme plans, technical developments, QC reports, etc.):

Agency or programme	Hydrographic and Oceanographic Service of the Chilean Navy (SHOA)	
Number and type of buoys	(a) deployed during the year	1
	(b) operational as of 31 August	3
	(c) reporting on GTS as of 31 August	0
Purpose of programme	(a) operational	[**X**]
(check/uncheck boxes using	(b) met / ocean research	[_]
(c) Others		

(repeat rows in the table above as necessary)

5. SPECIAL COMMENTS (if any):

Agency or programme	Hydrographic and Oceanographic Service of the Chilean Navy (SHOA)	
Number and type of buoys	(a) deployed during the year	1
	(b) operational as of 31 August	3
	(c) reporting on GTS as of 31 August	0
Purpose of programme	(a) operational	[**X**]
(check/uncheck boxes using	(b) met / ocean research	[_]
(c) Others		

APPENDIX E

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	CHINA
Year	2012.08 - 2013.07

1. CURRENT PROGRAMME:

Agency or programme	**State Oceanic Administration**	
Number and type of buoys	(a) deployed during the year	53 buoys, including 3m and 6m moored buoys, Tsunami buoys, drifters, and 22 Argo floats
	(b) operational as of 31 August	42
	(c) reporting on GTS as of 31	24
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	China Seas and adjacent waters	
Vandalism incidents	5	

Agency or programme	**China Meteorological Administration**	
Number and type of buoys	(a) deployed during the year	0
	(b) operational as of 31 August	22
	(c) reporting on GTS as of 31	0
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	China Seas	
Vandalism incidents	none	

2. PLANNED PROGRAMMES:

Agency or programme	**State Oceanic Administration**	
Number and type of buoys	planned for deployment in the next 12 months	2 met buoys, 10 surface drifters, 1 Tsunami buoy, 1 optics buoy, 6 Argo floats, 1 deep sea mooring buoy
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	South China Sea, Indian Ocean, Northwest Pacific	

3. TECHNICAL DEVELOPMENTS:

State The SOA carried out many studies on renovation of buoy design, instrumentation, data transmission and quality, and so on.

3.1 Renovation of buoy technology

3.1.1 Sensors

Wave sensor newly produced by Shandong Academy of Science Institute of Oceanographic Instrumentation (SDIOI) has the ability of directional wave measuring. Through data comparison and practical application it is found that the buoy measured wave direction is different from the average wave direction. However, due to the limitation of short observation time, the correction relationships under different sea states are unavailable. Long-term (several months) observation will be required to get accurate wave directions, and then the wind response coefficient and the barycenter parameter will be corrected through analysis on the long term data.

In order to meet the requirements of increasing ocean observation, the East China Sea Branch of SOA focuses on the data acquisition system of marine buoy. It researches and develops the CO_2 sensor that has successfully been used in the East China Sea buoys and has been stably operating over two years at sea. It for the first time allows 10m large buoy of to carry CO_2 sensor in China, which is of significant importance to the future observation of ocean CO_2.

3.1.2 Communication Control System supporting several communication modes

Communication control system supporting several communication modes is researched and developed on the basis of primary shortwave communication and Inmarsat-C satellite and the North China Sea Buoy Network to guarantee the continuity of data communication. It supports both the Inmarsat-C and CDMA/GPRS,

and carries the trial Compass satellite communication system. Generally, CDMA communication is default setting. It is automatically switched to Inmarsat-C and "Compass" satellite communication systems when CDMA doesn't work. The communication control system works stably in the pasting two years.

3.1.3 Double Data Collection Control System

All the large buoys are installed with double data collection control systems. All the regular sensors have dual backup mode. Two GPS, one location sensor, one temperature and humidity sensor, one air pressure sensor, one Compass transmitter developed by National Ocean Technology Center, door alarm and water inflow alarm are added to each buoy in North China Sea.

To meet the requirement of multi-sensor and multi-channel transmission, dual independent working mode, that is, double data collection systems and double communication systems, is used. Their communication systems are independent to each other. And the dual systems share all the data to avoid data missing.

3.1.4 Reserved device interfaces

With the growing need of ocean observing, marine monitoring parameters are increasing. In order to meet the requirements of national marine monitoring and the international development of marine devices, more interfaces to carry future sensors and instruments are reserved at the buoys of the North China Sea Buoy Network to ensure the sustaining use of buoys. Now, the buoys of North China Sea Branch are equipped with the infrared radiometer, visibility meter, precipitation meter, water quality sensor, etc, providing more and more data for the North China Sea forecasting service.

3.1.5 Drogue Study

The drogue is usually made of steel, making it difficult to transport, equip and repair, especially for large buoys with diameter above 3m. The East China Sea Branch of SOA develops the splitable 10m buoy. It has the same configuration intensity, but easy to transport. To solve the frequent vandalism problem of 1m buoy and the jammer of steel structure drogue to the performance of current meter, the East China Sea Branch, cooperating with other research institutes in China, develops 3m polyurea buoy that has light weight, well wave-following characteristic and higher data accuracy.

3.2 Buoy Data

3.2.1 Data Transmission

Large buoy uses Inmarsat-C, GDMA/GPRS and Compass in a mutually complementary mode to transmit data. Middle buoy uses CDMA communication. Data receiving rates of both are over 99%.

Data are regularly copied from data memory card on the float. It supplements the lost of satellite transmitted data due to weather or communication failure so as to ensure the continuity of data.

3.2.2 Data Quality

The North China Sea Forecasting Center appoints a technician to monitor the buoy data. The technician analyzes the data on the basis of local conditions and weather. If the data abnormal is due to the malfunction of sensor, the sensor will be repaired or replaced as soon as possible. Sensor cleaning and calibration are conducted regularly.

4. PUBLICATIONS (on programme plans, technical developments, QC reports, etc.):

None

Note: It is recommended that this form is filled in electronically and returned also electronically to the Secretariat. A template of the form can be downloaded from the following ftp site:

ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-National-Reports.doc

ANNEX - FORM FOR REPORTING INCIDENTS OF VANDALISM ON DATA BUOYS

Country			China					
Contact person e-mail			National Marine Data and Information Service, yuting@mail.nmdis.gov.cn					
Year	**Buoy Location**		**Type of Buoy (e.g. Tsunami / Met - Ocean Buoy/Drifter/ARGO floats/ Other)**	**Type of damage to buoy**	**Buoy id/WMO id**	**Number of days of transmission lost**	**Cost of replacement**	**Remarks (e.g. whether photos have been taken)**
	Latitude	**Longitude**						
2013.05			Large moored buoy	Water inflow	DBD06		153,000 US dollars	No
2013.05			Large moored buoy	Anchor chain rust and sensor damage	DBB01			No
2013.04			Large moored buoy	Sensor damage	DBB04			No
2013.04			Large moored buoy	Sensor damage	DBN07			No
2013.04			Tsunami Buoy	Anchor chain lost	N2		1 million US dollars	Yes
Efforts taken against vandalism								
Awareness meeting Organised								
Suggestions (if any)								
Photos on Vandalism			(please include pictures if available; and email electronic versions to support@jcommops.org)					

Note: It is recommended that this form is filled in electronically and returned electronically also to JCOMMOPS (support@jcommops.org). A template of the form can be downloaded from the following ftp site: ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-Buoy-Vandalism-Reports.doc

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APPENDIX F

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	ECUADOR
Year	2013

1. CURRENT PROGRAMME:

a. Agency or programme	NOAA´s Atlantic Oceanographic and Meteorological Laboratory (AOML)/Global Drifter Program´s array/Global Drifter program	
Number and type of buoys	(a) deployed during the year	10 Satellite-tracked SVP drift buoys
	(b) operational as of 31 August	02 drifting buoys
	(c) reporting on GTS as of 31 August	02 drifting buoys
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	Yes
	(b) met / ocean research	Yes
	(c) developmental	NO
Main deployment areas	South-east Pacific region	
Vandalism incidents	(a) Number of incidents	2 incident (tangled in nets fishermen)

b. Agency or programme	National warning Center TSUNAMI CNAT Secretaría Nacional de Riesgos - Instituto Oceanográfico de la Armada INOCAR	
Number and type of buoys	(a) deployed during the year November 2011)	1 EBM-22TSU buoy
	(b) operational as of 31 August	01 Buoy
	(c) reporting on GTS as of 31 August	01 Buoy
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	Yes
	(b) met / ocean research	Yes
	(c) developmental	NO
Main deployment areas	Coast central of Ecuador	
Vandalism incidents	(b) Number of incidents If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

2. PLANNED PROGRAMMES:

a. Agency or programme	NOAA´s Atlantic Oceanographic and Meteorological Laboratory (AOML)/Global Drifter Program´s array/Global Drifter program	
Number and type of buoys	planned for deployment in the next 12 months	8 Satellite-tracked SVP drift buoys
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	yes
	(b) met / ocean research	yes
	(c) developmental	
Main deployment areas	South-east Pacific region	

b. Agency or programme	Implementation of a Monitoring and early warning events oceanic origin. SENESCYT-INOCAR/ Coastal Wave Monitoring	
Number and type of buoys	planned for deployment in the next 12 months	3 TRIAXYS buoys
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	yes
	(b) met / ocean research	yes
	(c) developmental	
Main deployment areas	Coast of Ecuador and insular region	

3. <u>TECHNICAL DEVELOPMENTS:</u>

(a) Buoy design	**Satellite-tracked SVP drift buoys** The surface float ranges from 30.5 cm to 40 cm in diameter. It contains: batteries in 4-5 packs, each with 7-9 alkaline D-cell batteries; a transmitter; a thermistor to measure sea surface temperature. They also have a submergence sensor or a tether strain sensor to verify the presence of the drogue. The drogue is centered at 15 meters beneath the surface to measure mixed layer currents in the upper ocean. The outer surface of the drogue is made of nylon cloth **TRIAXYS buoys** TRIAXYS NW, Buoy Directional, SS Hull, Dome, 8GB Data Card, Blue Tooth, Solar Panels, Rechargeable Batteries (400 Ahr), Dome Cover, SST, Water Intrusion Sensor and Shipping Pallete
(b) Instrumentation	**Satellite-tracked SVP drift buoys** Thermistor to measure sea surface temperature. **TRIAXYS buoys** Wave sensor Module, ADCP Inmarsat M2M to provide GPS positioning
(c) Others	

4. PUBLICATIONS (on programme plans, technical developments, QC reports, etc.):

Ref	*Title*	*Type*[4]
1		
2		
3		
4		

(repeat rows in the table above as necessary)

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	Satellite-tracked SVP drift buoys DIARY
(b) Communications	Satellite-tracked SVP drift buoys Service ARGOS Inc.
(c) Buoy lifetimes	Satellite-tracked SVP drift buoys • year
(d) Other	

Note: It is recommended that this form is filled in electronically and returned also electronically to the Secretariat. A template of the form can be downloaded from the following ftp site:

ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-National-Reports.doc

[4]: Types of publications: (1) Implementation, (2) Operations, (3) Instrumentation, (4) Quality Management, (5) Data Management, (6) Data collection and/or location, (7) Data use, (8) Other

ANNEX - FORM FOR REPORTING INCIDENTS OF VANDALISM ON DATA BUOYS

Country		ECUADOR						
Contact person e-mail		miriam.lucero@inocar.mil.ec						
Year	**Buoy Location**		**Type of Buoy (e.g. Tsunami / Met -Ocean Buoy/Drifter/ARGO floats/ Other)**	**Type of damage to buoy**	**Buoy id/WMO id**	**Number of days of transmission lost**	**Cost of replacement**	**Remarks (e.g. whether photos have been taken)**
	Latitude	**Longitude**						
2013	2°S	82°W	Satellite-tracked SVP drift buoys	------	32692	3		tangled in nets fishermen
2013	1°S	82°W	Satellite-tracked SVP drift buoys	Drogue damage	32694	3		tangled in nets fishermen
Efforts taken against vandalism								
Awareness meeting Organised								
Suggestions (if any)								
Photos on Vandalism			(please include pictures if available; and email electronic versions to support@jcommops.org)					

Note: It is recommended that this form is filled in electronically and returned electronically also to JCOMMOPS (support@jcommops.org). A template of the form can be downloaded from the following ftp site: ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-Buoy-Vandalism-Reports.doc

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APPENDIX G

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	FINLAND
Year	2013

1. CURRENT PROGRAMME:

A. Agency or programme	Finnish Meteorological Institute (FMI) Wave buoy network	
Number and type of buoys Datawell WaveRiders	(a) deployed during the year	4
	(b) operational as of 31 August	4
	(c) reporting on GTS as of 31 August	0
Purpose of programme	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	
Main deployment areas	Main sea areas around Finland: Gulf of Finland, Northern Baltic Proper, Bothnian Sea, Bay of Bothnia	
Vandalism incidents	(a) Number of incidents If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

B. Agency or programme	FMI Moored SST buoys	
Number and type of buoys Moored MetOcean iSVP buoys	(a) deployed during the year	4
	(b) operational as of 31 August	4
	(c) reporting on GTS as of 31 August	0
Purpose of programme	(a) operational	[x]
	(b) met / ocean research	
	(c) developmental	
Main deployment areas	South coast of Finland (Gulf of Finland)	
Vandalism incidents	(a) Number of incidents If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

C. Agency or programme	FMI Utö atmospheric and marine research station	
Number and type of buoys Modified Metocean iSVP buoy with several CT instruments at different depths along an inductive modem cable moored near the island Utö	(a) deployed during the year	1
	(b) operational as of 31 August	0
	(c) reporting on GTS as of 31 August	0
Purpose of programme	(a) operational	[]
	(b) met / ocean research	[x]
	(c) developmental	[]
Main deployment areas	Archipelago Sea	
Vandalism incidents	(a) Number of incidents If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

D. Agency or programme	FMI Argo floats in the Baltic Sea	
Number and type of buoys APEX profiler with IRIDIUM RUDICS connection	(a) deployed during the year	1
	(b) operational as of 31 August	1
	(c) reporting on GTS as of 31 August	-
Purpose of programme	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[]
Main deployment areas	Bothnian sea	
Vandalism incidents	(a) Number of incidents If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

E. Agency or programme	FMI Argo floats The hydrography of the Arctic Mediterranean – Argo (Argos Program Number Nº 4046)	
Number and type of buoys APEX floats	(a) deployed during the year	2
	(b) operational as of 31 August	6
	(c) reporting on GTS as of 31 August	0
Purpose of programme	(a) operational	[]
	(b) met / ocean research	[x]
	(c) developmental	[]
Main deployment areas	Nordic Seas	
Vandalism incidents	(a) Number of incidents If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

F. Agency or programme	FMI Ice service and MyOcean-2 WP14 Baltic Sea Ice	
Number and type of buoys MetOcean iSVP	(a) deployed during the year	5
	(b) operational as of 31 August	0
	(c) reporting on GTS as of 31 August	0
Purpose of programme	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[]
Main deployment areas	Gulf of Bothnia (4), Gulf of Finland (1)	
Vandalism incidents	(a) Number of incidents If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

G. Agency or programme	Turku University of Applied Sciences	
Number and type of buoys Buoy-based vertical profiler YSI6952 (parameters: temperature, salinity, turbidity and dissolved oxygen, cyanobacteria and chlorophyll concentrations)	(a) deployed during the year	1
	(b) operational as of 31 August	1
	(c) reporting on GTS as of 31 August	0
Purpose of programme	(a) operational	[]
	(b) met / ocean research	[x]

	(c) developmental	[]
Main deployment areas	Archipelago Sea	
Vandalism incidents	(a) Number of incidents If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

2. PLANNED PROGRAMMES:

Agency or programme	FMI Ice service and MyOcean-2 WP14 Baltic Sea Ice	
Number and type of buoys MetOcean iSVP	planned for deployment in the next 12 months	5
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[]
Main deployment areas	Gulf of Bothnia	
Agency or programme	FMI contribution to IABP	
Number and type of buoys MetOcean iSVP	planned for deployment in the next 12 months	2
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	]
	(b) met / ocean research	[x]
	(c) developmental	[]
Main deployment areas	Arctic Ocean	

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	• • •
(b) Instrumentation	• • •
(c) Others	• • •

4. PUBLICATIONS (on programme plans, technical developments, QC reports, etc.):

Ref	*Title*	*Type*[5]
1D	Petra Roiha, Tero Purokoski and Simo Siiriä (2013): Finnish Meteorological Institute's Argo Float Experiments in the Baltic Sea http://boos.org/index.php?id=109&tx_ttnews[tt_news]=70&tx_ttnews[backPid]=10&cHash=c8382c6853	1
2		
3		
4		

(repeat rows in the table above as necessary)

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	• • •
(b) Communications	• • •
(c) Buoy lifetimes	• • •
(d) Other	• • •

Note: It is recommended that this form is filled in electronically and returned also electronically to the Secretariat. A template of the form can be downloaded from the following ftp site:

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[5]: Types of publications: (1) Implementation, (2) Operations, (3) Instrumentation, (4) Quality Management, (5) Data Management, (6) Data collection and/or location, (7) Data use, (8) Other

ANNEX - FORM FOR REPORTING INCIDENTS OF VANDALISM ON DATA BUOYS

Country								
Contact person e-mail								
Year	**Buoy Location**		**Type of Buoy (e.g. Tsunami / Met -Ocean Buoy/Drifter/ARGO floats/ Other)**	**Type of damage to buoy**	**Buoy id/WMO id**	**Number of days of transmission lost**	**Cost of replacement**	**Remarks (e.g. whether photos have been taken)**
	Latitude	**Longitude**						
Efforts taken against vandalism								
Awareness meeting Organised								
Suggestions (if any)								
Photos on Vandalism			(please include pictures if available; and email electronic versions to support@jcommops.org)					

Note: It is recommended that this form is filled in electronically and returned electronically also to JCOMMOPS (support@jcommops.org). A template of the form can be downloaded from the following ftp site: ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-Buoy-Vandalism-Reports.doc

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APPENDIX H

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	FRANCE
Year	1 July 2012 – 30 June 2013

This report concerns surface buoys only. Programmes using profilers (ARGO floats) are not described here.

PROGRAMMES

A. METEO-FRANCE

Number and type of buoys :

(a) 47 drifting buoys were deployed in last 12 months :

- 17 SVP-BS drifters (salinity measurements) with LPO and LOCEAN;
- 10 SVP-BTC (bathy measurements)
- 10 SVP-B in the North Tropical Atlantic
- 10 Marisonde GT (FGGE type buoy with bathy mesurements)

(b) 16 SVP were upgraded to SVP-B (Iridium) and deployed in Indian Ocean

In addition, Meteo-France operated 3 moored buoy stations (plus two others in co-operation with UKMO), four directional waveriders ;

(c) 50 buoys were operational at 30 June 2013 ;

(d) 50 buoys were reporting on GTS at 30 June 2013.

NB: The operational drifting buoys for the North Atlantic and the Mediterranean Sea are funded by E-SURFMAR (117 deployments in last 12 months, 113 operational and reporting on GTS at 30 June 2013).

Purposes of programme :

(a) Operational : to provide Weather Forecast Centres with oceanographic and meteorological observations in real time (E-

SURFMAR, French West Indies, IBPIO programme...) ;

(b) Research : to provide scientists with in-situ observations close to the air-sea interface ;

(c) Technical : to improve present materials (tests of new buoys, new sensors: compasses, barometers, conductivity probes, radiation sensors, sonic anemometer…). To validate wind, bathythermal and salinity measurements.

Main deployment areas :

North Atlantic.

Western Mediterranean Sea.

Indian Ocean.

Plans for the next 12 months :

Meteo-France will continue to operate drifting buoys in the Atlantic and Indian oceans through its contribution to the DBCP regional action groups (E-SURFMAR and IBPIO). The co-operation with the GDC will be pursued.

Meteo-France will continue to operate three ocean weather stations (one in West Indies and two in the Mediterranean Sea). The co-operation with the UK MetOffice to maintain the Brittany and Gascogne moored buoys will continue. The four waverider stations located in West Indies will be also maintained.

Other Meteo-France activities in the frame of the DBCP are described further (see paragraphs on technical developments and special comments).

B. INSU

LOCEAN (salinity drifters)

Number and type of buoys:

(a) 4 surpact salinity floats deployed (attached with SVP-BS PacificGyre or Metocean drifters)
(b) 10 Pacific Gyre SVP-BS drifters deployed: 5 in the western tropical Pacific Ocean (05-07/2013), 2 in the tropical Atlantic Ocean (May 2013), 3 in the North Atlantic subtropical gyre (August 2013).
(c) 3 SVP drifters deployed (september 2013) in the subtropical North Atlantic Ocean
(d) We also collaborate with ICM Spain for following and validating data of their salinity drifters (15 deployed), as well as with Meteo-France for validating data of Metocean SVP-BS drifters.

Purposes of programmes :

(a) Research : to understand, quantify and monitor the variability of near-surface salinity (in particular in regions with strong spatial variability due to river runoff or strong rainfall), in relation to GLOSCAL, an ESA project for the calibration/validation of the SMOS L-band radiometer mission. In this framework, small floats have also been used and developed to provide consistent data in order to better understand near-surface stratification, and at the same time, provide information on associated wave/SLP

conditions. The newest version, Surpact, developed in collaboration with SMRU, measures C/T at 4cm depth, surface wave spectra and SLP. Development are ongoing to estimate also rainrates on this float.

(b) Validation of past data from salinity drifters and transmission of the validated data to users through a website. We investigate more specifically daily cycles and rainfall-induced low salinity from the salinity drifters.

(c) Technical : to develop drifters able to measure surface salinity over a multi-month mission with little drifts.

Web sites : *http://www.locean-ipsl.upmc.fr/smos/drifters/*

Plans:

Deployments of 2 salinity drifters in the western tropical Atlantic (10/2013)
Deployment of 2 salinity drifters in south equatorial Indian Ocean (autumn 2013)
Deployment of 5 salinity drifters in equatorial Atlantic Ocean (May 2013)

3-5 surpact floats will be attached to some of these drifters.

C. CETMEF (Centre d' Etudes Techniques Maritimes Et Fluviales)

Number and type of buoys :

(a) CETMEF operates a network of 4 scalar buoys and 20 directional buoys (DATAWELL).
(b) 24 buoys were operational at 30 June;
(c) 22 were reporting on GTS at 30 June.

Purpose of programme :

Operational : to maintain a long duration wave measurement network along the coast of the French mother and overseas territories coasts and to centralize the French wave data.

Deployment area :

French coasts, Saint Pierre & Miquelon, Guyana and La Reunion Island.

Plans for the next 12 months :

The network will be maintained. CETMEF plans to complete it with three directional buoys. Real time data are available on the Internet at

http://candhis.cetmef.developpement-durable.gouv.fr and on the GTS thanks to Meteo-France.

D. IRD - French participation to PIRATA – (in cooperation with Meteo-France) and TACE-CLIVAR + AMMA2 + ALOC-GG + EU PREFACE programmes (international collaborations)

PIRATA:

Number and type of buoys:

IRD has been operating from 1997 a network of 5 Atlas buoys in the tropical Atlantic in co-operation with NOAA/PMEL; they are maintained yearly.

All the buoys have been replaced in May-June 2013 during the PIRATA-FR23 cruise carried out between Dakar (Sénégal) and Abidjan (Côte d'Ivoire).

An additional Atlas buoy has also been deployed at 6°S-8°E in June 2013 that will be maintained as the PIRATA Southeastern Extension of the PIRATA network. This buoy has already been deployed during a one-year test period in 2006-2007 (during the EGEE 3 and EGEE 5 cruises).

Thus, 6 Atlas buoys under French responsibility are reporting on GTS from June 2013 in the central and eastern tropical Atlantic.

One current meter mooring (ADCP) is maintained at 23°W-Equator by IRD from about ten years. This mooring has been replaced in October 2012 during an IFM-GEOMAR cruise (on the MERIAN). It will be replaced in 2014.
One other current meter mooring (ADCP) deployed at 10°W-Equator from June 2006 is replaced every two years and has been replaced during the PIRATA-FR22 cruise in March 2012. It will be replaced in 2014.

The CO_2 sensor and an oxygen optode associated to the ATLAS buoy at 10°W-6°S from in June 2006 installed during the EGEE 3 cruise), have been replaced in May 2013 during the PIRATA FR23 cruise. A 2^{nd} CO_2 sensor and an oxygen optode, initially installed on the ATLAS buoy at 38°W-8°N in April 2008 during a Brazilian PIRATA cruise, have been replaced in June 2013 during the yearly PIRATA BR XIV cruise. Both systems are under IRD responsibility (PI: N.Lefevre).

In May 2013 during the PIRATA-FR23 cruise, 3 surface drifters (SVP-BS PacifiGyres equipped with Surplas) have been deployed between 23°W and 10°W close to the equator.

Purposes of programme:

The PIRATA programme is an extension of the TAO array in the Tropical Atlantic. Contributions are from Brazil, France and USA, with collaborations with Germany.

(a) Operational: to provide oceanographic and meteorological observations in real time to Weather Forecast Centres as well as to ocean global circulation modes (e.g. MERCATOR);
(b) Research: to describe and understand the evolution of SST and salinity, of the fugacity of CO_2 and of dissolved oxygen concentration, upper ocean thermal structure and air-sea fluxes of momentum, heat and fresh water in the Tropical Atlantic.

Web site: *http://www.ifremer.fr/ird/pirata/*

Deployment area:

Tropical Atlantic Ocean, the 6 ATLAS buoys under French responsibility are located at: along the equator at 23°W, 10°W and 0°E, and at 10°W- 6°S, 10°W- 10°S, 8°E-6°S.

Plans for the next 12 months:

The tide gauge at São Tomé will be replaced in October 2013 (fully renewed with a INSU system). The meteorological station at São Tomé will be definitely stopped and sensors retrieved during the October 2013 operations.

IRD will continue to yearly maintain the six PIRATA ATLAS buoys and the two currentmeter moorings located in the eastern equatorial Atlantic, during French PIRATA dedicated cruises, and also in close collaboration with USA (NOAA/PMEL & AOML and RSMAS) and Germany (IFM/GEOMAR).

The next French PIRATA cruise should take place in the tropical Atlantic Ocean in April-May-June 2014. An additional ADCP mooring at 0°E-0°N should be deployed, in the framework of the EU PREFACE program that will be launched by end 2013.

E. SHOM (Hydrographic and Oceanographic Service of the Navy)

Number and type of buoys:

(a) 30 drifting buoys owned by SHOM were deployed in last 12 months:
10 Davis Drifter (lagrangian drifters for measuring water currents within one meter of sea surface);
10 WOCE (World Ocean Circulation Experiment) buoys drogued at 15 m;
6 WOCE (World Ocean Circulation Experiment) buoys drogued at 75 m;
4 SC40-ITP drifters (surface drifters with 120m or 200m thermistor string)

(b) 1 buoy was operational at 30 June 2013;

Purposes of program :

(a) to get oceanic data (current and temperature in depth) that could be introduced in real time into prediction models.

Deployment area :

Bay of Biscay

Plan for the next 12 months :

- 20 drifting buoys will be deployed in the next 12 months.

TECHNICAL DEVELOPMENTS

Instrumentation

(i) Meteo-France continues to participate in the evaluation of SVP pressure drifters. In parallel to the use of drifters, Meteo-France continuously surveys the performances of air pressure measurement for almost of the drifters of that kind deployed over the World Ocean.

(ii) The evaluation of SVP-B drifters fitted with a conductivity sensor is going on (co-operation between Meteo-France and LOCEAN)

(iii) Meteo-France is participating in the evaluation of drifters fitted with thermistor string SVP-BTC.

(iv) Meteo-France contributes to the DBCP Pilot Projects: Iridium and GHRSST.

PUBLICATIONS (programme plans, technical developments, QC reports, data studies...)

Boutin, J., N. Martin, G. Reverdin and X. Yin. Near-surface freshening inferred from SMOS and ARGO salinity: impact of rain. Ocean Sciences. Special Issue Earth Observation for ocean-atmosphere interactions Science.

Brandt, P., G. Caniaux, B.Bourlès, A.Lazar, M.Dengler, A.Funk, V.Hormann, H.Giordani and F.Marin, Equatorial upper-ocean dynamics and their interaction with the West African monsoon, Atmospheric Science Letters, 12 (1), p. 24-30. ISSN 1530-261X, 2011.

Cabanes, C., A. Grouazel, K. von Schuckmann, M. Hamon, V. Turpin, C. Coatanoan, S. Guinehut, C. Boone, N. Ferry, G. Reverdin, S. Pouliquen, and P.-Y. Le Traon, 2012,
The CORA dataset: validation and diagnostics of ocean temperature and salinity in situ measurement. Ocean Sci. Discuss., 9, 1273-1312, 2012.

Caniaux, G., H. Giordani, J.L. Redelsperger, M. Wade, B. Bourlès, D. Bourras, G. de Coëtlogon, Y. du Penhoat, S. Janicot, E. Key, N. Kolodziejczyk, L. Eymard, J. Jouanno, A. Lazar, M. Leduc-Leballeur, N. Lefèvre, F. Marin, H. Nguyen, et G. Parard : Les avancées d'AMMA sur les interactions océan-atmosphère. La Météorologie, numéro spécial AMMA, 17-24, octobre 2012.

Da-Allada, C. Y., G. Alory, Y. du Penhoat, E. Kestenare, F. Durand, and N. Hounkonnou, Seasonal mixed-layer salinity balance in the tropical Atlantic Ocean: Mean state and seasonal cycle, in press in J. Geophys. Res., doi:10.1029/2012JC008357, 2013.

Giordani, H., G. Caniaux, and A. Voldoire, 2013: Intraseasonal mixed layer heat budget in the equatorial Atlantic during the cold tongue development in 2006. J. Geophys. Res.,118,650-671,doi:10.1029/2012JC008280.

Hummels, R., M. Dengler, and B. Bourlès, Seasonal and regional variability of upper ocean diapycnal heat flux in the Atlantic Cold Tongue, Progress in Oceanography, 111, p. 52-74. ISSN 0079-6611, 2013.

Jouanno, J., F. Marin, Y. du Penhoat and J.-M. Molines : Intraseasonal modulation of the surface cooling in the Gulf of Guinea. J. Phys. Oceanogr., in press, doi: 10.1175/JPO-D-12-053.1, 2013.

Lefevre, N., and Merlivat L., Carbon and oxygen net community production in the eastern tropical Atlantic estimated from a moored buoy. Global Biogeochem. Cycles, 26, GB1009, doi:10.1029/2010GB004018, 2012

Lefèvre, N., G. Caniaux, S. Janicot, and A.K. Gueye, 2013 : Increased CO2 outgassing in February-May 2010 in the tropical Atlantic following the 2009 Pacific El Niño. J. Geophys. Res., 118, 1645-1657, doi:10.1002/jgrc.20107.

Lellouche, J.-M., O. Le Galloudec, M. Drévillon, C. Régnier, E. Greiner, G. Garric, N. Ferry, C. Desportes, C.-E. Testut, C. Bricaud, R. Bourdallé-Badie, B. Tranchant, M. Benkiran, Y. Drillet, A. Daudin, and C. De Nicola, Evaluation of real time and future global monitoring and forecasting systems at Mercator Océan. Ocean Sci. Discuss., 9, 1123-1185, 2012

Morisset, S., G. Reverdin, J. Boutin, N. Martin, X. Yin, F. Gaillard, P. Blouch, J. Rolland, J. Font, J. Salvador, 2012. Surface salinity drifters for SMOS validation. Mercator Ocean-Coriolis Quaterly Newsletter 44, April 2012.

Reverdin, G., S. Morisset, H. Bellenger, J. Boutin, B. Ward, N. Martin, P. Blouch, J. Rolland, F. Gaillard, and P. Bouruet-Aubertot. Near sea-surface T stratification from SVP drifters. JAOT-O, 2013.

Reverdin, G., S. Morisset, D. Bourras, N. Martin, A. Lourenço, J. Boutin, C. Caudoux, J. Font, J. Salvador. A SMOS surface drifter for air-sea interaction (SURPACT). Oceanography, April 2013.

Reverdin, G., S. Morisset, J. Boutin, N. Martin, M.-S. Martins, F. Gaillard, P. Blouch, J. Rolland, J. Font, J. Salvador, and D. Stammer. Validation of surface salinity from drifters. soumis, JAOT-O.

G. Reverdin, S. Morisset, J. Boutin, N. Martin, F. D'Ovidio, L. Marié, F. Gaillard, V. Thierry, D. Diverres, G. Alory, J. Font, J. Salvador, S. Le Reste, X. André, H. Claustre, F. Nencioli, B. Ward, 2013. European contributions to SPURS (Salinity Processes in the Upper Ocean regional Study): research cruise Strasse, Argo and Provbio floats, surface drifters, ships of opportunity. Mercator-Coriolis Newsletter. Avril 2013.

SO PIRATA, IRD – Yearly PIRATA cruise reports and PIRATA international meetings.

Météo-France – Centre de Météorologie Marine, E-SURFMAR Data Buoys Monthly

report.

SPECIAL COMMENTS

(a) Buoy QC

(i) The Centre de Météorologie Marine (CMM) of Meteo-France continues to operate quality control procedures on drifting buoys data. Warning messages are sent to the *buoy-qir@vedur.is* mailing list of Internet when a problem appears (e.g. bad location detected) or when a modification seems needed (i.e. to recalibrate or to remove a sensor from GTS) via JCOMMOPS interface. Statistics on comparisons with analysis fields are set up for each buoy.

(ii) Buoy data QC tools developed by Meteo-France are available on the Internet (*http://www.meteo.shom.fr/qctools*) to help buoy operators to check their buoys : Real time observations from buoys are subject to routine quality monitoring. Besides monthly statistics provided by various meteorological centres for individual buoys, tools are used by Meteo-France to identify buoys reporting dubious data as quickly as possible.

(b) Buoy data

(i) The CMM reports the wave data collected by CETMEF in real time onto the GTS.

(ii) Since the 1st of January 2002, Meteo-France has been providing the Coriolis Data Centre with surface current data computed thanks to SVP drifter tracks. CORIOLIS contributes to the French operational oceanographic project with in-situ data. Buoy positions, get from the GTS, are interpolated every 3 hours. Surface current data are computed over 6 hours, on a weekly basis. Data are flagged with drogue presence indexes. Wind speed and wind stress data from ECMWF analysis model coupled with sampled surface current data has been provided too from mid-2004.

(c) Other activities

(i) For the eighteenth consecutive year, Meteo-France funded 10 barometers to be added to SVP drifters deployed in the Tropical Indian Ocean, each year in November. Twenty other upgrades were funded in 2013. These drifters are devoted to the Southern Ocean, south of 40°S in the Indian Ocean, as a principle. These 30 buoys of 2013 are upgraded to Iridium. These actions will be renewed in 2014.

(ii) IRD, also contributes to the deployment of SVP (3 SVP-BS in 2013) buoys and ARGO profilers (6 ARVOR in 2013) in the equatorial Atlantic

during the PIRATA servicing cruises and also in the framework of the CORIOLIS programme.

(iii) During the PIRATA cruise, IRD provides CTD (72 in 2013) and XBT (54 in 2013) profiles in quasi-real time from the vessel for operational oceanography (MERCATOR).

APPENDIX I

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	INDIA
Year	Aug 2012 – July 2013

1. CURRENT PROGRAMME:

Agency or programme	**National Institute of Ocean Technology**	
Number and type of buoys	(a) deployed during the year	33 buoys, including Coastal, Met-Ocean, OMNI and Tsunami buoys
	(b) operational as of 31 August	24
	(c) reporting on GTS as of 31	17
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	Bay of Bengal and Arabian Sea	
Vandalism incidents	3	

Agency or programme	**National Institute of Oceanography /Indian National Centre for Ocean Information Services**	
Number and type of buoys	(a) deployed during the year	40 SVP-B buoys
	(b) operational as of 31 August	
	(c) reporting on GTS as of 31	
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	Bay of Bengal and Arabian Sea	
Vandalism incidents	NIL	

2. PLANNED PROGRAMMES:

Agency or programme	**National Institute of Ocean Technology**	
Number and type of buoys	Planned for deployment in the next 12 months	24 buoys (including 4 coastal, 12 OMNI,4 met-Ocean and 4 Tsunami Buoys)
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	Bay of Bengal and Arabian Sea	

Agency or programme	**National Institute of Oceanography /Indian National Centre for Ocean Information Services**	
Number and type of buoys	Planned for deployment in the next 12 months	40 SVP-B buoys
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	Bay of Bengal and Arabian Sea	

3. TECHNICAL DEVELOPMENTS:

The Ocean Observation Systems (OOS) group of NIOT is engaged in establishment and maintenance of Data Buoy Network for measurement of met-ocean parameters in Indian Seas to monitor the Marine Environment and to improve weather and Ocean Forecasts.

3.1.1 OMNI Buoy Network

OMNI buoy network at 12 deep sea locations was established successfully as recommended by the National expert committee. OMNI buoys are the state-of-the-art Moored buoys with subsurface measurements extending up to 500m depth using induction mooring system. This work was executed in phases considering procurement process and ship time availability.

3.1.2 Met-Ocean data buoys attached with surface sensors in coastal region - Coastal Buoys

Four coastal buoys have been deployed Andaman, Agatti, Krishnapattinam and Goa. These coastal buoys are equipped with sensors to measure meteorological and oceanographic parameters. The mooring systems are specially designed to withstand site specific conditions. All these coastal buoys deployed with INDIAN SATELLITE (INSAT)/GPRS communication to transmit the data.
At Andaman buoy system remained at site and withstood hostile conditions. Two coastal buoys at Andaman and Lakshadweep also support coral reef monitoring programme. At Andaman an underwater survey in the buoy deployed locations 3D underwater videography was conducted for the first time.

3.1.3 Tsunami buoy system

NIOT is maintaining more than required number of Tsunami Buoy systems. Tsunami buoy is being deployed with indigenous surface buoy system consisting of in-house CPU and other components. Among 12 countries engaged in tsunami buoy monitoring, this is one among them along with USA pursuing indigenous developmental activities. Systematic technological advancements are leading to better performance of NIOT integrated tsunami Buoy systems which are using INMARSAT communication.

3.1.4 Indigenous Buoy Data Acquisition System IDAS:

Necessary steps were initiated to upgrade the existing indigenous buoy system to measure all the parameter such as subsurface-CT up to 500m, radiation, rainfall etc similar to OMNI buoy system. IDAS is developed into four variants such as Met-Ocean, Wave, Tsunami and OMNI with INMARSAT/INSAT/GSM/GPRS communication. They are working at sea fitted to buoys and working satisfactorily.

3.1.5 Tracker for BPR system

During the retrieval of BPR for tsunami buoy system a new arrangement was done by incorporating RF beacon system. This has drastically saved search time and ease of tracking when unit pops up to the surface.

3.1.6 UHF position transmitter

In order to closely monitor the buoy immediately after deployment from vessel, an UHF system was designed to monitor the buoy position during deployment and to alert in case of any drift and this system was successfully interfaced with surface buoy system. This facility enabled to receive the buoy position data every minute so that settling of surface buoy can be closely monitored and failure if any can be attended immediately instead of waiting for buoy normal transmission time through satellite.

3.1.7 Mooring analysis and comparison with tension recorder data

Prior to the deployment of mooring, the survival mooring analysis is carried out to ensure the mooring configuration is capable of resisting extreme storms and remain on location. The analysis results were compared and found in compliance with the readings of tension recorder fitted on the mooring at the depth of 5m from the surface buoy. ORCAFLEX and CABLE – WHOI software are being in use to analyze the expected load on the buoy moorings.

3.2 Buoy Data

3.2.1 Data Transmission

All deep sea moored buoy uses Inmarsat-C /INSAT communication and GSM/GPRS communication for coastal buoys to transmit data. Performances of these communications for data receiving rates of both are over 95%.

Data are regularly transmitted and internally stored in buoy electronics. It supplements the lost of satellite transmitted data due to weather or communication failure so as to ensure the continuity of data.

3.2.2 Data Quality

ADDRESS (Advanced Data REception and analysiS System)

A new data reception and QC software was developed. The software has capabilities on reporting, data reception, inspection, analysis, transforming, and modeling and to maintain inventory. The QC methodology is in line with international standards. This was inaugurated by Secretary MoES and Chairman NIOT –GC on 6 September 2012.

4. PUBLICATIONS **(on programme plans, technical developments, QC reports, etc.):**

R. Venkatesan, V. R. Shamji, G. Latha, Simi Mathew, R. R. Rao, Arul Muthiah, M. A. Atmanand New in-situ ocean subsurface time series measurements from OMNI buoy network in the Bay of Bengal Current Science 104,9, 10 May 2013, pp 1166-1177.
Vimala J, Latha G, Venkatesan R Application of Soft Computing Tools for Wave Prediction at Specific Locations in the Arabian Sea using Moored Buoy observations, International Journal of Ocean and Climate Systems 2, 3 2012, pp 255-264.
A. K. Shukla , K. N. Babu , R. P. Prajapati , N. M. Suthar , Ajai , A. Sinha ,A. M. Saifee , S. N. Satashia , M. Arul Muthiah & R. Venkatesan (2013): An Ocean CAL-VAL Site at Kavaratti in Lakshadweep for Vicarious Calibration of OCM-2 and Validation of Geophysical Products—Development and Operationalization, Marine Geodesy, 36:2, 203-218.

Note: It is recommended that this form is filled in electronically and returned also electronically to the Secretariat. A template of the form can be downloaded from the following ftp site:

ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-National-Reports.doc

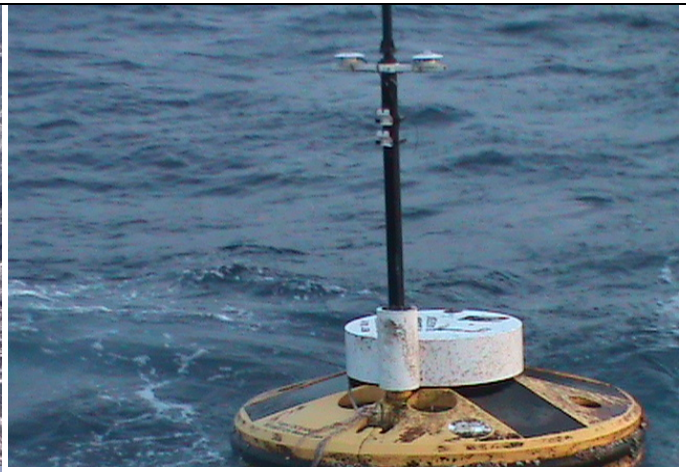
DATA BUOY CO-OPERATION PANEL (DBCP)

FORM FOR REPORTING INCIDENTS OF VANDALISM ON DATA BUOYS

Country			INDIA					
Contact person e-mail			venkat@niot.res.in, dr.r.venkatesan@gmail.com,					
Year	**Buoy Location**		**Type of Buoy (e.g. Tsunami / Met -Ocean Buoy/Drifter/ARGO floats/ Other)**	**Type of damage to buoy**	**Buoy id /WMO id**	**Number of days of transmission lost**	**Cost of replacement**	**Remarks (e.g. whether photos have been taken)**
	Latitude	**Longitude**						
2013	15°23'N	73°45'E	Met –Ocean buoy	sensors damaged	23170	240	-	Photo available
2012	14°12'N	82°54'E	Met-Ocean Buoy	Surface sensors	23101	354	-	Photo available
2012	08°10'N	85°30'E	Met-Ocean Buoy	Few surface sensors	23460	246	-	Photo available
2012	11°00'N	86°32'E	Met-Ocean Buoy	Few surface sensors	23459	-	-	Photo available
2012	20°16'N	71°52'E	Met-Ocean Buoy	Upper mast damages.	23493	284	-	Photo available
2012	11°00'N	89°30'E	Tsunami buoy	Broken upper mast	-	224	-	Photo available
2012	14°39'N	89°29'E	Tsunami buoy	Radar reflector damaged	-	337	-	Photo available
2012	15°20'N	90°09'E	Tsunami buoy	Radar reflector lost	-	171	-	Photo available
Efforts taken against vandalism			Organized regional meeting involving countries in bay of Bengal, associated with BOBP IGO and BOBLME distributed the posters, distributed the hand-outs and assisted the fishermen in understanding the use of buoys in vernacular language. Informative stickers fitted to buoys, disseminated to fishermen associations Ports ministry of fisheries and many other sea users. Refer Annexure -I					

	
Awareness meeting Organized	• As a follow up action, BoBP-IGO had approached NIOT to conduct an awareness programme for the fishermen community during the celebration of the 10th anniversary existence of the Association of Deep Sea Going Artisanal Fishermen (ADSGAF) at Thuthoor Village, Kanyakumari District from 16th to 20th July 2012 • A National Workshop on Deep Sea Fisheries: Assessing the Potentialities and Needs - an awareness programme, jointly organized by the Association of Deep Sea Going Artisanal Fishermen (ADSGAF) and BPBP-IGO in association with NIOT at Chennai, was conducted from 6-8th August 2012 at Chennai. • Bay of Bengal Large Marine Ecosystem (BOBLME) Project published an article “Protecting our Buoys” in the BOBLME Newsletter 2012. This is in response to the Workshop on Best Practices for Instruments and Methods of Ocean Observation organized by NIOT in association with UN Bodies such as WMO, JCOMM, DBCP and Regional Organizations such as BoBP and BOBLME during 19-21st November 2012 at NIOT, Chennai. This newsletter was projected in the Project Steering Committee of BOBLME during 20-21st March 2013. • Bay of Bengal programme Inter Governmental organisation working for Bangaldesh India Maldives and Srilanka is supporting efforts to bring awareness on protection of buoy systems. During the Fifth Regional Training Course on Code of Conduct for Responsible Fisheries conducted by the BOBP-IGO in Chennai on

	2 February 2013 • Refer Annexure –I
Suggestions (if any)	
Photos on Vandalism	   

Note: It is recommended that this form is filled in electronically and returned electronically to JCOMMOPS (support@jcommops.org). A template of the form can be downloaded from the following ftp site: ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-Buoy-Vandalism-Reports.doc

ANNEXURE –I

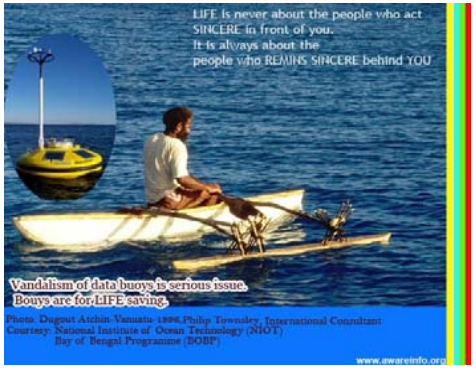
PROTECTING OUR BUOYS

IN RESPONSE TO A MAJOR CONCERN expressed by the UN General Assembly, regional fisheries management organizations and oceanographic researchers – about damage to ocean observation buoys from vandalism and mishandling, the Food and Agriculture Organisation, the Intergovernmental Oceanographic Commission and the World Meteorological Organization have been working to develop measures to protect them.

As a concrete step, BOBLME, the Bay of Bengal Programme - Inter Governmental Organisation (BOBP-IGO) and India's National Institute of Ocean Technology (NIOT) have produced and disseminated a multilingual hand-out and a poster to generate awareness among fishers in the Bay of Bengal about protecting observation buoys.

The posters are worded in 16 languages, including nine from India, as well as those of the other seven BOBLME countries.

7 December 2012, BOBLME Newsletter



Fifth Regional Training Course on Code of Conduct by the BOBP-IGO in Chennai on 2 February 2013

APPENDIX J

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	**JAPAN**
Year	**2013**

1. CURRENT PROGRAMME:

Agency or programme	**Japan Meteorological Agency**	
Number and type of buoys	(a) deployed during the year	(Type 1) 16 drifting buoys with air pressure, SST, wave height and wave period sensors (Type 2) 27 profiling floats (Type 3) 3 Tsunami buoys
	(b) operational as of 31 August	(Type 1) 5 (Type 2) 48 (Type 3) 3
	(c) reporting on GTS as of 31 August	(Type 1) 5 (Type 2) 48 (Type 3) 3
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	(Type 1) weather and sea condition monitoring (Type 2) ocean state and climate monitoring (Type 3) Tsunami monitoring
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	(Type 1, 2) seas around Japan (Type 3) the Pacific Ocean off the coast of Tohoku, Japan	
Vandalism incidents	(a) Number of incidents N/A	

Agency or programme	**Japan Agency for Marine-Earth Science and Technology**	
Number and type of buoys	(a) deployed during the year	(Type1) 1 Surface Velocity Profiler(SVP) (Type2) 1 Polar Ocean Profiling system (POPS) (Type3) 3 surface moorings for meteorological and subsurface oceanographic(3 TRITON buoys) (Type4) 51 profiling floats (Type5) 14 oceanographic drifters
	(b) operational as of 31 August	(Type1) 1 (Type2) 1 (Type3) 15 (12 TRITON buoys, 3 RAMA buoys) (Type4) 204 (Type5) 0
	(c) reporting on GTS as of 31 August	(Type1) 1 (Type2) 0 (Type3) 15 (12 TRITON buoys, 3 RAMA buoys) (Type4) 174 (Type5) 0
Purpose of programme	(a) operational	[x]

(check/uncheck boxes using [_] or [x] as appropriate)	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	(Type1, 2) Arctic Ocean (Type3) Western tropical Pacific as TAO/TRITON array and the eastern Indian Ocean as RAMA array (Type4) North Pacific and Southern Ocean for floats	
Vandalism incidents	(a) Number of incidents 2 (see annex for details)	

Agency or programme	**Seikai National Fisheries Research Institute, Fisheries Research Agency**	
Number and type of buoys	(a) deployed during the year	4 surface drifters
	(b) operational as of 31 August	3
	(c) reporting on GTS as of 31	N/A
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	oceanographic research
	(c) developmental	[x]
Main deployment areas	The East China Sea, Tsushima Straight and the Japan Sea	
Vandalism incidents	(a) Number of incidents N/A	

Agency or programme	**Okinawa Institute of Science and Technology**	
Number and type of buoys	(a) deployed during the year	(Type1) 41 surface drifters (Type2) 6 profiling float
	(b) operational as of 31 August	(Type1) 9 (Type2) 6
	(c) reporting on GTS as of 31 August	N/A
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	Current circulation research
	(c) developmental	[x]
Main deployment areas	(Type1, 2) Mainly Okinawa Trough	
Vandalism incidents	(a) Number of incidents N/A	

2. <u>PLANNED PROGRAMMES:</u>

Agency or programme	**Japan Meteorological Agency**	
Number and type of buoys	planned for deployment in the next 12 months	(Type 1) 16 drifting buoys with air pressure, SST, wave height and wave period sensors (Type 2) 27 profiling floats
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	(Type 1) weather and sea condition monitoring (Type 2) ocean state and climate monitoring
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	(Type1, 2) seas around Japan	

Agency or programme	**Japan Agency for Marine-Earth Science and Technology**	
Number and type of buoys	planned for deployment in the	(Type1) 6 SVP

	next 12 months	(Type2) 13 meteorological and subsurface oceanographic surface moorings (9 TRITON buoys, 3 RAMA buoys and 1 JKEO buoys) (Type3) 50 profiling floats
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	(Type1) Arctic Ocean for SVP and POPS (Type2) Western tropical Pacific as TAO/TRITON array and the eastern Indian Ocean as RAMA array, Kuroshio extension region for JKEO (Type3) North Pacific and Southern Ocean for floats	

Agency or programme	**Seikai National Fisheries Research Institute, Fisheries Research Agency**	
Number and type of buoys	planned for deployment in the next 12 months	4 surface drifters
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	oceanographic research
	(c) developmental	[x]
Main deployment areas	The East China Sea, Tsushima Straight and the Japan Sea	

Agency or programme	**Okinawa Institute of Science and Technology**	
Number and type of buoys	planned for deployment in the next 12 months	10 profiling float
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	Current circulation research
	(c) developmental	[x]
Main deployment areas	Mainly Okinawa Trough	

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	
(b) Instrumentation	
(c) Others	

4. PUBLICATIONS (on programme plans, technical developments, QC reports, etc.):

Ref	***Title***	***Type***[6]
1		
2		
3		
4		

(repeat rows in the table above as necessary)

[6]: Types of publications: (1) Implementation, (2) Operations, (3) Instrumentation, (4) Quality Management, (5) Data Management, (6) Data collection and/or location, (7) Data use, (8) Other

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	
(b) Communications	
(c) Buoy lifetimes	
(d) Other	

Note: It is recommended that this form is filled in electronically and returned also electronically to the Secretariat. A template of the form can be downloaded from the following ftp site:
ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-National-Reports.doc

APPENDIX K

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	REPUBLIC OF KOREA
Year	2013

1. CURRENT PROGRAMME:

Agency or programme	Korea Meteorological Administration	
Number and type of buoys	(a) deployed during the year	10 Moored Buoys
	(b) operational as of 31 August	37 Moored Buoys
	(c) reporting on GTS as of 31 August	10 Moored Buoys
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Regional sea around the Korea peninsula	
Vandalism incidents		
Agency or programme	National Institute of Meteorological Research	
Number and type of buoys	(a) deployed during the year	16 Argo floats
	(b) operational as of 31 August	69 Argo floats
	(c) reporting on GTS as of 31 August	69 Argo floats
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	The East Sea and Northwest Pacific Ocean	
Vandalism incidents		
Agency or programme	Korea Hydrographic and Oceanographic Administration	
Number and type of buoys	(a) deployed during the year	6 Drifters
	(b) operational as of 31 August	1 Drifter 19 Moored Buoys
	(c) reporting on GTS as of 31 August	1
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Southern and Eastern coast around Republic of Korea	
Vandalism incidents		
Agency or programme	Korea Institute of Ocean Science & Technology	
Number and type of buoys	(a) deployed during the year	0
	(b) operational as of 31 August	18 Argo floats
	(c) reporting on GTS as of 31 August	18 Argo floats
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	The East Sea	
Vandalism incidents		

2. PLANNED PROGRAMMES:

Agency or programme	Korea Meteorological Administration	
Number and type of buoys	planned for deployment in the next 12 months	8 Moored Buoys
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Regional sea around the Korea peninsula	
Agency or programme	National Institute of Meteorological Research	
Number and type of buoys	planned for deployment in the next 12 months	16 Argo floats
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	The East Sea and Northwest Pacific Ocean	
Agency or programme	Korea Hydrographic and Oceanographic Administration	
Number and type of buoys	planned for deployment in the next 12 months	6 Drifters 4 Moored Buoys
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Southern and Eastern coast around Republic of Korea	
Agency or programme	Korea Institute of Ocean Science & Technology	
Number and type of buoys	planned for deployment in the next 12 months	1 Argo float
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	The East Sea	

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	• • •
(b) Instrumentation	• • •
(c) Others	• • •

4. PUBLICATIONS (on programme plans, technical developments, QC reports, etc.):

Ref	***Title***	***Type[7]***
1		
2		
3		
4		

(repeat rows in the table above as necessary)

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	• • •
(b) Communications	• • •
(c) Buoy lifetimes	• • •
(d) Other	• • •

Note: It is recommended that this form is filled in electronically and returned also electronically to the Secretariat. A template of the form can be downloaded from the following ftp site:

ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-National-Reports.doc

[7]: Types of publications: (1) Implementation, (2) Operations, (3) Instrumentation, (4) Quality Management, (5) Data Management, (6) Data collection and/or location, (7) Data use, (8) Other

ANNEX - FORM FOR REPORTING INCIDENTS OF VANDALISM ON DATA BUOYS

Country								
Contact person e-mail								
Year	**Buoy Location**		**Type of Buoy (e.g. Tsunami / Met -Ocean Buoy/Drifter/ARGO floats/ Other)**	**Type of damage to buoy**	**Buoy id/WMO id**	**Number of days of transmission lost**	**Cost of replacement**	**Remarks (e.g. whether photos have been taken)**
	Latitude	**Longitude**						
Efforts taken against vandalism								
Awareness meeting Organised								
Suggestions (if any)								
Photos on Vandalism			(please include pictures if available; and email electronic versions to support@jcommops.org)					

Note: It is recommended that this form is filled in electronically and returned electronically also to JCOMMOPS (support@jcommops.org). A template of the form can be downloaded from the following ftp site: ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-Buoy-Vandalism-Reports.doc

APPENDIX L

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	NEW ZEALAND
Year	2013

1. CURRENT PROGRAMME:

Agency or programme		
Number and type of buoys	(a) deployed during the year	0
	(b) operational as of 31 August	3
	(c) reporting on GTS as of 31 August	3
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[ ]
	(c) developmental	[ ]
Main deployment areas	Tasman Sea and two buoys on remote islands (one vandalised)	
Vandalism incidents	(a) Number of incidents: 1 If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

(repeat table above as often as necessary)

2. PLANNED PROGRAMMES:

Agency or programme		
Number and type of buoys	planned for deployment in the next 12 months	11
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[ ]
	(c) developmental	[ ]
Main deployment areas	Tasman Sea/Southern Ocean plus redeployment of island buoy	

(repeat table above as often as necessary)

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	• • •
(b) Instrumentation	• • •
(c) Others	• The MSNZ buoy programme suffered a severe setback due to the sad and untimely passing of Julie Fletcher. Buoy numbers have dwindled, but 5 MetOcean Iridium drifters have recently arrived in NZ and deployment is in the planning stage. 5 further Marlin-Yug Iridium drifter are on order, and deployment is likely to follow during the antipodean summer. One Marlin-Yug Argos drifter beached on Muriwai Beach this winter. It will be redeployed shortly.

4. PUBLICATIONS (on programme plans, technical developments, QC reports, etc.):

Ref	***Title***	***Type[8]***
1		
2		
3		
4		

(repeat rows in the table above as necessary)

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	• • •
(b) Communications	Our two remaining Marlin-Yug Argos drifters continue to operate, as does the MetOcean Iridium buoy on Antipodes Island. A further 10 Iridium drifters (5 MetOcean, 5 Marlin-Yug) will be deployed over the following 6 months or so. JouBeh Technologies and Scotia Weather Services will process data and insert onto the GTS.
(c) Buoy lifetimes	• MetOcean Iridium buoy on Antipodes Island has been operating since 14 Feb 2012, 18.7 months, while the two remaining Marlin-Yug Argos drifters have been operational since 18 June and 24 August 2012, 14.6 and 12.3 months respectively. All of these are clear improvements on recently deployed

[8]: Types of publications: (1) Implementation, (2) Operations, (3) Instrumentation, (4) Quality Management, (5) Data Management, (6) Data collection and/or location, (7) Data use, (8) Other

	drifters (see Julie Fletcher's report from last year)
(d) Other	• Nil • •

Note: It is recommended that this form is filled in electronically and returned also electronically to the Secretariat. A template of the form can be downloaded from the following ftp site:

ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-National-Reports.doc

DATA BUOY CO-OPERATION PANEL (DBCP)
ANNEX - FORM FOR REPORTING INCIDENTS OF VANDALISM ON DATA BUOYS

Country			New Zealand					
Contact person e-mail			Steve.knowles@metservice.com					
Year	**Buoy Location**		**Type of Buoy (e.g. Tsunami / Met -Ocean Buoy/Drifter/ARGO floats/ Other)**	**Type of damage to buoy**	**Buoy id/WMO id**	**Number of days of transmission lost**	**Cost of replacement**	**Remarks (e.g. whether photos have been taken)**
	Latitude	**Longitude**						
2013	34.9S	172.8E	MetOcean SVP-B	Severe - crush	555086		US$2500	Photo attached
Efforts taken against vandalism								
Awareness meeting Organised								
Suggestions (if any)								
Photos on Vandalism								

	 (please include pictures if available; and email electronic versions to support@jcommops.org)

Note: It is recommended that this form is filled in electronically and returned electronically also to JCOMMOPS (support@jcommops.org). A template of the form can be downloaded from the following ftp site: ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-Buoy-Vandalism-Reports.doc

APPENDIX M

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	SAUDI ARABIA
Year	2013

1. CURRENT PROGRAMME:

Agency or programme	Faculty of Marine Sciences, King Abdulaziz University	
Number and type of buoys	(a) deployed during the year (2013)	(1) Wave Rider
	(b) operational as of 31 August 2013	(1) Wave Rider
	(c) reporting on GTS as of 31 August	None
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas		
Vandalism incidents	(a) Number of incidents (None) If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

(repeat table above as often as necessary)

Agency or programme	Faculty of Marine Sciences, King Abdulaziz University	
Number and type of buoys	(a) deployed during the year (2012)	(1) Met/Ocean Buoy
	(b) operational as of 31 August 2013	None (Re-Deployment before end of year 2013)
	(c) reporting on GTS as of 31 August	None
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas		
Vandalism incidents	(a) Number of incidents (None) If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

(repeat table above as often as necessary)

Agency or programme	Faculty of Marine Sciences, King Abdulaziz University	
Number and type of buoys	(a) deployed during the year (2012)	(3) Tide Gauges
	(b) operational as of 31 August 2013	(3) Tide Gauges
	(c) reporting on GTS as of 31 August	None
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas		
Vandalism incidents	(a) Number of incidents (None) If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

(repeat table above as often as necessary)

Agency or programme	Faculty of Marine Sciences, King Abdulaziz University	
Number and type of buoys	(a) deployed during the year (2012)	6 (GPS Drifters)
	(b) operational as of 31 August 2013	None
	(c) reporting on GTS as of 31 August	None
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas		
Vandalism incidents	(a) Number of incidents (None) If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

(repeat table above as often as necessary)

2. PLANNED PROGRAMMES:

Agency or programme	Faculty of Marine Sciences, King Abdulaziz University	
Number and type of buoys	planned for deployment in the next 12 months	(1) Met/Ocean Buoy (Re-Deployment)
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	21.46°N 39.05°E (Offshore Jeddah, Red Sea)	

(repeat table above as often as necessary)

Agency or programme	Faculty of Marine Sciences, King Abdulaziz University	
Number and type of buoys	planned for deployment in the next 12 months	(10) GPS Drifters
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	Jeddah Coastal and Offshore Areas, Red Sea	

(repeat table above as often as necessary)

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	• • •
(b) Instrumentation	• • •
(c) Others	• • •

4. PUBLICATIONS (on programme plans, technical developments, QC reports, etc.):

Ref	*Title*	*Type*[9]
1	Jeddah Transect Project Final Report - Sub-Project IV (In Preparation)	1,2,3,4,5,6,7,8
2	Coastal Monitoring System for the Management of Jeddah Coastline (In Preparation)	1,2,3,4,5,6,7,8
3	Numerical Study of wind-generated waves in the Red Sea (In Preparation)	1,6,7,8
4	Verification and Application of a spectral wave model of the Red Sea with focus on coastal waters of Jeddah (In Preparation)	1,2,6,7,8
5	A baroclinic tide-surge model of the Red Sea (In Preparation)	1,2,3,6,7,8

(repeat rows in the table above as necessary)

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	• • •
(b) Communications	• • •
(c) Buoy lifetimes	• • •
(d) Other	• • •

Note: It is recommended that this form is filled in electronically and returned also electronically to the Secretariat. A template of the form can be downloaded from the following ftp site:

ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-National-Reports.doc

[9]: Types of publications: (1) Implementation, (2) Operations, (3) Instrumentation, (4) Quality Management, (5) Data Management, (6) Data collection and/or location, (7) Data use, (8) Other

ANNEX - FORM FOR REPORTING INCIDENTS OF VANDALISM ON DATA BUOYS

Country								
Contact person e-mail								
Year	**Buoy Location**		**Type of Buoy (e.g. Tsunami / Met -Ocean Buoy/Drifter/ARGO floats/ Other)**	**Type of damage to buoy**	**Buoy id/WMO id**	**Number of days of transmission lost**	**Cost of replacement**	**Remarks (e.g. whether photos have been taken)**
	Latitude	**Longitude**						
Efforts taken against vandalism								
Awareness meeting Organised								
Suggestions (if any)								
Photos on Vandalism			(please include pictures if available; and email electronic versions to support@jcommops.org)					

Note: It is recommended that this form is filled in electronically and returned electronically also to JCOMMOPS (support@jcommops.org). A template of the form can be downloaded from the following ftp site: ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-Buoy-Vandalism-Reports.doc

APPENDIX N

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	SOUTH AFRICA
Year	2013

1. CURRENT PROGRAMME:

Agency or programme	SAWS, UCT, DEA, BCRE, SAEON and CSIR (drifters on behalf of the Global Drifter Program.)	
Number and type of buoys	(a) deployed during the year	36xSVP-B
	(b) operational as of 1 July 2012	30xSVP-B 3 moored data buoys along South Africa's coast 7 moored wave rider buoys at South Africa's ports
	(c) reporting on GTS as of 1 July 2012	30xSVP-B
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x] – data buoys
Main deployment areas	South Atlantic Ocean / South Indian Ocean / Southern Ocean	

2. PLANNED PROGRAMMES:

Agency or programme	SAWS, UCT, DEA, BCRE, SAEON	
Number and type of buoys planned for deployment in the next 12 months	40 SVP-B	
	4 moored buoys as part of the SAMBA line	
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[]
Main deployment areas	South Atlantic Ocean / South Indian Ocean / Southern Ocean	

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	• SVP-B are mainly Clearwater buoys • The DEA data buoys are in-house designs • The CSIR wave buoys are directional and non-directional Datawell Waveriders
(b) Instrumentation	• SVP-B: SST and atmospheric pressure • Data buoys: current speed and direction, SST, surface wind speed and direction, atmospheric pressure and air temp. • Waveriders: wave height, period and direction as well as SST, wind speed and direction, atmospheric pressure and air temp
(c) Others	

4. PUBLICATIONS (on programme plans, technical developments, QC reports, etc.):

Ref	***Title***	***Type***
1	National DBCP reports for the ISABP, IBPIO, IPAB and SOBP	2, 6, 7
2	Website for DEA – data buoys	2, 3, 4, 6, 7
3	Website for CSIR – waverider buoys	2, 3, 6
4		

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	• SVP-B : Good • Data buoys : Good • Waverider : Good
(b) Communications	• SVP-B : Good • Data buoys : Good Waverider : Good
(c) Buoy lifetimes	• SVP-B : 1 failure on deployment and 4 questionable deployments. Oldest buoys still transmitting is in the water now for 2 years and 7 months. • Data buoys : 95% available over the last 12 months • Waverider : Excellent
(d) Other	

_____

INTERNATIONAL BUOY PROGRAMME FOR THE INDIAN OCEAN

Report on the South African 2013 National Drifting Weather Buoy Programme

The following report details progress of the South African National Drifting Weather Buoy Programme for the International Buoy Programme for the Indian Ocean for the intersessional period 2012/2013, up to 30 June 2013. A total of 11 drifters were deployed during this period.

Drifting Weather Buoy Deployments

Deployments 2012/2013

Argos ID	Date of deployment	Latitude	Longitude
101942	2012-07-23	50.0°S	030.0°E
101513	2012-07-26	46.1°S	042.2°E
101928	2012-07-31	40.0°S	032.2°E
39806	2012-07-31	39.9°S	032.1°E
101634	2012-08-02	34.6°S	026.8°E
109207	2012-08-02	34.6°S	026.8°E
101938	2013-02-19	33.6°S	027.6°E
101945	2013-02-19	33.6°S	027.6°E
101939	2013-04-12	26.7°S	038.3°E
101944	2013-04-12	26.7°S	038.3°E
101950	2013-04-12	26.7°S	038.3°E

Partnerships

As in previous years, the drifters were generously sent to us by NOAA, while the South African Weather Service (SAWS) covered the customs and courier costs.
The deployments were done from three vessels: the SA Agulhas II, Algoa and the Knorr. The deployments from the SA Agulhas II were done with the purpose to populate the southern Indian Ocean with drifters, although two deployments were done inside the Agulhas Current for the Adopt-A-Drifter Program. These deployments were done by personnel from SAWS. The SA Agulhas is managed by the Department of Environmental Affairs (DEA).
Three deployments were done by personnel from DEA and the Bayworld Centre for Research and Education (BCRE) from the vessel, Algoa. These deployments had a dual purpose. Firstly to contribute to a study that is looking at eddies that form in the Mozambique Channel and then secondly to serve the purpose of the DBCP.
Lastly, two drifters were deployed by the Knorr when she visited the South African waters and these drifters were deployed for the Adopt-A-Drifter Program and facilitated by the South African Environmental Observation Network (SAEON).

South Africa is entering a new and phase where interest in drifter data from various institutes and Universities is picking up. SAWS, as focal point of the DBCP, is excited to liaise with the different partners to bring a solid deployment plan to the table at the next DBCP meeting in Paris.

Challenges:

Only one of the buoys failed on deployment. This was a Clearwater SVPB drifter.

As mentioned above, other institutes in South Africa is becoming more interested in using buoy

data for shorter projects and research. Although this is a very good thing, it has led to the situation where the demand was greater than the supply. Various planned deployments in the south Indian Ocean were not done because we had no buoys to deploy.

Future Plans:

Meteor Cruise	– Oct to Dec 2013 the vessel will be doing work in the south Indian Ocean. DEA and BCRE hope to participate in this cruise and continue the eddie studies.
Annual SANAP cruise to Marion Island	– Marion Island logistical cruise in April/May 2014.

Compiled by Sydney Marais and Santjie du Toit and approved by Johan Stander
For the International Buoy Programme for the Indian Ocean, July 2013

INTERNATIONAL PROGRAMME FOR ANTARCTIC BUOYS

Report on the South African 2013 National Drifting Weather Buoy Programme

The following report details progress of the South African National Drifting Weather Buoy Programme for the International Programme for Antarctic Buoys for the intersessional period 2012/2013, up to 30 June 2013. A total of 10 SVP-B drifters were deployed during this period.

Drifting Weather Buoy Deployments

Deployments 2012/2013

Argos ID	Date of deployment	Latitude	Longitude
109278	2012-12-12	55.0°S	000.0°E
109218	2012-12-13	60.0°S	000.7°E
109277	2013-01-19	59.6°S	020.0°W
109216	2013-01-20	59.5°S	025.0°W
109269*	2013-01-20	59.5°S	027.3°W
109273	2013-01-21	56.0°S	032.0°W
109214	2013-01-23	55.0°S	030.0°W
109268	2013-01-25	57.6°S	015.0°W
109275	2013-01-25	58.4°S	010.0°W
40304**	2013-01-25	59.2°S	005.0°W

*Buoy on South Thule**Redeployment of 2012 buoy on South Thule. Deployed without a drogue.

Partnerships

NOAA supplied South Africa with all the buoys deployed in the Southern Ocean. We thank them for this. South African Weather Service (SAWS) covered the customs and courier costs.

All the buoys were deployed from the SA Agulhas II on her annual buoy deployment cruise during the summer logistical cruise to Antarctica. The ship is managed by the Department of Environmental Affairs (DEA). The actual deployments were done by personnel of SAWS.
The South Georgia Government is an important partner of South Africa, by allowing us access to the South Sandwich Islands and South Georgia.

Challenges

Only one of the 10 buoys deployed were reported as “questionable”. All the buoys were Clearwater buoys, except for the South Thule redeployment, which was a buoy from Technocean. No serious challenges can be reported.

Future Plans:

Annual SANAP cruise to Antarctica – December 2013 to February 2014
Fisheries Department of South Georgia – SAWS wishes to engage more closely with them to see if they can deploy further south than what they normally do, in order to aid the IPAB.

Compiled by Santjie du Toit and Sydney Marais and approved by Johan Stander
For International Programme for Antarctic Buoys, July 2013

INTERNATIONAL SOUTH ATLANTIC BUOY PROGRAMME

Report on the South African 2013 National Drifting Weather Buoy Programme

The following report details progress of the South African National Drifting Weather Buoy Programme for the International South Atlantic Buoy Programme for the intersessional period 2012/2013, up to 30 June 2013. A total of 15 drifters were deployed.

Drifting Weather Buoy Deployments

Deployments 2012/2013

Argos ID	Date of deployment	Latitude	Longitude
39799	2012-07-15	50.0°S	001.2°E
39745	2012-07-17	54.4°S	000.0°E
40425	2012-09-19	51.2°S	044.0°W
109637*	2012-09-12	37.0°S	012.3°W
109292	2012-09-22	50.0°S	010.0°W
109630	2012-09-22	50.0°S	013.0°W
109213	2012-09-22	50.0°S	015.0°W
109209	2012-09-23	49.0°S	015.0°W
109626	2012-09-23	48.0°S	015.0°W
109280	2012-09-23	47.0°S	015.0°W
109212	2012-09-23	46.0°S	015.0°W
109211	2012-09-24	45.0°S	015.0°W
40414	2012-11-03	52.9°S	047.1°W
109267	2013-01-22	54.2°S	036.0°W
101776	2013-05-21	52.9°S	046.4°W

* Fixed at Tristan da Cunha

Partnerships

None of the buoys would have been deployed if it were not for NOAA's donation of the buoys. The South African Weather Service (SAWS) paid the import duties.

Most of the buoys were deployed by SAWS personnel onboard the SA Agulhas II, during the inaugural cruise of the new vessel, as well as the annual Gough Island logistical cruise managed by the Department of Environmental Affairs (DEA).
Three buoys were deployed by the Fisheries Department of the Falkland Islands. For this we can thank the Government of South Georgia for liaising with the Falklands. South Africa was also allowed to replace the fixed buoy on Tristan da Cunha with a "fresh" one during the Gough cruise. The Tristan da Cunha Government are always willing to assist the ISABP in any way.

Challenges

One buoy failed on deployment and two are listed as "questionable" on the deployment log. All the buoys deployed were Clearwater buoys. No other major challenges can be reported.

Future Plans:

Annual SANAP cruise to Gough Island – Eight buoys will be deployed during September/October 2013. The buoy on Tristan da Cunha will be replaced.

Fisheries Department of the Falklands	– Continue to liaise with them for deployment during the rest of 2013 and early 2014.

Compiled by S.Marais and S. du Toit and approved by Johan Stander
For the International South Atlantic Buoy Programme, July 2013

SOBP REPORT FOR SOUTH AFRICA

Report on the South African National Drifting Weather Buoy Programme

The following report details progress of the South African National Drifting Weather Buoy Programme for the International Programme for Southern Oceans for the intersessional period 2012/2013, up to 30 June 2013. A Total of 43 drifters were deployed during this period.

Below is a table of the number of drifters deployed in the different regions:

ISABP	IBPIO	IPAB	Total in SOBP
15	11	10	36

The South African Weather Service (SAWS) is the focal point of the DBCP for South Africa. In the last few years, NOAA has provided South Africa with all the buoys that we need to deploy. With assistance from the Department of Environmental Affairs (DEA), these buoys were deployed mainly on the annual logistical cruises of the SA Agulhas II to Marion Island, Gough Island and Antarctica.

During 2013, a number of other institutes within South Africa started requesting drifters to be used in their own research. One of the bigger projects currently undertaken jointly by the University of Cape Town, DEA and Bayworld Centre for Research and Education (BCRE), is the study of eddies that form in the Mozambique Channel and then move into the Agulhas Current south of South Africa. For projects such as these, the data is only required for a very short time. After this, the drifters will contribute to the global data as part of the various Programmes within the DBCP. This being said, South Africa realize that we cannot continue to rely on donations by NOAA. Of course we will welcome any drifter donation and will be happy to deploy drifters on behalf of any other country or institute. South Africa is serious about purchasing our own drifters to contribute to the international Programmes.

In comparison to 2011/2012, South Africa has deployed 7 buoys less in the 2012/2013 period – three less for the ISABP; seven less for the IBPIO but three more for the IPAB.

Upcoming cruises for the 2013/2014 period include the annual logistical cruises to Marion Island, Gough Island and Antarctica; continued liaison with the Governments of South Georgia, the Falklands and Tristan da Cunha for further deployments by their fisheries vessels and the Meteor Cruise to the South Indian Ocean at the end of 2013.

Report compiled by C.S. Marais and S. du Toit and approved by J. Stander.
For the Southern Ocean Buoy Program July 2013.

APPENDIX O

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	SWEDEN
Year	2013

1. CURRENT PROGRAMME:

Agency or programme		
Number and type of buoys	(a) deployed during the year	
	(b) operational as of 31 August	3 wave buoys, 1 ocean buoys
	(c) reporting on GTS as of 31 August	No
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[ ]
	(c) developmental	[ ]
Main deployment areas		
Vandalism incidents	(a) Number of incidents If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

(repeat table above as often as necessary)

2. PLANNED PROGRAMMES:

Agency or programme		
Number and type of buoys	planned for deployment in the next 12 months	6 coastal buoys
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[ ]
	(c) developmental	[ ]
Main deployment areas		

(repeat table above as often as necessary)

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	• Ocean buoy from Axys. Measurement chain under water consisting of a conductive wire with several instruments for salinity (conductivity) and temperature measurements. • Wave buoys from Datawell 0.7 hull, also measuring SST
(b) Instrumentation	• Met: Air temp, humidity and wind • Oce: Oxygen, current and wave. Conductivity and sea temp from about 10-80 metres (several levels) • Wave buoy: Wave sensor and a thermistor

(c) Others	• Coastal buoys: Met, currents, salinity, chlorophyll, oxygen, turbidity on several depths,

4. PUBLICATIONS (on programme plans, technical developments, QC reports, etc.):

Ref	***Title***	***Type[10]***
1		
2		
3		
4		

(repeat rows in the table above as necessary)

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	• Wave buoy: Good. Well-tested and calibrated sensors • Ocean buoys: New parameters and sensors have to be verified.
(b) Communications	• Ocean buoy: Iridium • Wave riders: Two with Iridium and one with Orbcomm
(c) Buoy lifetimes	• New ocean buoys estimated to about 5-8 years. But individual sensors 1-5 years. • Waveriders estimated to about 5-8 years
(d) Other	• Long term goal - to operate: o Two ocean buoys, with one complete spare unit. o Three wave buoys, with two spare unit. o Six coastal bouys with one spare unit

Note: It is recommended that this form is filled in electronically and returned also electronically to the Secretariat. A template of the form can be downloaded from the following ftp site:

ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-National-Reports.doc

[10]: Types of publications: (1) Implementation, (2) Operations, (3) Instrumentation, (4) Quality Management, (5) Data Management, (6) Data collection and/or location, (7) Data use, (8) Other

ANNEX - FORM FOR REPORTING INCIDENTS OF VANDALISM ON DATA BUOYS

Country								
Contact person e-mail								
Year	**Buoy Location**		**Type of Buoy (e.g. Tsunami / Met -Ocean Buoy/Drifter/ARGO floats/ Other)**	**Type of damage to buoy**	**Buoy id/WMO id**	**Number of days of transmission lost**	**Cost of replacement**	**Remarks (e.g. whether photos have been taken)**
	Latitude	**Longitude**						
Efforts taken against vandalism								
Awareness meeting Organised								
Suggestions (if any)								
Photos on Vandalism			(please include pictures if available; and email electronic versions to support@jcommops.org)					

Note: It is recommended that this form is filled in electronically and returned electronically also to JCOMMOPS (support@jcommops.org). A template of the form can be downloaded from the following ftp site: ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-Buoy-Vandalism-Reports.doc

APPENDIX P

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	UK
Year	2013

1. CURRENT PROGRAMMES:

Met Office	Marine Automated Weather Station network moored buoys	
Number and type of buoys	(a) deployed during the year	No new sites
	(b) operational as of 31 July	7
	(c) reporting on GTS as of 31 July	7
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	
	(c) developmental	[x] at K7
Main deployment areas	North-east Atlantic (2 buoys in Biscay jointly operated with Meteo-France)	
Vandalism incidents	none	

Met Office	Other moored buoys	
Number and type of buoys	(a) deployed during the year	No new sites
	(b) operational as of 31 August	2
	(c) reporting on GTS as of 31 July	2
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	
	(c) developmental	
Main deployment areas	Off South-west Wales	
Vandalism incidents	none	

Met Office/NOCS	Porcupine Abyssal Plain OceanSITES mooring	
Number and type of buoys	(a) deployed during the year	N/A
	(b) operational as of 31 July	1
	(c) reporting on GTS as of 31 July	1
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	Pre-operational
	(b) met / ocean research	[x]
	(c) developmental	
Main deployment areas	North-east Atlantic	
Vandalism incidents	None, although buoy was damaged by a collision with a ship in rough weather and subsequently replaced	

PML/Met Office	Western Channel Observatory	
Number and type of buoys	(a) deployed during the year	No new sites
	(b) operational as of 31 July	2
	(c) reporting on GTS as of 31 July	2

Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	Pre-operational
	(b) met / ocean research	[x]
	(c) developmental	
Main deployment areas	Western Channel	
Vandalism incidents	None	

Cefas	SmartBuoy monitoring sites	
Number and type of buoys	(a) deployed during the year	No new sites
	(b) operational as of 31 July	6
	(c) reporting on GTS as of 31 July	0
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x] for monitoring
	(b) met / ocean research	[x]
	(c) developmental	
Main deployment areas	North Sea, Celtic Sea and Liverpool Bay	
Vandalism incidents	None	

Cefas	WaveNet (waverider buoys)	
Number and type of buoys	(a) deployed during the year	No new sites
	(b) operational as of 31 July	28 (19 Cefas plus 9 others)
	(c) reporting on GTS as of 31 July	0 (data available via WaveNet website)
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x] for coastal flood management
	(b) met / ocean research	
	(c) developmental	
Main deployment areas	North Sea, Celtic Sea and Liverpool Bay	
Vandalism incidents	None	

Met Office	Drifting buoys	
Number and type of buoys	(a) deployed during the year	18
	(b) operational as of 31 July	19
	(c) reporting on GTS as of 31 July	19
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	
Main deployment areas	South Atlantic, Southern Ocean and subtropical North Atlantic (for GHRSST drifters)	
Vandalism incidents	N/A	

SAMS	FASTNEt (**F**luxes **A**cross **S**loping **T**opography of the **N**orth **E**ast A**t**lantic) project drifters	
Number and type of buoys	(a) deployed during the year	30
	(b) operational as of 31 July	29
	(c) reporting on GTS as of 31 July	29
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	
	(b) met / ocean research	[x]
	(c) developmental	

Main deployment areas	North-east Atlantic (Malin shelf)
Vandalism incidents	N/A.

Cefas	SmartBuoy monitoring sites	
Number and type of buoys	(a) deployed during the year	No new sites
	(b) operational as of 31 July	
	(c) reporting on GTS as of 31 July	0
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	
Main deployment areas	North Sea, Celtic Sea and Liverpool Bay	
Vandalism incidents	None	

2. PLANNED PROGRAMMES:

NOC/Met Office	CANDYFLOSS (**C**arbon **A**nd **N**utrient **DY**namics and **FL**uxes **O**ver **S**helf **S**ystems) project	
Number and type of buoys	Oct 2013 to Feb 2015	Met Office buoy to go alongside the Cefas SmartBuoy
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	
	(b) met / ocean research	[x]
	(c) developmental	
Main deployment areas	Celtic Sea	

3. TECHNICAL DEVELOPMENTS:

A new design Hydrosphere/Mobilis DB-8000 buoy with dual Axys Watchman 500s, dual Iridium transmission systems and an autonomous Triaxys was deployed at K7 end November 2012 and is operating normally (having reported significant wave height >15m and maximum max wave height >26m in February 2013).

The Turbot Bank buoy off south-west Wales was replaced in March 2013 with a single Axys Watchman/Iridium based system and an autonomous Triaxys on a Planet Ocean DB300 hull.

A modified Hydrosphere/Mobilis DB-8000 buoy with dual Axys Watchman 500, dual Iridium transmission systems and an autonomous Triaxys was deployed at E1 in June 2013. One side is used for meteorology, the other by PML to handle data from their oceanographic sensors. In addition the buoy has a winching system designed to lower/raise PML's bio-geochemical sensors out of the water for cleaning.

4. PUBLICATIONS (on programme plans, technical developments, QC reports, etc.):

None

5. SPECIAL COMMENTS (if any):

All UK Met Office buoys are routinely monitored by Meteo-France as part of their E-SURFMAR responsibility. Meteo-France also handle GTS data distribution for the Met Office and SAMS (FASTNEt) drifters.

The Met Office shares in WMO co-ordinated monitoring of the Global Observing System, by acting as a lead centre for monitoring the quality of surface marine observations. This includes observations from ships, drifters, moored buoys and other fixed marine platforms.
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APPENDIX Q

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	Ukraine
Year	2013-2014

1. CURRENT PROGRAMME:

Agency or programme	Marine Hydrophysical institute NAS of Ukraine	
Number and type of buoys	(a) deployed during the year	2 Iridium SVP-BTC80/RTC/GPS
	(b) operational as of 31 August	0
	(c) reporting on GTS as of 31 August	0
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x] data were put on GTS
	(b) met / ocean research	[x] study of the Black Sea
	(c) developmental	[x] evaluation of new drifters with thermistor chains
Main deployment areas	The Black Sea	
Vandalism incidents	(a) Number of incidents If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

(repeat table above as often as necessary)

2. PLANNED PROGRAMMES:

Agency or programme	Marine Hydrophysical institute NAS of Ukraine	
Number and type of buoys	planned for deployment in the next 12 months	4 Iridium SVP-BTC80/RTC/GPS
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x] data will be on GTS
	(b) met / ocean research	[x] study of the Black Sea
	(c) developmental	[x] evaluation of new drifters with thermistor chains
Main deployment areas	The Black Sea	

(repeat table above as often as necessary)

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	• New design of the thermistor chain
(b) Instrumentation	• New prototype of drifter's electronics
(c) Others	• New GPS to get longer lifetime

4. PUBLICATIONS (on programme plans, technical developments, QC reports, etc.):

Ref	***Title***	***Type[11]***
1	Features of GPS use on Argos-2 and Iridium telemetry equipped drifters	The article to be published as the result of the DBCP 2013 Workshop
2		
3		
4		

(repeat rows in the table above as necessary)

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	• Via the Meteo-France Quality Control Tool as well as by means of data analysis, received via Iridium telemetry
(b) Communications	• Iridium (Meteo-France supports data traffic)
(c) Buoy lifetimes	• WMO61689 – 234 days (came ashore) • WMO61690 – 111 days (came ashore and recovered to be redeployed in September 2013)
(d) Other	• • •

Note: It is recommended that this form is filled in electronically and returned also electronically to the Secretariat. A template of the form can be downloaded from the following ftp site:

ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-National-Reports.doc

[11]: Types of publications: (1) Implementation, (2) Operations, (3) Instrumentation, (4) Quality Management, (5) Data Management, (6) Data collection and/or location, (7) Data use, (8) Other

ANNEX - FORM FOR REPORTING INCIDENTS OF VANDALISM ON DATA BUOYS

Country								
Contact person e-mail								
Year	**Buoy Location**		**Type of Buoy (e.g. Tsunami / Met -Ocean Buoy/Drifter/ARGO floats/ Other)**	**Type of damage to buoy**	**Buoy id/WMO id**	**Number of days of transmission lost**	**Cost of replacement**	**Remarks (e.g. whether photos have been taken)**
	Latitude	**Longitude**						
Efforts taken against vandalism								
Awareness meeting Organised								
Suggestions (if any)								
Photos on Vandalism			(please include pictures if available; and email electronic versions to support@jcommops.org)					

Note: It is recommended that this form is filled in electronically and returned electronically also to JCOMMOPS (support@jcommops.org). A template of the form can be downloaded from the following ftp site: ftp://ftp.wmo.int/Documents/PublicWeb/amp/mmop/documents/dbcp/templates/Format-DBCP-Buoy-Vandalism-Reports.doc

APPENDIX R

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country: **United States of America**

Year: **2013**

CURRENT PROGRAMMES:

A. **Agency or programme**: National Oceanic and Atmospheric Administration (NOAA)/ Atlantic Oceanographic and Meteorological Laboratory (AOML) and Scripps Institution of Oceanography (SIO)

Global Drifter Program (GDP)

Number and type of buoys:
(a) deployed during 1 August 2012 – 25 Jul 2013: 1385 drifters
(b) operational as of 1 August 2013: 969
(c) reporting on GTS as of 1 August: 969

Purpose of programme:
(a) operational: [x]
(b) met / ocean research: [x]
(c) developmental:

Main deployment areas: Global.

The Global Drifter Program (GDP) is the principle component of the Global Surface Drifting Buoy Array, a branch of NOAA's Global Ocean Observing System (GOOS) and a scientific project of the DBCP. Its objectives are to (1) Maintain a global 5x5 degree array of 1250 satellite-tracked surface drifting buoys to meet the need for an accurate and globally dense set of in-situ observations of mixed layer currents, sea surface temperature, atmospheric pressure, winds and salinity, and (2) provide a data processing system for scientific use of these data. These data support short-term (seasonal to interannual) climate predictions as well as climate research and monitoring. For more information, see http://www.aoml.noaa.gov/phod/dac/gdp_objectives.php.

The current array design is for 1250 drifters globally, at an approximate resolution of 5x5 degrees. This goal was reached in September 2005. The instantaneous size of the array is expected to fluctuate through the year. At its current size of 969 drifters, the array is 78% of its design size.

B. **Agency or programme:** National Oceanic and Atmospheric Administration (NOAA)/ National Weather Service (NWS)/ National Data Buoy Center (NDBC)

Moored Buoys (MET/OCEAN)

Number and type of buoys:
(a) deployed during 1 August 2012 – 25 Jul 2013: 90
(b) operational as of 1 August 2013: 85
(c) reporting on GTS as of 1 August 2013: 85

Purpose of programme: (a) operational: [x]

(b) met / ocean research:

(c) developmental:

Main deployment areas: Atlantic and Pacific Oceans and Coastal Zone of the US, including the Bering Sea, Gulf of Mexico, and Great Lakes.

NDBC's moored buoys measure and transmit barometric pressure; wind direction, speed, and gust; air and sea temperature; and wave energy spectra from which significant wave height, dominant wave period, and average wave period are derived. Even the direction of wave propagation is measured on many moored buoys. For more information, see http://www.ndbc.noaa.gov/mooredbuoy.shtml.

C. Agency or programme: National Oceanic and Atmospheric Administration (NOAA)/ National Weather Service (NWS)/ National Data Buoy Center (NDBC)

Tsunameter Stations

Number and type of buoys: (a) deployed during 1 August 2012 – 25 Jul 2013: 28

(b) operational as of 1 August 2013: 32

(c) reporting on GTS as of 1 August 2013: 32

Purpose of programme: (a) operational: [x]

(b) met / ocean research:

(c) developmental:

Main deployment areas: Atlantic and Pacific Oceans and Gulf of Mexico

To ensure early detection of tsunamis and to acquire data critical to real-time forecasts, NOAA has placed Deep-ocean Assessment and Reporting of Tsunami (DART) stations at sites in regions with a history of generating destructive tsunamis. NOAA completed the original 6-buoy operational array (map of original six stations) in 2001 and expanded to a full network of 39 stations in March, 2008. Originally developed by NOAA, as part of the U.S. National Tsunami Hazard Mitigation Program (NTHMP), the DART Project was an effort to maintain and improve the capability for the early detection and real-time reporting of tsunamis in the open ocean. DART presently constitutes a critical element of the NOAA Tsunami Program. The Tsunami Program is part of a cooperative effort to save lives and protect property through hazard assessment, warning guidance, mitigation, research capabilities, and international coordination. NOAA's National Weather Service (NWS) is responsible for the overall execution of the Tsunami Program. This includes operation of the U.S. Tsunami Warning Centers (TWC) as well as leadership of the National Tsunami Hazard Mitigation Program. It also includes the acquisition, operations and maintenance of observation systems required in support of tsunami warning such as DART, local seismic networks, coastal, and coastal flooding detectors. NWS also supports observations and data management through the NDBC. For more information, see http://www.ndbc.noaa.gov/dart/dart.shtml.

D. Agency or programme: National Oceanic and Atmospheric Administration (NOAA)/ National Weather Service (NWS)/ National Data Buoy Center (NDBC)

Tropical Atmosphere Ocean (TAO) Project

Number and type of buoys: (a) deployed during 1 August 2012 - 25 July 2013: 10 toroids and 1 subsurface

(b) operational as of 1 August 2013: 33

(c) reporting on GTS as of 1 August 2013: 33

Purpose of programme: (a) operational: [x]

(b) met / ocean research: [x]

(c) developmental:

Main deployment areas: Equatorial Pacific Ocean

The TAO array (renamed the TAO/TRITON array on 1 January 2000) consists of approximately 70 moorings in the Tropical Pacific Ocean, telemetering oceanographic and meteorological data to shore in real-time. The array is a major component of the El Niño/Southern Oscillation (ENSO) Observing System, the Global Climate Observing System (GCOS) and the Global Ocean Observing System (GOOS). Support is provided primarily by the United States (National Oceanic and Atmospheric Administration) and Japan (Japan Agency for Marine-earth Science and TEChnology). For more information, see http://www.pmel.noaa.gov/tao/proj_over/proj_over.html.

E. Agency or programme: National Oceanic and Atmospheric Administration (NOAA)/ Pacific Marine Environmental Laboratory (PMEL) and Atlantic Oceanographic and Meteorological Agency (AOML)

Prediction and Research moored Array in the Tropical Atlantic (PIRATA)

Number and type of buoys: (a) deployed during 1 Aug 1 2012 – 25 Jul 2013: 18 surface toroids, 1 developmental surface toroid

(b) operational as of 1 August 2012: 18 surface toroids, 1 developmental toroid

(c) reporting on GTS as of 1 August 2012: 18 surface toroids

Purpose of programme: (a) operational:

(b) met / ocean research: [x]

(c) developmental: [X]

Main deployment areas: Tropical Atlantic Ocean

PIRATA is a multinational observation network, established to improve our knowledge and understanding of ocean-atmosphere variability in the tropical Atlantic. It is a joint project of Brazil, France and the United States of America. PIRATA is motivated by fundamental scientific issues and by societal needs for improved prediction of climate variability and its impact on the countries surrounding the tropical Atlantic basin. The overarching goals of the project are to (1) improve the description of the intra-seasonal to interannual variability in the atmospheric and oceanic boundary layers of the tropical Atlantic Ocean; (2) improve our understanding of the relative contributions of air-sea fluxes and ocean dynamics to variability in sea surface temperature and sub-surface heat content; (3) provide a set of data useful for developing and improving the predictive models of the ocean-atmosphere coupled system; (4) document interactions between

tropical Atlantic climate and variability outside the region, such as ENSO and the North Atlantic Oscillation; and (5) design, deploy, and maintain an array of moored oceanic buoys and collect and transmit a set of oeanic and atmospheric data, via satellite in near-real time, to monitor and study the upper ocean and atmosphere of the tropical Atlantic Ocean. For more information, see http://www.pmel.noaa.gov/pirata/.

The current array design for PIRATA calls for 18 surface buoys; this network is 100% completed. Future extensions and additions may be added, as demanded by research and operational needs.

F. Agency or programme: National Oceanic and Atmospheric Administration (NOAA)/ Pacific Marine Environmental Laboratory (PMEL)

Research Moored Array for African-Asian-Australian Monsoon Analysis and prediction (RAMA)

Number and type of buoys:
(a) deployed during 1 Aug 2012 – 25 Jul 2013:
19 surface toroids, 8 subsurface moorings, 3 developmental surface toroids

(b) operational as of 1 August: 17 surface toroids, 10 subsurface, 2 developmental

(c) reporting on GTS as of 1 August: 17

Purpose of programme:
(a) operational:

(b) met / ocean research: [x]

(c) developmental: [X]

Main deployment areas: Tropical Indian Ocean

RAMA addresses the needs for comprehensive, long term, high quality real-time measurements in the Indian Ocean suitable for climate research and forecasting. RAMA is targeted at understanding and prediction of the east African, Asian and Australian monsoons, and benefits nations outside the Indian Ocean region due to atmospheric teleconnections which influence the far field. For more information, see http://www.pmel.noaa.gov/tao/rama/.

The current array design for RAMA calls for 46 moored buoy sites, of which 32 (70%) are currently occupied by surface or subsurface toroids or developmental moorings. Future additions may be added, as demanded by research and operational needs

G. Agency or programme: Naval Oceanographic Office (NAVOCEANO)

Number and type of buoys:
(a) deployed 1 August 2012 – 18 July 2013:
62 Argos floats, 4 Iridium floats, 50 Argos drifters, 14 Iridium drifters

(b) operational as of 18 July 2012: 90 floats, 7 drifters

(c) reporting on GTS as of 18 July 2012 : 90 floats, 7 drifters

Purpose of programme:
(a) operational: [x]

(b) met / ocean research:

(c) developmental:

Main deployment areas: Floats: primarily northern hemisphere.
Drifters: South China Sea, Arabian Gulf, Mediterranean Sea, Caribbean Sea and the East Pacific.

The purpose of NAVOCEANO deployments is to support US Navy operations globally. Deployment plans are dictated by operational needs.

PLANNED PROGRAMMES:

A. Agency or programme: National Oceanic and Atmospheric Administration (NOAA)/ Atlantic Oceanographic and Meteorological Laboratory (AOML) and Scripps Institution of Oceanography (SIO)

Global Drifter Program (GDP)

Number and type of buoys planned for deployment in the next 12 months: 1000 drifters, 800 funded by NOAA's Climate Program Office and 200 by Consortium Research partners.

Purpose of programme: (a) operational: [x]

(b) met / ocean research: [x]

(c) developmental:

Main deployment areas: Global.

B. Agency or programme: National Oceanic and Atmospheric Administration (NOAA)/ National Weather Service (NWS)/ National Data Buoy Center (NDBC)

Moored Buoys (MET/OCEAN)

Number and type of buoys planned for deployment in next 12 months: 20

Purpose of programme: (a) operational: [x]

(b) met / ocean research:

(c) developmental:

Main deployment areas: Atlantic and Pacific Oceans and Coastal Zone of the US, including the Bering Sea, Gulf of Mexico, and Great Lakes.

C. Agency or programme: National Oceanic and Atmospheric Administration (NOAA)/ National Weather Service (NWS)/ National Data Buoy Center (NDBC)

Tsunameter Stations

Number and type of buoys planned for deployment in the next 12 months: 20

Purpose of programme: (a) operational: [x]

(b) met / ocean research:

(c) developmental:

Main deployment areas: Atlantic and Pacific Oceans and Gulf of Mexico

D. Agency or programme: National Oceanic and Atmospheric Administration (NOAA)/ National Weather Service (NWS)/ National Data Buoy Center (NDBC)

Tropical Atmosphere Ocean (TAO) Project

Number and type of buoys planned for deployment in the next 12 months: 34 toroids, 4 subsurface

Purpose of programme: (a) operational: [x]

(b) met / ocean research: [x}

(c) developmental:

Main deployment areas: Equatorial Pacific Ocean

E. Agency or programme: National Oceanic and Atmospheric Administration (NOAA)/ Pacific Marine Environmental Laboratory (PMEL) and Atlantic Oceanographic and Meteorological Agency (AOML)

Prediction and Research moored Array in the Tropical Atlantic (PIRATA)

Number and type of buoys planned for deployment in the next 12 months: 18 + 1 developmental

Purpose of programme: (a) operational:

(b) met / ocean research: [x]

(c) developmental: [X]

Main deployment areas: Equatorial Atlantic Ocean

F. Agency or programme: National Oceanic and Atmospheric Administration (NOAA)/ Pacific Marine Environmental Laboratory (PMEL)

Research Moored Array for African-Asian-Australian Monsoon Analysis and Prediction (RAMA)

Number and type of buoys planned for deployment in the next 12 months: 24 surface toroids and 10 subsurface

Purpose of programme: (a) operational:

(b) met / ocean research: [x]

(c) developmental:

Main deployment areas: Tropical Equatorial Indian Ocean

G. Agency or programme: Naval Oceanographic Office (NAVOCEANO)

Number and type of buoys planned for deployment in the next 12 months: 60 profiling floats and 100 drifting buoys

Purpose of programme: (a) operational: [x]

(b) met / ocean research:

(c) developmental:

Main deployment areas: Floats: primarily northern hemisphere.
Drifters: South China Sea, Arabian Gulf, Mediterranean Sea, Caribbean Sea and the East Pacific.

TECHNICAL DEVELOPMENTS:

PMEL continues to test “Tropical-Flex” moorings alongside PMEL legacy moorings. T-Flex moorings communicate via Iridium modem and Seabird electronics replace legacy PMEL temperature thermistors.

NDBC has deployed 28 TAO Refresh moorings in the TAO array and will continue deploying them until the TAO array is completely refreshed.

PUBLICATIONS (on programme plans, technical developments, QC reports, etc.):

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Moum, J. N., A. Perlin, J. D. Nash, and M. J. McPhaden, 2013: Ocean mixing controls seasonal sea surface cooling in the equatorial Pacific cold tongue. Nature, in press.

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Zhang, R.-H., F. Zheng, J. Zhu, and Z. G. Wang, 2013: A successful real-time forecast of the 2010–11 La Niña event. Sci. Rep. 3, 1108; doi: 10.1038/srep01108.

SPECIAL COMMENTS (if any):

(a) Quality of buoy data:

During the 2012-2013 inter-sessional period the GDP did not deploy any new clusters of drifters for inter-comparison and evaluation due to delays in acquisition and recalls of drifters from two manufacturers. Instead the GDP has been focusing on lifetimes of drifters (see below) across the entire global array since 2005, by manufacturer and buoy type.

(b) Buoy Lifetimes

For information on quantifying buoy lifetimes and efforts to increase the lifetimes of drifting buoys, the reader is referred to the report from the Global Drifter Program and from the DBCP Task Team on Best Practices.

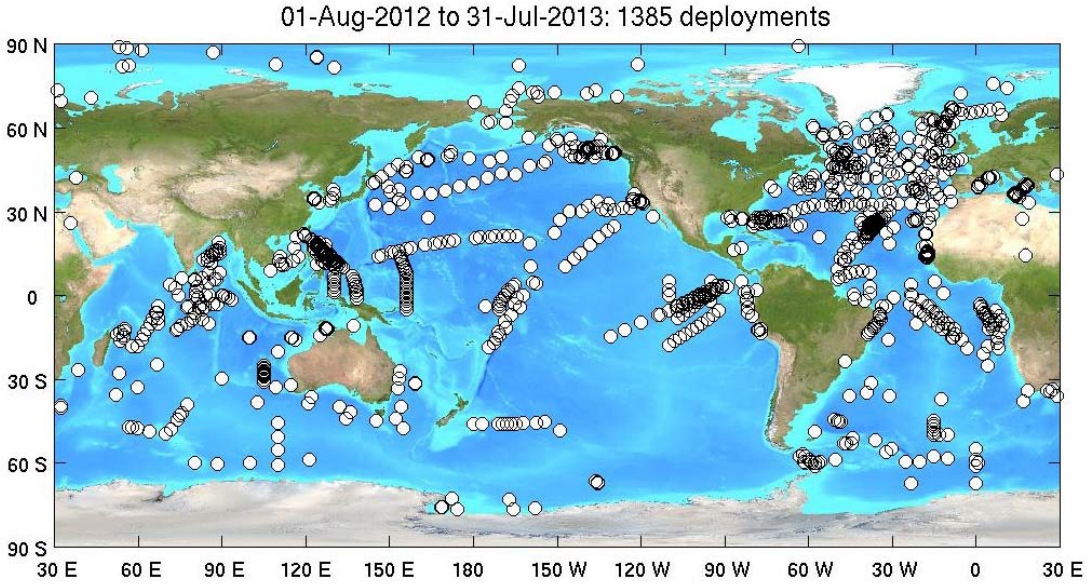

Fig. 1: Global Drifter Program deployment locations during the year.

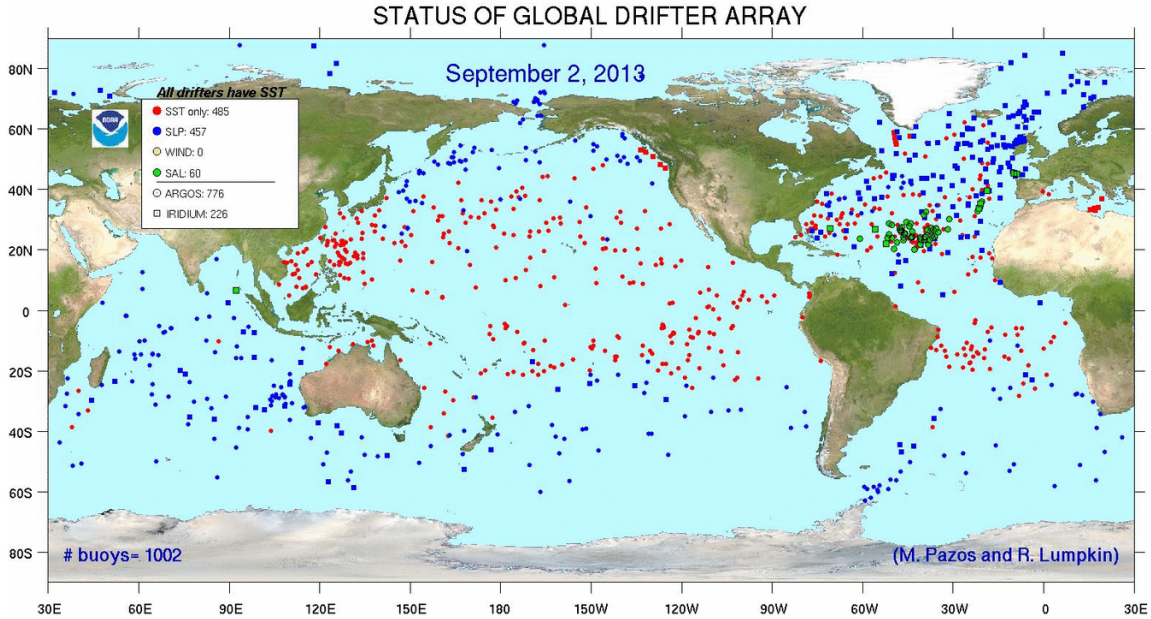

Fig. 2: Global drifter array status as of 22 July 2013. Figure from http://www.aoml.noaa.gov/phod/dac.

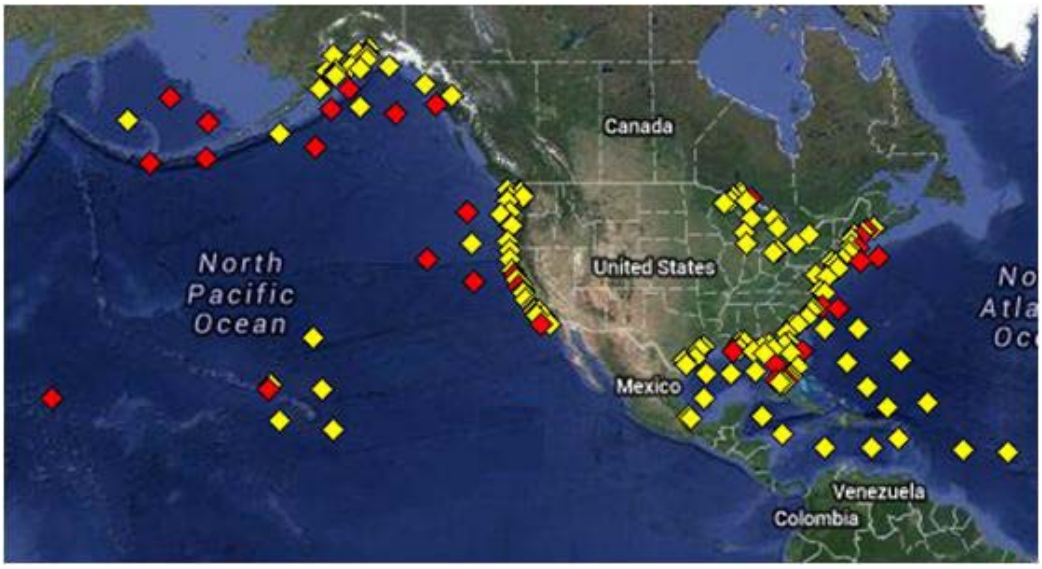

Fig. 3: NDBC Moored Buoys (MET/OCEAN). Figure from http://www.ndbc.noaa.gov/obs.shtml.

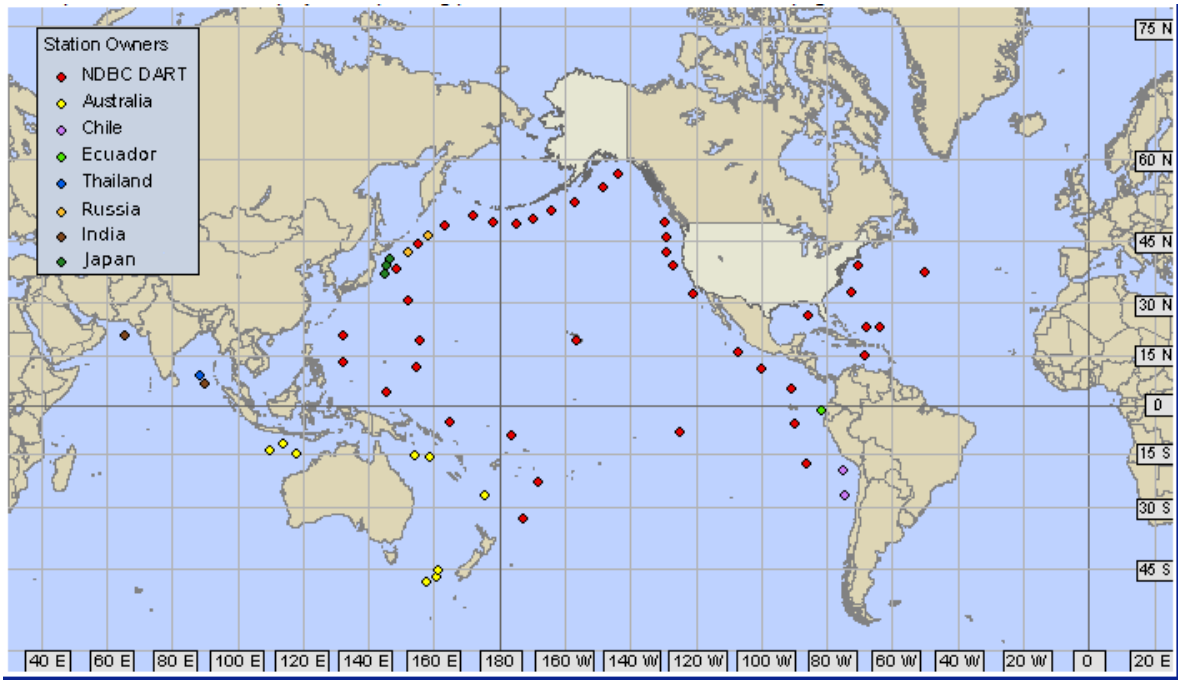

Fig 4: International Tsunami Network status, with NDBC DART tsunameters indicated in red. Figure from http://www.ndbc.noaa.gov/obs.shtml.

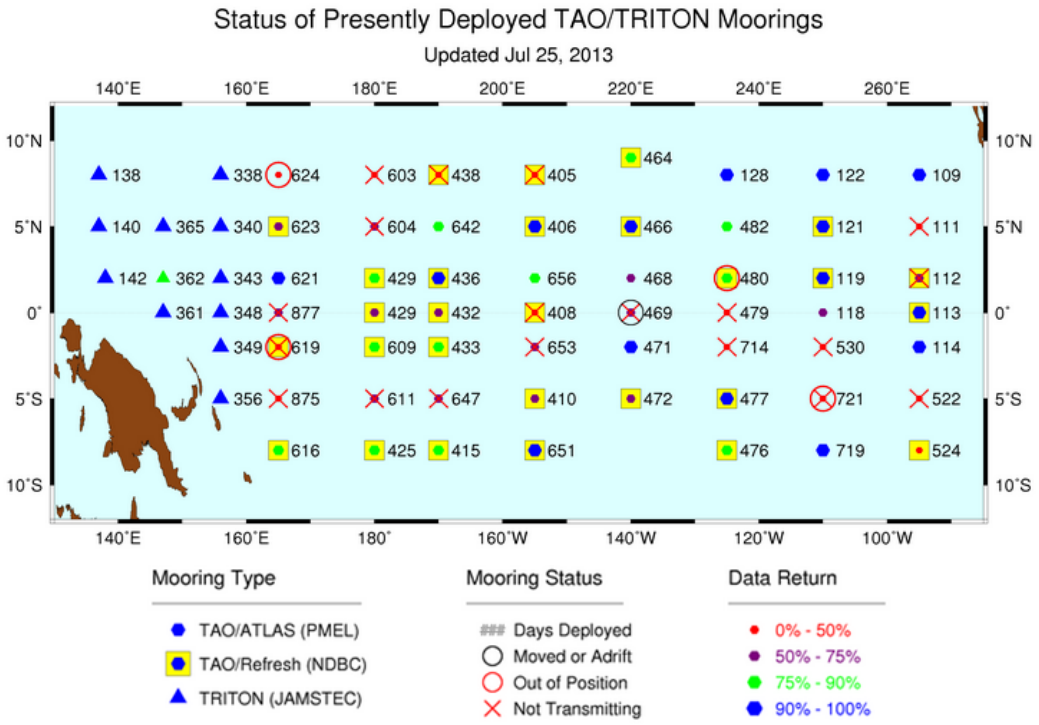

Fig. 5: NDBC Tropical Atmosphere Ocean (TAO) Array and TRITON Array status on 25 July 2013. The numbers indicate how many days have passed since last servicing (ideally <365). Figure from http://www.pmel.noaa.gov/tao/global/status/.

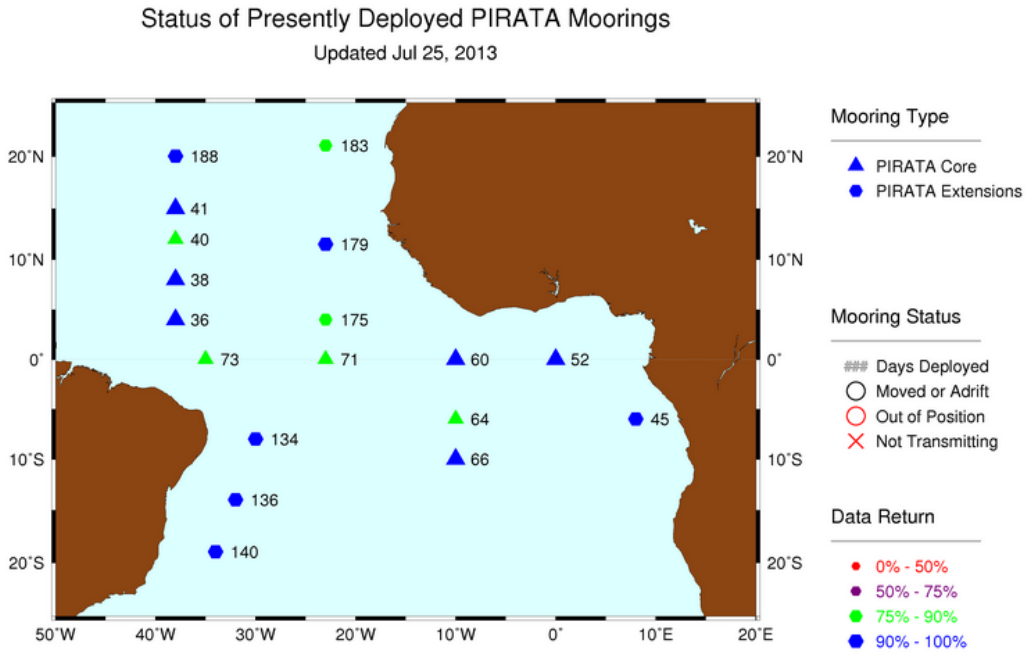

Fig. 6: PIRATA Array including PMEL/AOML Northeast Extension status on 25 July 2013. The numbers indicate how many days have passed since last servicing (ideally <365).). Figure from http://www.pmel.noaa.gov/tao/global/status/.

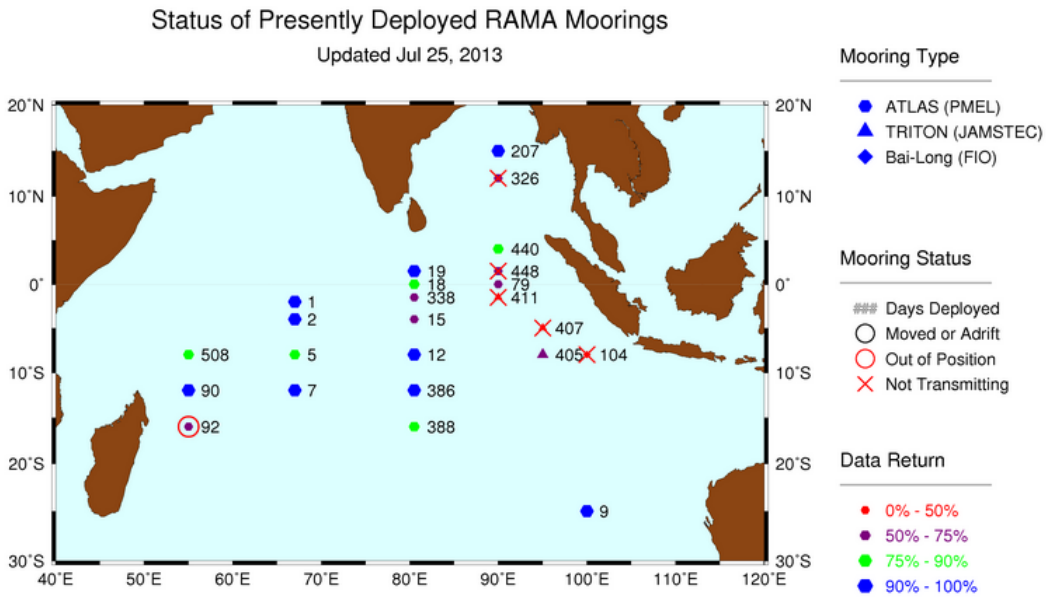

Fig. 7: International RAMA Array status on 25 July 2013. The numbers indicate how many days have passed since last servicing (ideally <365).). Figure from http://www.pmel.noaa.gov/tao/global/status/.