WORLD METEOROLOGICAL ORGANIZATION

DATA BUOY COOPERATION PANEL

THIRTY-FIRST SESSION

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ITEM: 13

ENGLISH ONLY

NATIONAL REPORT

(Submitted by Members/Member States[1])

SUMMARY AND PURPOSE OF DOCUMENT

This document provides the reports on national activities during the last intersessional period.

ACTION PROPOSED

The Meeting is invited to note the information contained in this document when discussing how it organises its work and formulates its recommendations.

Appendix: National reports for:

1. Brazil
2. Canada
3. China SOA
4. Hong Kong China
5. France
6. India
7. I.R. of Iran
8. Japan
9. Kenya
10. Netherlands
11. New Zealand
12. Republic of Korea
13. Slovenia
14. South Africa
15. United States
16. Germany

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 1

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	**Brazil**
Year	**2015**

1. CURRENT PROGRAMME:

Agency or programme	Brazil National Buoy Program (PNBOIA), part of the Brazil GOOS Programme	
Number and type of buoys	(a1) deployed during the year 2014	• 10 SVP drifters • 06 SVP-B drifters • 04 moored buoys of Platform type • 01 moored buoy of Costal type • 02 Argo Floats
	(a2) deployed during the year 2015	• 25 SVP drifters • 03 Argo Floats
	(b) operational as of 31 July	• 06 moored buoys of Platform type • 01 moored buoy of Costal type • 70 drifters
	(c) reporting on GTS as of 31 July	• 04 moored buoys of Platform type • 01 moored buoy of Costal type • 70 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) in 2014 and one (01) in 2015	

(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	• 08 SVP drifters • 21 SVP-B drifters • 02 moored buoys of Platform type • 04 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		

(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[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) Training	• Two Navy officer did a four months training in QC and buoys management, at NDBC (NOAA) (one in 2014 and one in 2015)

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 (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**						
2014	-22.887	-43.134	Met-Ocean Buoy	The buoy start to drift due to fisherman activity	Argos ID: 69008 WMO: 31052	From may 31 to December 05 of 2014	USD 17,000.00 (mooring line)	
2015	08°09'20"S	034°33'48" w	Met-Ocean Buoy	A vessel hit the buoy and broke one of the solar panel	Argos ID: 69009	No days of transmission lost	USD 2,000.00 (solar panel)	Photos have been taken
Efforts taken against vandalism		Instalation of fake cameras in the buoys. Placement of crime warning signs in the buoys						
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 2

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	Canada
Year	2015

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 (all operational) • 25 GDP Barometer Upgrade buoys deployed (not counted in GTS totals) • 0 waverider deployed
	(b) operational as of 31 August	• 14 - 3 M Discus • 3 - 6 M NOMAD • 0 – 0.7 M waverider
	(c) reporting on GTS as of 31 August	17 – 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	Coastal waters of British Columbia, open ocean deployments of moored buoys (NOMADS and 3-Meters Discus Buoys), and GDP drifting buoys at Northeast Pacific Ocean.	

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	• 20 (seasonal) moored buoys • 1 Pan Am Games WKR Moored Buoy • 1 Pan Am TriAXYS Wave Buoy
	(b) operational as of 31 August	• 10 – 3 M Discus • 11–1.7M WKR • 1 Pan Am TriAXYS Wave Buoy
	(c) reporting on GTS as of 31 August	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. 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	• 9 moored buoys maintained (8 NOMADs and one 3MD in NW Atlantic) • 0 waverider • 0 SVP
	(b) operational as of 31 August	• 1 - 3 M Discus • 7 - 6 M NOMAD • 0 - 0.7 M waverider • 0 - SVPB
	(c) reporting on GTS as of 31 August	7 – Moored Buoys 0 - SVPB
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. Note EC also provides logistical support for a number of E-SURFMAR drifting buoys deployments each year via the port of Halifax, as well as when ship deployment opportunities are available.	

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 drifters
	(b) operational as of 31 August	• 20 (including Polar SVP by U of Manitoba in Sep'14, ICEX by DND air deployments, and 1 POPS funded by DFO)
	(c) reporting on GTS as of 31 August	20
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, open ocean deployments of moored buoys (NOMADS and 3-Meters Discus 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	• 20 (seasonal) moored 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	Canadian waters of the Great Lakes, and large interior lakes in central Canada. Note that all deployments are seasonal. Hope to continue to use the hull from Churchill buoy for deployment in the Beaufort Sea.	

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	• 9 moored buoys • 0 waverider buoy • 4-5 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	

	buoys deployments each year via the port of Halifax, as well as when ship deployment opportunities are available.

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	Approx. 14 include **4 Polar SVP** in range 76-80N 134-160W, **7 ICEX-Air** in range of 81-85N 134-153W ,**1 POPS**, **and 2 AXIB** buoys near 74N 166W
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 deployments of ICEX-Air buoys.	

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

(a) Buoy design	• **Integration of Iridium SBD modem Moored Buoy Payload:** • Over the past two year, EC has worked with AXYS Technologies to integrate an Iridium short burst data (SBD) modem into the existing “payload”. • At current, there are 15 GOES/Iridium units installed at operational moored buoys in the Pacific & Yukon Region, as well as 2 GOES/Iridium units installed in Atlantic Region. •
(b) Instrumentation	• Plan to integrate new wind sensors into Buoy network. Initial integration of the new wind sensors to WM100/500 has to be completed by MSC Observation and Engineering and AXYS. •
(c) Others	• MSC Drifting Buoys are now transmitting in FM-18 and in BUFR formats. • MSC Moored Buoy Transformation Project for investigating streamlined and less costly methods to measure marine weather observations.

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

Ref	*Title*	*Type*[3]
1	DBCP_MB METADATA_2015-06-01_CA.xlsx	Metadata
2	List of References and Guidelines on Monitoring Standards to Industry w.r.t. Future Purchase of Met-Ocean Equipment  List of References and Guidelines on Mo	List of References for Industry
3		
4		

(repeat rows in the table above as necessary)

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	• Quality controlled using the Weather Buoy System
(b) Communications	•
(c) Buoy lifetimes	•
(d) Other	• Currently revisiting the web publication of MANMAR, and reviewing the content of MANMAR. • Project to improve the Historical Moored Buoy Metadata Information. •

ANNEX - FORM FOR REPORTING INCIDENTS OF VANDALISM ON DATA BUOYS

Zero buoy vandalism activity over the past year. (July 2014 – June 2015)

[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

APPENDIX 3

Country	China
Year	2014.08 - 2015.07

1. CURRENT PROGRAMME:

Agency or programme	**State Oceanic Administration**	
Number and type of buoys	(a) deployed during the year	48 buoys, including 3m, 6m and 10m discus moored buoys, Tsunami buoys, drifters, and Argo floats
	(b) operational as of 31 July	40 moored buoys 158 Argo floats
	(c) reporting on GTS as of 31 August	158
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[_]
	(b) met / ocean research	[_]
	(c) developmental	[_]
Main deployment areas	China Seas and adjacent waters	
Vandalism incidents	3	

Agency or programme	**China Meteorological Administration**	
Number and type of buoys	(a) deployed during the year	2
	(b) operational as of 31 August	27
	(c) reporting on GTS as of 31 August	0
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[_]
	(b) met / ocean research	[_]
	(c) developmental	[_]
Main deployment areas	China Seas	
Vandalism incidents	none	

Agency or programme	**Ministry of Environmental Protection**	
Number and type of buoys	(a) deployed during the year	0
	(b) operational as of 31 August	21
	(c) reporting on GTS as of 31 August	0
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[_]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	Coastal 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	10 Argo floats, 3 moored buoys, 1 deep sea mooring.

Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[_]
	(b) met / ocean research	[_]
	(c) developmental	[_]
Main deployment areas	South China Sea, Bohai Sea, Indian Ocean	

Agency or programme	**China Meteorological Administration**	
Number and type of buoys	planned for deployment in the next 12 months	10 met-ocean buoys: 4 -- 6m discus, 4—10m discus.
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[_]
	(b) met / ocean research	[_]
	(c) developmental	[_]
Main deployment areas	China Seas and adjacent waters	

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

States Oceanic Administration of China has been dedicating to the improvement of ocean observation sensors such as wind sensor, ocean temperature and humidity sensor, marine pressure sensor, gravity ocean wave sensor, etc. and has made certain progress. In order to meet the need of operational monitoring of ocean environment, some special buoys such as small wave buoy, water quality buoy, nuclear radiation buoy and oil spill monitoring buoy are developed and applied in the emergency events.

A lot of innovations are made in manufacturing process, sensor cost reduction, sensor quality and measurement accuracy by the State Ocean Administration. The overall quality and technology of ocean buoys has reached a new level, especially in terms of cost reduction and extension of usage life. The developed buoy with foamed material and polycarbonate is a new type of buoy. This buoys have stronger load capacity, better impact resisting performance and robust working ability, which greatly increase the life of the buoy.

4. <u>PUBLICATIONS (on programme plans, technical developments, QC reports, etc.):</u>

Ref	***Title***	***Type[4]***
1	Zhang Jiantao, Yao Shiqiang. 2014: The application of QTP in the test of buoy receive system software (in Chinese), The 16th Youth conference of China Instrument and Control Society, Changsha, 2014.	Instrumentation
2	Li Yongqi, Zhang Qian. 2014: The design of met-ocean buoy with mast cable (in Chinese), The 16th Youth conference of China Instrument and Control Society, Changsha,2014.	Instrumentation
3	Wang Bo, Li Min Liu Shixuan et al., 2014: Current status and trend of ocean data buoy observation technology applications. Chinese Journal of Scientific Instrument, 33(11):2401-2414.	Instrumentation
4	Chen, G., H. Zhang, and X. Wang, 2014: Annual amphidromic	Data use

[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

	columns of sea temperature in global oceans from Argo data, Geophys. Res. Lett., 41(6), 2014GL059430	
5	Cheng, L., and J. Zhu, 2014: Uncertainties of the Ocean Heat Content Estimation Induced by Insufficient Vertical Resolution of Historical Ocean Subsurface Observations, J. Atmos. Ocean. Technol., 31(6), 1383-1396.	Data use
6	Deng, Z., and T. Yu, 2014: Application of Argo-derived background diapycnal mixing in HYCOM, J. Mar. Syst.,137, 1-12	Data use
7	Fu, H., X. Wang, P. C. Chu, X. Zhang, G. Han, and W. Li, 2014: Tropical cyclone footprint in the ocean mixed layer observed by Argo in the Northwest Pacific, Journal of Geophysical Research: Oceans, 119(11), 8078-8092	Data use
8	Yuan, D., Z. Zhang, P. C. Chu, and W. K. Dewar, 2014: Geostrophic Circulation in the Tropical North Pacific Ocean Based on Argo Profiles, J. Phys. Oceanogr., 44(2), 558-575	Data use

5. <u>SPECIAL COMMENTS (if any):</u>

None.

ANNEX - FORM FOR REPORTING INCIDENTS OF VANDALISM ON DATA BUOYS

Country			China					
Contact person e-mail			Yu Ting, National Marine Data and Information Service, email: julia_yu_nmdis@163.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**						
2015.04.01	18° 28′ N	116° 5′ E	Tsunami buoy	Intentional damage	HX2	\	\	Yes(Fig.1)
2015.04.25			Met-ocean buoy	Ship collision damage	\	30days	20K USD	Yes(Fig.2)
2015.07.26			10m multi-parameter buoy	Intentional damage	\	60days	45K USD	Yes(Fig.3)
Efforts taken against vandalism			1. The installation of defense mechanisms such as anti-climb fence; 2. Improve the remote monitoring of buoy, such as install video camera and alarm system; 3. To strengthen the security capabilities of fasteners, such as increasing anti-theft bolts; 4. To strengthen the running state monitoring and control of the buoy.					
Awareness meeting Organised								
Suggestions (if any)			1. To establish the monitoring system of buoy operation 2. To strengthen the education, improve the senses of people in protecting scientific equipment.					
Photos on Vandalism								

Photo on vadalism

Figure 1 The damage of Tsunami buoys and the left battery

Figure 2 Ship collision damage

Figure3 Sensor lost and superstructure damage

APPENDIX 4

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	Hong Kong China
Year	2015

1. CURRENT PROGRAMME:

Agency or programme		
Number and type of buoys	(a) deployed during the year	1
	(b) operational as of 31 August	1
	(c) reporting on GTS as of 31 August	Yes
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[ ]
	(c) developmental	[ ]
Main deployment areas	South China Sea	
Vandalism incidents	(a) Number of incidents 0 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	1
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[ ]
	(c) developmental	[ ]
Main deployment areas	South China Sea	

(repeat table above as often as necessary)

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	• MetOcean Surface Velocity Program (SVP) drifting buoy attached with a holey sock drogue
(b) Instrumentation	• Equipped with pressure and temperature sensors to measure air pressure and sea surface temperature
(c) Others	• A drifter buoy was deployed for the first time over the South China Sea on 26 June 2015. With the arrangements of RTH Tokyo, the drifter buoy messages are disseminated on the GTS since 0600 UTC 22 July 2015. •

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

Ref	***Title***	***Type[5]***
1		
2		
3		
4		

(repeat rows in the table above as necessary)

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	• Performance of pressure and temperature sensors is checked before deploy • Real-time buoy data, including position and battery voltage data are closely monitored using a dedicated webpage • Quality of air pressure and sea surface temperature data from buoy are checked against observations from nearby land stations and voluntary observing ships
(b) Communications	• Hourly data transmission via Iridium • •
(c) Buoy lifetimes	• About 1 year from date of deployment • •
(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

[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

APPENDIX 5

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	**FRANCE**
Year	2015 (**1 July 2014 – 30 June 2015)**

1. CURRENT PROGRAMME:

Agency or programme	**Météo-France**	
Number and type of buoys	(a) deployed during the year	- 5 drifting buoys : 2 SVP-BS drifters with LPO and LOCEAN, 3 SVP-BTC - 37 SVP-B upgrades (21 for E-SURFMAR) - 71 SVP-B for E-SURFMAR
	(b) operational as of 31 August	- 68 (+ 91 for E-SUFMAR, including 4 in AtlantOS activities) buoys were operational at 30 June 2014 - 3 moored buoys (plus 2 in cooperation with UKMO)
	(c) reporting on GTS as of 31 August	- 68 (+ 91 for E-SUFMAR) buoys were reporting on GTS at 30 June 2014 - 3 moored buoys (plus 2 in cooperation with UKMO)
Purpose of programme	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	North Atlantic South Atlantic Indian Ocean	
Vandalism incidents		

Agency or programme	**INSU – LOCEAN (Salinity drifters)**	
Number and type of buoys	(a) deployed during the year	1 Pacific Gyre SVP-BS drifter deployed: in the equatorial Atlantic
	(b) operational as of 31 August	1
	(c) reporting on GTS as of 31 August	1
Purpose of programme	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	Eastern equatorial Atlantic	
Vandalism incidents		

Agency or programme	**CEREMA/DTecEMF** (Centre d'études et d'expertise sur les risques, l'environnement, la mobilité et l'aménagement / Direction technique eau, mer et fleuves), ex-CETMEF	
Number and type of buoys	(a) deployed during the year	
	(b) operational as of 31 August	22 buoys were operational at 30 June 2015
	(c) reporting on GTS as of 31 August	18 were reporting on GTS at 30 June 2015
Purpose of programme	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	French coasts, Saint Pierre & Miquelon, Guyana and La Reunion Island	
Vandalism incidents		

Agency or programme	**IRD** - French participation to PIRATA – (in cooperation with Meteo-France) and CLIVAR-Atlantic, AMMA2 + EU PREFACE & AtlantOS programmes (international collaborations)	
Number and type of buoys	(a) deployed during the year	Network of 6 Atlas buoys (All the buoys have been replaced in March-April 2015 during the PIRATA-FR25 cruise). 1 current meter mooring (ADCP) replaced during the PIRATA-FR25 cruise in March 2015 (at 10°W-0°N). During the PIRATA-FR25 cruise, 5 surface drifters (SVP-BS PacifiGyres, two equipped with Surplas, three equipped with a thermistance chain down to 80m depth -also as contribution of Meteo-France to AtlantOS-) have been deployed along 23°W and in the Gulf of Guinea.
	(b) operational as of 31 August	6 buoys were operational at 30 June 2015
	(c) reporting on GTS as of 31 August	6 buoys were reporting on GTS at 30 June 2015
Purpose of programme	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Tropical Atlantic Ocean	
Vandalism incidents		

Agency or programme	**SHOM** (Hydrographic and Oceanographic Service of the Navy)	
Number and type of buoys	(a) deployed during the year	- 10 drifting buoys owned by SHOM were deployed in last 12 months: - 10 WOCE (World Ocean Circulation Experiment) buoys drogued at 50 m;
	(b) operational as of 31 August	8 buoys were operational at 30 June 2015
	(c) reporting on GTS as of 31 August	All WOCE were reporting on GTS at 30 June 2015
Purpose of programme	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	Mediterranean Sea	
Vandalism incidents		

Agency or programme	**IUEM** (European Institute for Marine Studies, UBO)	
Number and type of buoys	(a) deployed during the year	
	(b) operational as of 31 August	1 buoy (MAREL Iroise) was operational at 30 June 2014
	(c) reporting on GTS as of 31 August	
Purpose of programme	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	French coast at the Brest-Bay outlet, at the interface with the Iroise sea (48°21’29’’ N, 4°33’05.48’’ W)	
Vandalism incidents		

2. PLANNED PROGRAMMES:

Agency or programme	**Météo-France**	
Number and type of buoys	planned for deployment in the next 12 months	About 115 SVP-B 30 upgrades
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	North Atlantic South Atlantic Indian Ocean	

Agency or programme	**INSU**	
Number and type of buoys	planned for deployment in the next 12 months	1 salinity drifter SVP-BS 1 surpact drifters (attached to an SVP drifter)
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	Equatorial Tropical Atlantic Ocean	

Agency or programme	**CEREMA/DTecEMF**	
Number and type of buoys	planned for deployment in the next 12 months	To maintain the network
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	French coasts, Saint Pierre & Miquelon, Guyana and La Reunion Island	

Agency or programme	**IRD**	
Number and type of buoys	planned for deployment in the next 12 months	To maintain the 6 Atlas Network and the 2 currentmeter moorings An additional ADCP mooring at 0°E-0°N should be deployed
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment	Tropical Atlantic Ocean	

areas	

Agency or programme	**SHOM**	
Number and type of buoys	planned for deployment in the next 12 months	15 drifting buoys
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas		

Agency or programme	**IUEM**	
Number and type of buoys	planned for deployment in the next 12 months	To maintain the “MAREL Iroise” 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	French coast at the Brest-Bay outlet, at the interface with the Iroise sea (48°21’29’’ N, 4°33’05.48’’ W)	

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	•
(b) Instrumentation	• In parallel to the use of SVP-B drifters, Meteo-France continuously surveys the performances of air pressure measurement for almost of the drifters of that kind deployed over the World Ocean. • The evaluation of SVP-B drifters fitted with a conductivity sensor is going on (co-operation between Meteo-France and LOCEAN) • Meteo-France is participating in the evaluation of drifters fitted with thermistor string SVP-BTC. • Meteo-France is testing news electronics for the french open ocean moored buoys, transmitting through Iridium system. • E-SURFMAR is developing a SAWS (Ship Automated Weather Station), so called EUCAWS for its VOS fleet. • INSU will investigate the use of inexpansive CT cells in order to estimate ocean salinity. Work will have to be done on proper antifouling protection. • In addition, capability to measure rainfall through acoustical measurements (microphones) is investigated (surpact drifters)
(c) Others	•

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

Ref	*Title*	*Type*[6]
1	Da-Allada, C. Y., G. Alory, Y. du Penhoat, J. Jouanno, N. Hounkonnou, and E. Kestenare : Causes for the recent increase for sea surface salinity in the northeast Gulf of Guinea, doi 10.2989/1814232X.2014.927398, Afr. J. of Mar. Scien, 2014.	7
2	Da-Allada, C. Y., Y. du Penhoat, J. Jouanno, G. Alory, and N. Hounkonnou : Modeled mixed-layer salinity balance in the Gulf of Guinea: Seasonal and interannual variability, in press in Ocean Dyn., 64, 12, 1783-1802, 2014.	7
3	Djakouré, S., P. Penven, B. Bourlès, J .Veitch, and V. Koné : Coastally trappe eddies in the north of the Gulf of Guinea, J. Geophys. Res., 119, doi 10.1002/2014JC010243, 2014.	7
4	Giordani, H., and G. Caniaux: Frontogenesis in the equatorial front formation in 2006. Climate Dynamics, Volume 43, Issue 11 (Special issue: Tropical Atlantic Variability and Climate), 10.1007/s00382-014-2293-3, 3147-3162, 2014	7
5	Hernandez, O., J. Boutin, N.Kolodziejczyk, G. Reverdin, N. Martin, F.Gaillard, N. Reul and J.L. Vergely : SMOS salinity in the subtropical north Atlantic salinity maximum: Part I: Comparison with Aquarius and in situ salinity, J. Geophys. Res., DOI 10.1002/2013JC009610, 2014.	7
6	Hounsou-Gbo, A., M. Araujo, B. Bourlès, D. Veleda, and J. Servain : Tropical Atlantic contributions to strong rainfall variability along the Northeast Brazilian coast, Advances in Meteorology, Volume 2014, ID 902084, 2014.	7
7	Johns, W.E., P. Brandt, B. Bourlès, A. Tantet, A. Papapostolou and A. Houk : Zonal Structure and Seasonal Variability of the Atlantic Equatorial Undercurrent, Climate Dynamics, (Published online: 23 avril 2014), Volume 43, Issue 11 (Special issue: Tropical Atlantic Variability and Climate), 3047–3069,doi 10.1007/s00382-014-2136-2, 2014.	7
8	Kolodziejczyk, N., F.Marin, B.Bourlès, Y.Gouriou, and H. Berger : Seasonal variability of the Equatorial Undercurrent termination and associated salinity maximum in the Gulf of Guinea, Climate Dynamics, (Published online: 28 March 2014), Volume 43, Issue 11 (Special issue : Tropical Atlantic Variability and Climate), 3025–3046, doi 10.1007/s00382-014-2107-7, 2014.	7
9	Lefevre, N., D.F. Urbano, F. Gallois, and D. Diverres : Impact of physical processes on the seasonal distribution of the fugacity of CO2 in the western tropical Atlantic, J. Geophys. Res., published online DOI 10.1002/2013JC009248, 2014	7
10	Nubi, O.A., B. Bourlès, C.A. Edokpayi, and N. Hounkonnou, Inter-annual variability on the influence of equatorial upwelling on biological productivity along 10°W in the Eastern Equatorial Atlantic (EEA), Journal of Biod. and Env. Sc., 4(1), 72-80, ISSN:2220-6663, 2014.	7
11	Nubi, O.A., B. Bourlès, C.A. Edokpayi, and N. Hounkonnou : The influence of the equatorial upwelling on biological productivity in the Gulf of Guinea as inferred from in-situ measurements, in press in African Journal of Marine Science (AJMS), 2015.	7
12	Perez, R.C., V. Hormann, R. Lumpkin, P. Brandt, W.E. Johns, F. Hernandez , C. Schmid, and B. Bourlès : Mean meridional currents in the central and eastern equatorial Atlantic, Climate Dynamics, (Published online: 31 October 2013), Volume 43, Issue 11 (Special issue : Tropical Atlantic Variability and Climate), 2943-2962, doi 10.1007/s00382-013-1968-5, 2014.	7
13	Pinker, R. T., A. Bentamy, K. B. Katsaros, Y. Ma, and C. Li:	7

[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

	Estimates of net heat fluxes over the Atlantic Ocean. J. Geophys. Res. Oceans, 119, 410–42, 2014.	
14	Servain, J., G. Caniaux, Y. K.Kouadio, M.J. McPhaden and M. Araujo : Recent climatic trends in the tropical Atlantic, Climate Dynamics, (Published online: 31 October 2013), Volume 43, Issue 11 (Special issue: Tropical Atlantic Variability and Climate), 3071-3089, doi 10.1007/s00382-014-2168-7, 2014.	7
15	Kergadallan X., R. Sanquer, A. Le Berre et G. Amis, 2014 : « Fiches synthétiques de mesure des états de mer », Edition Cerema DtecEMF (http://www.eau-mer-fleuves.cerema.fr/fiches-synthetiques-de-mesure-des-etats-de-mer-a980.html)	7
16	Centurioni L.R., V. Hormann, Y. Chao, G. Reverdin, J. Font, and D.-K. Lee, 2014 : Sea Surface Salinity Observations with Lagrangian Drifters in the Tropical North Atlantic during SPURS: Circulation, Fluxes and Comparisons with Remote Sensed Salinity from Aquarius. Oceanography, 28(1):96–105, http://dx.doi.org/10.5670/oceanog.2015.08	6
17	Reverdin G., S. Morisset, L. Marié, D. Bourras, G. Sutherland, N. Ward, J. Salvador, J. Font, Y. Cuypers, L. Centurioni, V. Hormann, N. Koldziejczyk, J. Boutin, F. D'Ovidio, F. Nencioli, N. Martin ,D. Diverres, G. Alory, R. Lumpkin, 2015 : Surface salinity in the North Atlantic subtropical gyre during the Strasse/SPURS summer 2012 cruise. Oceanography, 28 (1), 84-93, doi:10.5670/oceanog.2015.09.	3
18	Météo-France – Centre de Météorologie Marine, E-SURFMAR Data Buoys Monthly report.	4

5. <u>SPECIAL COMMENTS (if any):</u>

(a) Quality of buoy data	• 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. • 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. • The CMM reports the wave data collected by CETMEF in real time onto the GTS. • 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. • LOCEAN (INSU) has continued the production and validation of delayed-mode S data from the drifters deployed since 2005 by French and Spanish partners (data available on www.locean-ipsl.upmc.fr/smos/drifters under Regions).
(b) Communications	•
(c) Buoy lifetimes	•
(d) Other	• For the nineteenth consecutive year, Meteo-France funded 10 barometers to be added to SVP drifters deployed in the Tropical Indian Ocean, each year in November. Fifteen other upgrades were funded in 2015. These drifters are devoted to the Southern Ocean, south of 40°S in the Indian Ocean, as a principle. These 25 buoys of 2015 are upgraded to Iridium. These actions will be renewed in 2016. • IRD, also contributes to the deployment of SVP (5 SVP-BS in 2015) buoys and ARGO profilers (8 ARVOR in 2015) in the equatorial Atlantic during the PIRATA servicing cruises and also in the framework of the CORIOLIS programme. • During the PIRATA cruise, IRD provides CTD (8 in 2015) and XBT (109 in 2015) profiles in quasi-real time from the vessel for operational oceanography (MERCATOR).

APPENDIX 6

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	INDIA
Year	JUNE 2014 – JULY 2015

1. CURRENT PROGRAMME:

Agency or programme	National Institute of Ocean Technology, India	
Number and type of buoys	(a) deployed during the year	35
	(b) operational as of 31 August	19
	(c) reporting on GTS as of 31 August	19
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	(a) Number of incidents 6 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	National Institute of Ocean Technology, India	
Number and type of buoys	planned for deployment in the next 12 months	19 moored buoys
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x] 19
	(b) met / ocean research	[x] 19
	(c) developmental	[x]
Main deployment areas	Bay of Bengal and Arabian sea	

(repeat table above as often as necessary)

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	• Discus • •
(b) Instrumentation	• Indigenized Data Acquisition Systems developed • Indigenized Bottom pressure recorder developed •
(c) Others	• •

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

Ref	*Title*	*Type*[7]
1	*Vimala J, G. Latha and R. Venkatesan, Estimation of significant wave heights using numerical and neural techniques and comparison with buoy and satellite observations, International Journal of Ocean and Climate systems, Dec 2014, Vol 5, No.4, 223 – 238.*	7
2	*Venkatesan R, Arul Muthiah M, and Murugesh P, Unusual corrosion of Instrument Deployed in the Deep Sea for the Indian Tsunami early warning system. Marine Technology Society Journal, November/December 2014, Volume 48, N0. 6, pp. 6 – 13.*	6
3	*Venkatesan R, Vedachalam N, Arul Muthiah M, Kesavakumar B, Sundar R, Atmanand MA, Evolution of reliable and cost-effective power systems for buoys used in monitoring Indian seas. Marine Technology Society Journal. January/Feb 2015, Vol 49,N0. 1, pp. 71 – 87.*	1 & 3
4	*Chaitanya A.V.S., F. Durand, Simi Mathew, V. V. Gopalakrishna, F. Papa, M. Lengaigne, J. Vialard, Ch. Krantikumar and R.Venkatesan, Observed year-to-year sea surface variability in the Bay of Bengal during the period 2009–2014 period. Ocean Dynamics, February 2015, 65, N0. 2, pp.173 – 186.*	7
5	*Venkatesan R, Vedachalam N, Sundar R, Arul Muthiah, Prasad P, and Atmanand MA., Assessment of the reliability of the Indian seas tsunami buoy system. Journal of Society for Underwater Technology, 2015, Volume 32, No.4, pp.255 – 270.*	1& 3
6	*R. Venkatesan, S. Ramasundaram, R. Sundar, N. Vedachalam, R. Lavanya and M. A. Atmanand. Reliability assessment of state of the art real time data reception and analysis system for the Indian seas. Marine Technology Society Journal, May/June 2015, Volume 49, No.3, pp.127-134.*	5
7	*Suchandra Aich Bhowmick, Rashmi Sharma, K. N. Babu, A. K. Shukla, Raj Kumar, R. Venkatesan, Rakesh Gairola, Pascal Bonnefond, Nicolas Picot , Validation of SWH and SSHA from SARAL/AltiKa using Jason-2 and in-situ Observations Marine Geodesy, April, 2015, DOI:10.1080/01490419.2015.1042602.*	7
8	*Ashokan. M, Latha. G, Ramesh. R,"Analysis of shallow water ambient noise due to rain and derivation of rain parameters", Applied AcousticsElsevier,Vol 88, pp 114-122.*	7
9	*Najeem, M. C. Sanjana, G. Latha and P. Edwards Durai, "Wind induced ambient noise modelling and comparison with field measurements in Arabian Sea", Applied Acoustics-Elsevier, 89, 2015, pp*101-106	7

(repeat rows in the table above as necessary)

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	• Good. As per WMO standard • •
(b) Communications	• Indian Satellites used for data telemetry

[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

	• GPRS/GSM Communication used for Coastal buoys • •
(c) Buoy lifetimes	• 2 years • •
(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

ANNEX - FORM FOR REPORTING INCIDENTS OF VANDALISM ON DATA BUOYS

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					
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 in INR**	**Remarks (e.g. whether photos have been taken)**
	Latitude	**Longitude**						
2014	8N	73E	Moored OMNI Met-Ocean buoy	Precipitation sensor damaged.	AD09/ 23453	No data lost due this sensor	NIL	Enclosed
2014	10.5N	72.10E	Moored Met-Ocean buoy	Solar panel damaged	CALVAL/ 23497	No data lost due to solar panel damaged.	NIL	Enclosed
2014	15.5N	73.7E	Moored Met-Ocean buoy	Except hull remaining items lost	CB04/ 23170	Buoy replaced on Dec 2014. 178 days of data have been lost.		Enclosed
2015	14.2N	80.20E	Moored Met-Ocean buoy	Transmitter, sensors and hardware lost	CB05/ 23098	Buoy removed from location on 27/03/2015. 130 days of data have been lost.		Enclosed
2015	15.5N	73.7E	Moored Met-Ocean buoy	Full buoy lost	CB04/ 23170	Buoy has not yet been replaced. As of Jul 31, 2015, 41 days of data have been lost		Damage has not been verified
2015	20.34 N	67.56E	Moored Tsunami buoy	Buoy stopped transmitting and no ships have returned to site so vandalism is not verified.	ITBS12/ 23226	Buoy has not yet been replaced. As of Jul 31, 2015, 103 days of data have been lost	xxif mooring is lost	Damage has not been verified

Efforts taken against vandalism	Anti-theft hardware used on all moorings.
Awareness meeting Organized	Conducted Fisherman awareness and community interaction Programme at Goa in association with Indian Coast Guard and Fisheries. During the programme, the importance of buoys and its usage was highlighted to the community and sought their help and cooperation in safe guarding the buoys. Similar Awareness programmes were conducted at Krishnapatnam, Ennore & Royapuram (Photo enclosed)
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

_____

AD09 Rainfall sensor

CALVAL – Solar penal damaged

CB04 –damaged buoy and remaining items lost

CB05 – Mast lost (incl. Modem, sensors)

Awareness meeting Organized

Fisherman awareness programme

Video screening on NIOT operations

Team demonstration of NIOT operations


RAINA RAMPONKAR &FISHING CANOE OWNERS SOCIETY
Regd. No. 143
KATEM RAINA, VASCO-GOA-403802


INDIAN COAST GUARD
COMMUNITY INTERACTION PROGRAMME


INDIAN COAST GUARD

APPENDIX 7

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	I.R. of Iran
Year	2015

1. CURRENT PROGRAMME:

Agency or programme		
Number and type of buoys	(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 *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	Caspian Sea, Persian Gulf, and Oman Sea	
Vandalism incidents	(a) Number of incidents (two buoys disappeared) 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	Two 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		

(repeat table above as often as necessary)

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	• OCEANOR • DATAWELL • AANDERRA
(b) Instrumentation	• WAVE CHARACTERISTICS • WATER TEMPERATURE • SALINITY • CURRENT SPEED AND DIRECTION • WIND SPEED AND DIRECTION • AIR PRESSURE • AIR TEMPERATURE • HUMIDITY
(c) Others	•

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	• • •
(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

[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

ANNEX - FORM FOR REPORTING INCIDENTS OF VANDALISM ON DATA BUOYS

Country		I.R. of Iran					
Contact person e-mail		Layeghi2001@yahoo.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**						
2015	26°33'28".51N	53°43'16".21E	MOORED BUOY (DATAWELL)	DISAPEARED	KISH ISLAND			
2015	25°36'34".08N	57°46'18".12E	MOORED BUOY (DATAWELL)	DISAPEARED	JASK			
Efforts taken against vandalism		USING BETTER SOLUTION FOR TRACKING THE BUOYS					
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 8

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	**JAPAN**
Year	**2015**

1. CURRENT PROGRAMME:

Agency or programme	**Japan Meteorological Agency (JMA)**	
Number and type of buoys	(a) deployed during the year	・16 drifting buoys with air pressure, SST,wave height and wave period sensors ・19 profiling floats ・3 Tsunami buoys
	(b) operational as of 31 August	・5 drifting buoys with air pressure, SST, wave height and wave period sensors ・54 profiling floats ・3 Tsunami buoys
	(c) reporting on GTS as of 31 August	・5 drifting buoys with air pressure, SST, wave height and wave period sensors ・54 profiling floats ・3 Tsunami buoys
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x] ・weather and sea condition monitoring (drifting buoys) ・ocean state and climate monitoring (profiling floats) ・Tsunami monitoring (Tsunami buoys)
	(b) met / ocean research	[ ]
	(c) developmental	[ ]
Main deployment areas	・seas around Japan (drifting buoys and profiling floats) ・the Pacific Ocean (off the coast of Tohoku, Japan) (Tsunami buoys)	
Vandalism incidents	(a) Number of incidents: None	

Agency or programme	**Japan Agency for Marine-Earth Science and Technology (JAMSTEC)**	
Number and type of buoys	(a) deployed during the year	・28 profiling floats ・11 surface moorings for meteorological and subsurface oceanographic (8 TRITON buoys and 3 RAMA buoys)
	(b) operational as of 31 August	・186 profiling floats ・11 surface moorings for meteorological and subsurface oceanographic (8 TRITON buoys, 3 RAMA buoys)
	(c) reporting on GTS as of 31 August	・170 profiling floats ・11 surface moorings for

		meteorological and subsurface oceanographic (8 TRITON buoys, 3 RAMA buoys)
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x] (TRITON and RAMA buoys)
	(b) met / ocean research	[x] (profiling floats and TRITON and RAMA buoys)
	(c) developmental	[x] (profiling floats)
Main deployment areas	・the North Pacific and the Southern Ocean (profiling floats) ・the Western tropical Pacific (TAO/TRITON array) and the Eastern Indian Ocean (RAMA array)	
Vandalism incidents	(a) Number of incidents: 1 (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	7 surface drifters
	(b) operational as of 31 August	3 surface drifters
	(c) reporting on GTS as of 31 August	0
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[x] oceanographic research
	(c) developmental	[ ]
Main deployment areas	the East China Sea	
Vandalism incidents	(a) Number of incidents: None	

Agency or programme	**Okinawa Institute of Science and Technology Graduate University**	
Number and type of buoys	(a) deployed during the year	3 profiling floats
	(b) operational as of 31 August	6 profiling floats
	(c) reporting on GTS as of 31 August	0
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[x] oceanographic research
	(c) developmental	[ ]
Main deployment areas	mainly Okinawa Trough	
Vandalism incidents	(a) Number of incidents: None	

Agency or programme	**Tsurumi-Seiki Co., Ltd.**	
Number and type of buoys	(a) deployed during the year	0 profiling float
	(b) operational as of 31 August	0 profiling float
	(c) reporting on GTS as of 31 August	0
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[ ]
	(c) developmental	[ ]
Main deployment areas		
Vandalism incidents	(a) Number of incidents: None	

(repeat table above as often as necessary)

2. PLANNED PROGRAMMES:

Agency or programme	**Japan Meteorological Agency (JMA)**	
Number and type of buoys	planned for deployment in the next 12 months	・16 drifting buoys with air pressure, SST, wave height and

		wave period sensors ・27 profiling floats
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x] ・weather and sea condition monitoring (drifting buoys) ・ocean state and climate monitoring (profiling floats)
	(b) met / ocean research	[ ]
	(c) developmental	[ ]
Main deployment areas	seas around Japan	

Agency or programme	**Japan Agency for Marine-Earth Science and Technology (JAMSTEC)**	
Number and type of buoys	planned for deployment in the next 12 months	・30 profiling floats ・5 oceanographic drifters ・3 meteorological and subsurface oceanographic surface moorings (3 RAMA buoys)
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x] (TRITON and RAMA buoys)
	(b) met / ocean research	[x] (profiling floats and TRITON and RAMA buoys)
	(c) developmental	[x] (profiling floats)
Main deployment areas	the Eastern Indian Ocean (RAMA array)	

Agency or programme	**Seikai National Fisheries Research Institute, Fisheries Research Agency**	
Number and type of buoys	planned for deployment in the next 12 months	0 surface drifter
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[ ]
	(c) developmental	[ ]
Main deployment areas		

Agency or programme	**Okinawa Institute of Science and Technology Graduate University**	
Number and type of buoys	planned for deployment in the next 12 months	4 profiling floats
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[x]oceanographic research
	(c) developmental	[ ]
Main deployment areas	mainly Okinawa Trough	

Agency or programme	**Tsurumi-Seiki Co., Ltd.**	
Number and type of buoys	planned for deployment in the next 12 months	0 profiling float
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. <u>TECHNICAL DEVELOPMENTS:</u>

(a) Buoy design	• JAMSTEC RCGC Ocean Circulation Research Group deployed 1 Deep NINJA float in the Southern Ocean in December 2014. We have ever deployed 15 Deep NINJA floats and 4 floats are now active. Their information and data available at http://www.jamstec.go.jp/ARGO/deepninja/. The 3 Deep NINJA floats will be deployed in the Indian Southern Ocean and the North Pacific in this year. •
(b) Instrumentation	•
(c) Others	•

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

Ref	***Title***	***Type[9]***
1	Japan National Report, Appendix 6, Report of the 16th meeting of the International Argo Steering Team.	(1) Implementation, (2) Operations, (3) Instrumentation, (5) Data Management, (7) Data use
2	Argo National Data Management Report of Japan, 2014, Appendix 5, Report of the 15th Argo Data Management Meeting.	(4) Quality Management, (5) Data Management, (7) Data use
3	Development of a profiling float for deep ocean observation, "Deep NINJA", Technologies related to float hardware, *Journal of the Japan Society for Marine Surveys and Technology*, 27(1), 1-17. (in Japanese)	(1) Implementation, (3) Instrumentation
4	Development of a profiling float for deep ocean observation, "Deep NINJA", Technologies related to functions for observation, *Journal of the Japan Society for Marine Surveys and Technology*, 27(1), 19-46. (in Japanese)	(1) Implementation, (3) Instrumentation, (4) Quality Management, (6) Data collection and/or location, (7) Data use

(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	•

[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

	• •

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		Japan						
Contact person e-mail		triton@jamstec.go.jp						
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**						
2015	2N	138E	Met-Ocean Buoy	Tower broken	12013 / 52080	0	300,000JPY	photo-1 .jpg
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 9

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	KENYA
Year	2015

1. CURRENT PROGRAMME:

Agency or programme	Scripps Institute of Oceanography	
Number and type of buoys	(a) deployed during the year	None
	(b) operational as of 31 August	None
	(c) reporting on GTS as of 31 August	None
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[_]
	(b) met / ocean research	[_]
	(c) developmental	[x]
Main deployment areas	Western Indian Ocean	
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	Scripps Institute of Oceanography KMD received four SVP drifters from the Scripps Institute of Oceanography early 2015. Efforts by our PMO and JCOMMOPS (Martin) are underway to recruit a ship to deploy the drifters in North Western Indian Ocean. We are also hoping that through the KMD-Scripps collaboration, we will be able to have some of the future drifters fitted with additional sensors such as barometers. The Kenya Marine Fisheries Institute (KMFRI) received a ship donation from Belgium and we are hopeful that we may get ship time from the same research vessel. KMD has plans to acquire two coastal ocean fixed buoys including a tsunami monitoring buoy (DART) in the near future.	
Number and type of buoys	planned for deployment in the next 12 months	Four SVP drifters
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[_]
	(b) met / ocean research	[_]
	(c) developmental	[x]
Main deployment areas	Western Indian Ocean	

Agency or programme	Kenya Meteorological Department KMD received four SVP drifters from the Scripps Institute of Oceanography early 2015. Efforts by our PMO and JCOMMOPS (Martin)

	are underway to recruit a ship to deploy the drifters in North Western Indian Ocean. We are also hoping that through the KMD-Scripps collaboration, we will be able to have some of the future drifters fitted with additional sensors such as barometers.	
Number and type of buoys	planned for deployment in the next 12 months	Acquire and deploy two mooring buoys and one DART
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[_]
	(b) met / ocean research	[_]
	(c) developmental	[x]
Main deployment areas	Western Indian Ocean off Kenyan Coast	

(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[10]***
1	None	
2		
3		
4		

(repeat rows in the table above as necessary)

5. SPECIAL COMMENTS (if any): **NONE**

(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

[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

APPENDIX 10

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	Netherlands
Year	2015

1. CURRENT PROGRAMME:

Agency or programme	Argo – Dutch Argo Programme	
Number and type of buoys	(a) deployed during the year	7
	(b) operational as of 31 August	14
	(c) reporting on GTS as of 31 August	
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[]
	(c) developmental	[]
Main deployment areas	South Atlantic Ocean / ACC	
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	Argo – Dutch Argo Programme	
Number and type of buoys	planned for deployment in the next 12 months	7
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[]
	(c) developmental	[]
Main deployment areas	South Atlantic Ocean / ACC	

(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[11]***
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	• Many premature failures due to battery leak (known feature of Apex floats supplied between 2009 and early 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

APPENDIX 11

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	**NEW ZEALAND**
Year	**2015**

1. <u>CURRENT PROGRAMME:</u> ***(for period 1st Aug 2014 – 31st July 2015)***

A. Agency or programme	**Meteorological Service of New Zealand (MSNZ)**	
Number and type of buoys	(a) deployed during the year	2 SVP-B
	(b) operational as of 31st July	8
	(c) reporting on GTS as of 31st July	8
Purpose of programme	Provide real-time data for MetService weather forecasting needs.	
Main deployment areas	Tasman Sea, Southern Ocean	
Vandalism incidents	None	

B. Agency or programme	**MSNZ / Global Drifter Program (GDP)**	
Number and type of buoys	(a) deployed during the year	12 SVP-B
	(b) operational as of 31st July	12
	(c) reporting on GTS as of 31st July	12
Purpose of programme	Provide real-time data for MetService forecasting / GDP needs.	
Main deployment areas	Tasman Sea, Pacific Ocean – North and East of the North Island.	
Vandalism incidents	None	

C. Agency or programme	**NOAA / GDP / MSNZ**	
Number and type of buoys	(a) deployed during the year	10 SVP-B
	(b) operational as of 31st July	10
	(c) reporting on GTS as of 31st July	10
Purpose of programme	NOAA – GDP - / Assist NZ MetService forecasting.	
Main deployment areas	Southern Ocean from New Zealand towards Antarctica up to 60 deg. South. – *(Deployed by NIWA)*	
Vandalism incidents	None	

2. PLANNED PROGRAMMES: ***(for period 1st Aug 2015 – 31st July 2016)***

A. Agency or programme	**MSNZ Barometer Upgrade Program (GDP)**	
Number and type of buoys	Planned deployment in the next 12 months.	10 SVP-B
Purpose of programme	Provide real-time data for MetService weather forecasting needs.	
Main deployment areas	Tasman Sea, Southern Ocean.	

B. Agency or programme	**NOAA / GDP / MSNZ – Southern Ocean**	
Number and type of buoys	Planned for deployment in the next 12 months	5 SVP-B
Purpose of programme	To support the GDP to increase the number of buoy observations in the Southern Ocean – assist NZ MetService forecasting.	
Main deployment areas	Southern Pacific Ocean – South of NZ – towards Antarctica.	

C. Agency or programme	**NOAA / GDP / MSNZ - North East of NZ**	
Number and type of buoys	Planned for deployment in the next 12 months.	10 SVP-B
Purpose of programme	To support the GDP to increase the number of buoy observations in an area NE of NZ.	
Main deployment areas	NE of NZ - 166-175W – 21-35S.	

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	• N/A
(b) Instrumentation	• N/A
(c) Others	• N/A

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

Ref	***Title***	***Type[12]***
1	N/A	

(repeat rows in the table above as necessary)

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	• Good / excellent – A few random co-ordinate issues.
(b) Communications	• Iridium drifter data was delayed once due to data processing problems by Scotia Weather Services. • CLS had a data distribution issue once during this period. • Both problems fixed quickly with good communication regarding the issue from both companies.

(c) Buoy lifetimes	• One Marlin-Yug had a life time of 10 days after an unusual GPS error. • Another Marlin-Yug had barometer / connection problems after 15 months. All other Marlin-Yug and MetOcean buoys deployed prior and post this buoy have been performing well. • A Marlin-Yug Argos buoy is still in operation after 38 months of active life.
(d) Other	N/A

[12]: 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

APPENDIX 12

Country	**REPUBLIC OF KOREA**
Year	**2015**

1. CURRENT PROGRAMME:

Agency or programme	**Korea Meteorological Administration**	
Number and type of buoys	(a) deployed during the year	6 Moored Buoy
	(b) operational as of 31 August	55 Moored Buoy
	(c) reporting on GTS as of 31 August	11 Moored Buoy
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Yellow Sea(the western sea of Korea), East Sea(the eastern sea of Korea) and South Sea(the southern sea of Korea)	
Vandalism incidents		

Agency or programme	**National Institute of Meteorological Research**	
Number and type of buoys	(a) deployed during the year	17 Argo floats
	(b) operational as of 31 August	68 Argo floats
	(c) reporting on GTS as of 31 August	68 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 and Northwest Pacific Ocean	
Vandalism incidents		

Agency or programme	**Korea Hydrographic and Oceanographic Administration**	
Number and type of buoys	(a) deployed during the year	3 Moored Buoy
	(b) operational as of 31 August	24 Moored Buoy
	(c) reporting on GTS as of 31 August	-
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x] To provide real time informations and compare with model predictions
	(b) met / ocean research	[ ]
	(c) developmental	[ ]
Main deployment areas	Yellow Sea(the western sea of Korea) and East Sea(the eastern and southern coast of Korea)	
Vandalism incidents		

Agency or programme	**Korea Institute of Ocean Science and Technology**	
Number and type of buoys	(a) deployed during the year	2 Moored Buoy
	(b) operational as of 31 August	2 Moored Buoy
	(c) reporting on GTS as of 31 August	-
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Yellow Sea(the western sea of Korea), East Sea(the eastern sea of Korea)	
Vandalism incidents		

2. PLANNED PROGRAMMES:

Agency or programme	**Korea Meteorological Administration**

Number and type of buoys	planned for deployment in the next 12 months	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	Yellow Sea(the western sea of Korea), East Sea(the eastern sea of Korea) and South Sea(the southern sea of Korea)	

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 Moored Buoy
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x] To provide real time informations and compare with model predictions
	(b) met / ocean research	[ ]
	(c) developmental	[ ]
Main deployment areas	Yellow Sea(the western sea of Korea) and East Sea(the eastern and southern coast of Korea)	

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

Ref	***Title***	***Type[13]***
1	Application of a large ocean observation buoy in the middle area of the Yellow Sea	Note
2	Variation pattern analysis on the air and surface water temperatures of the Yellow Sea monitoring buoy	Article

[13]: 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

APPENDIX 13

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	Slovenia
Year	2015

1. CURRENT PROGRAMME:

Agency or programme	Slovenian Environment Agency	
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	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	Adriatic Sea, Gulf of Trieste	
Vandalism incidents	(a) Number of incidents: 0 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	Slovenian Environment Agency	
Number and type of buoys	planned for deployment in the next 12 months	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		

(repeat table above as often as necessary)

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	• 1 metal buoy, own design • 2 plastic (PET) buoys, design Fugro Oceanor Seawatch Midi Buoy •
(b) Instrumentation	• • •
(c) Others	• • •

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

Ref	***Title***	***Type[14]***
1	/	
2		
3		
4		

(repeat rows in the table above as necessary)

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	• approximately once per month manual control measurements for the sea surface temperature at all 3 buoys, no control measurements for other parameters • •
(b) Communications	• GSM network • •
(c) Buoy lifetimes	• • •
(d) Other	• • •

[14]: 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

APPENDIX 14

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	South Africa
Year	2014/2015

1. CURRENT PROGRAMME:

Agency or programme	SAWS, DEA (Oceans and Coast), UCT, SAEON, CSIR and BCRE	
Number and type of buoys	(a) deployed during the year	43x SVP-B 4x Sea gliders 4x Wave gliders 1x Slocum glider
	(b) operational as of 31 August	39x SVP-B 4x Sea gliders 4x Wave gliders 1x Slocum glider
	(c) reporting on GTS as of 31 August	39x SVP-B
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 Atlantic, South Indian Ocean, sub-Antarctic Southern Ocean	
Vandalism incidents	(a) Number of incidents None	

(repeat table above as often as necessary)

2. PLANNED PROGRAMMES:

Agency or programme	**2015/16**	
Number and type of buoys	planned for deployment in the next 12 months	IBPIO = 20 ISABP = 25 IPAB = 17 Total (62) x SVP-B buoys 4x Southern Ocean Argo 4x South Atlantic Argo 2x Sea gliders 2x Carbon wave gliders
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	Sub-Antarctic Southern Ocean, South Atlantic, Southern Ocean	

(repeat table above as often as necessary)

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	• SVP-B are mainly Clearwater buoys. • CSIR wave buoys are both directional and non-directional Datawell Waveriders
(b) Instrumentation	• Wave gliders: wave height, period and direction, SST, wind

	speed and direction, atmospheric pressure and air temperature • SVP-B: SST and atmospheric pressure
(c) Others	• None

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

Ref	***Title***	***Type[15]***
1	National DBCP reports for the ISABP, IBPIO, IPAB and SOBP	2,6,7
2	Website for CSIR SOCCO - http://socco.org.za/	2,3, 6
3	Ansorge et al. 2014. Evidence of a southward eddy corridor in the south-west Indian ocean. *Deep Sea Research Part II: Topical Studies in Oceanography*	2, 6,7
4	Swart et al. 2014. The seasonal cycle of mixed layer characteristics and phytoplankton biomass in the Sub-Antarctic Zone: a high-resolution glider experiment. *J. Marine Systems*.	2, 6, 7
5	Thomalla et al. 2015. High-resolution view of the spring bloom initiation and net community production in the Subantarctic Southern Ocean using glider data. – *ICES Journal of Marine Science*	2, 6, 7

(repeat rows in the table above as necessary)

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	• SVP-B : Good • Wave gliders : Good • Sea gliders : Good
(b) Communications	• SVP-B : Good • Wave gliders : Good • Sea gliders : Good
(c) Buoy lifetimes	• SVP – B : Good • Wave gliders : Excellent • Sea gliders : Excellent
(d) Other	

[15]: 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

APPENDIX 15

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

Country	**United States of America**
Year	**2015**

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 2014 – 31 Jul 2015: 1041 drifters
(b) operational as of 1 August 2015: 1407
(c) reporting on GTS as of 1 August: 1407

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.

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 2014 –31 July 2015: 54
(b) operational as of 1 August 2015: 94
(c) reporting on GTS as of 1 August 2015: 94

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 2014 – 31 July 2015: 31

(b) operational as of 1 August 2015: 32

(c) reporting on GTS as of 1 August 2015: 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 July 2014 - 31 July 2015: 44 toroids and 3 subsurface

(b) operational as of 1 August 2015: 51

(c) reporting on GTS as of 1 August 2015: 51

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 2014 – 31 Jul 2015: 16 surface toroids, 1 developmental surface toroid

(b) operational as of 1 August 2015: 18 surface toroids, 1 developmental toroid

(c) reporting on GTS as of 1 August 2015: 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 2014 – 31 Jul 2015: 15 surface toroids, 3 subsurface moorings,
(b) operational as of 1 August 2015: 12 surface toroids, 9 subsurface, 2 developmental
(c) reporting on GTS as of 1 August: 12

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 34 (74%) 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 2014 – 31 July 2015: 68 Argo floats, 17 Iridium floats, 52 MetOcean Argos SLDMB drifters, 5 MetOcean Iridium iSphere drifters, 26 MetOcean Iridium iSVP drifters, 11 MetOcean Iridium iSLDMB drifters
(b) operational as of 31 July 2015: 107 Argo floats, 11 Iridium floats, 11 Iridium iSVP drifters
(c) reporting on GTS as of 31 July 2015: 107 Argos floats, 11 Iridium floats, 11 Iridium iSVP drifters

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

(b) met / ocean research:

(c) developmental:

Main deployment areas: Global.

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: 23 surface toroids and 5 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: ~50 buoys worldwide and 65 floats worldwide.

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

(b) met / ocean research:

(c) developmental:

Main deployment areas: Global.

TECHNICAL DEVELOPMENTS:

PMEL has completed testing "Tropical-Flex" moorings alongside PMEL legacy moorings. T-Flex moorings communicate via Iridium modem and Seabird electronics replace legacy PMEL temperature thermistors. T-Flex Evaluation Tech Memo is in progress.

PMEL is testing technical solutions to Saharan dust bias to moored radiation measurements.

NDBC has deployed 54 TAO Refresh moorings in the TAO array since 26 July 2013, leaving only one station not refreshed (currently scheduled for the upcoming year).

NDBC has also deployed 11 Technical Refresh (SCOOP) systems in the weather buoy array since 04 November 2014 including 2 at operational stations.

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SPECIAL COMMENTS (if any):

(a) Changes made to Tropical Atmosphere Ocean (TAO) Mooring Array position information:

The TAO moorings are run by the NOAA National Data Buoy Center (NDBC), and are part of the TAO/TRITON mooring array which spans the Tropical Pacific. The NDBC has been informed that vandalism continues to plague the TAO array, especially in the eastern sector, which drastically reduces the data available for assimilation into models and for climate research. Therefore, the NDBC has decided to reduce the publically available position information on its website, as one of several counter-vandalism measures. The mooring positions are available to the nearest 0.1 degree when transmitted through the Global Telecommunications System (GTS), and to nominal mooring position on the TAO website.

NDBC will provide the high resolution position of each TAO Mooring to stakeholders and members of the climate and research community who request this information. Questions or queries should be directed to shannon.mcarthur@noaa.gov.

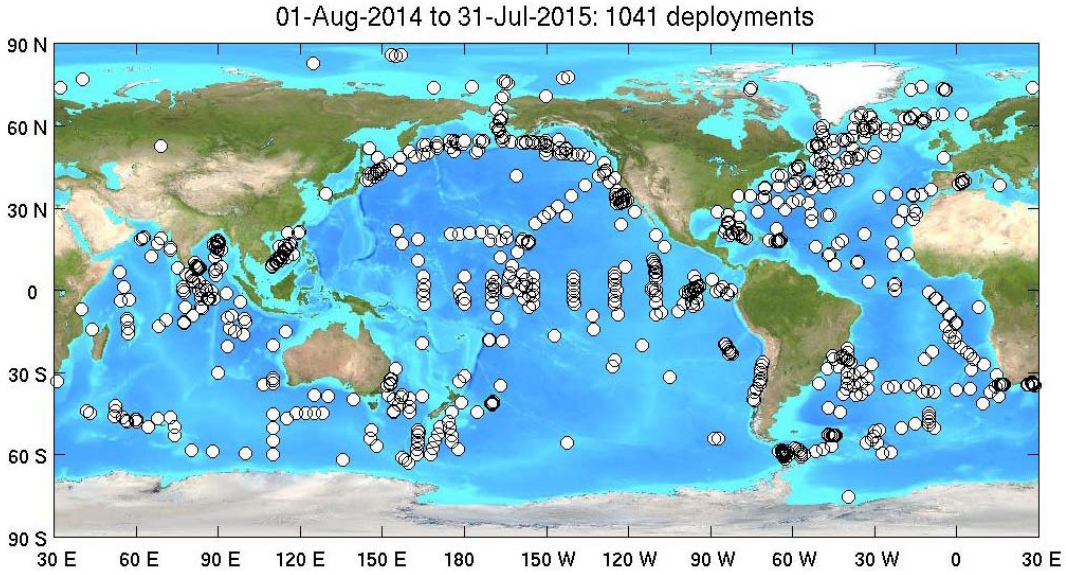

Fig. 1: Global Drifter Program deployment locations during the year.

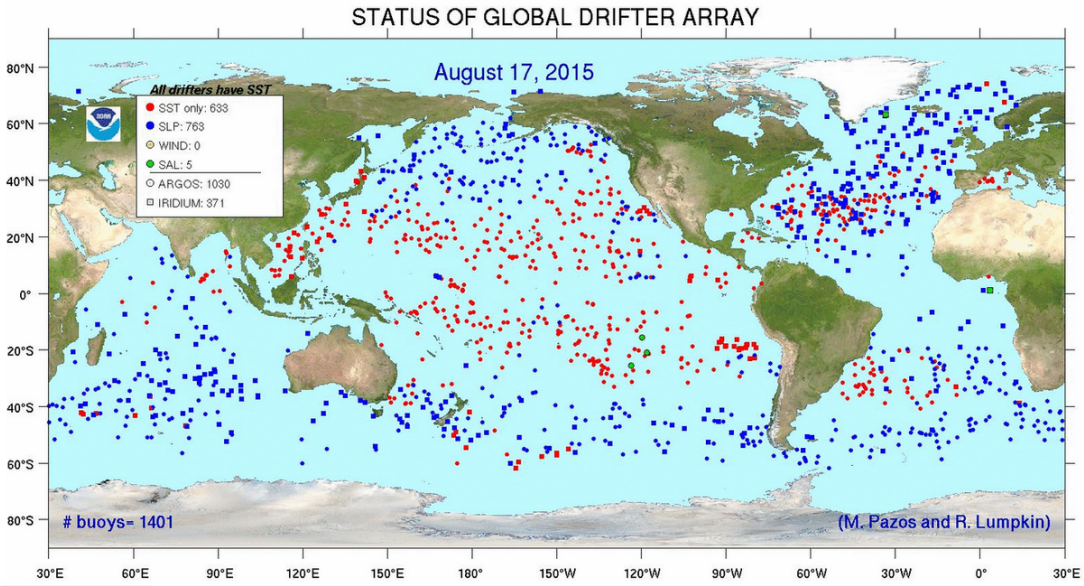

Fig. 2: Global drifter array status as of 17 August 2015. Figure from http://www.aoml.noaa.gov/phod/dac.

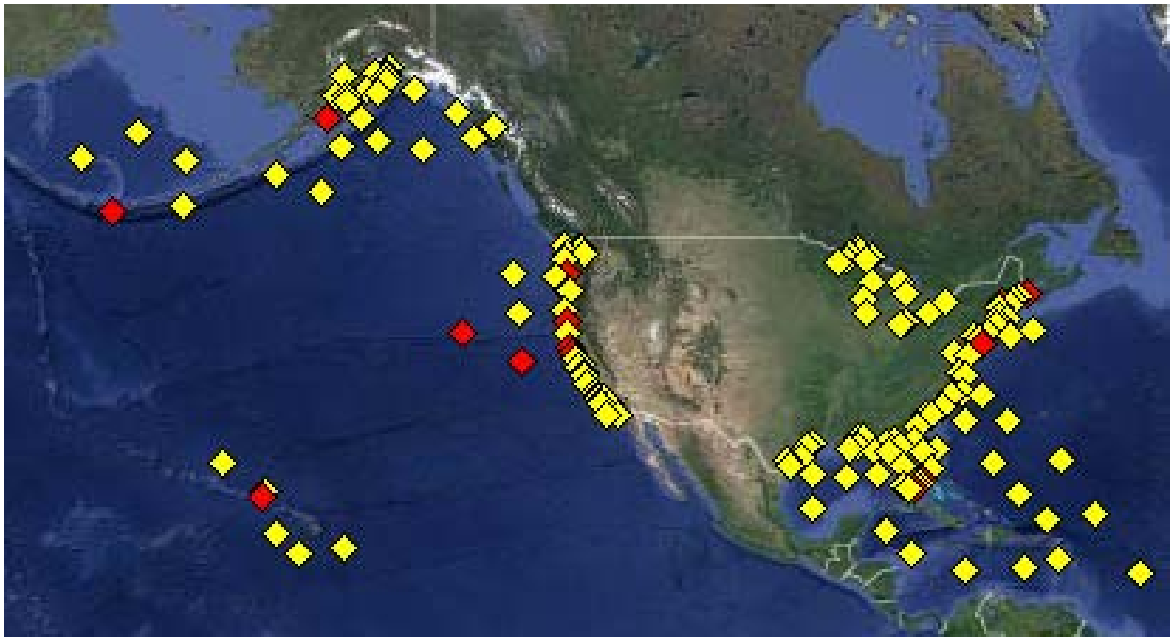

Fig. 3: NDBC Moored Buoys (MET/OCEAN), showing stations reporting in the last 8h (yellow) or not (red). Figure from http://www.ndbc.noaa.gov/obs.shtml. This image is for 20 August 2015.

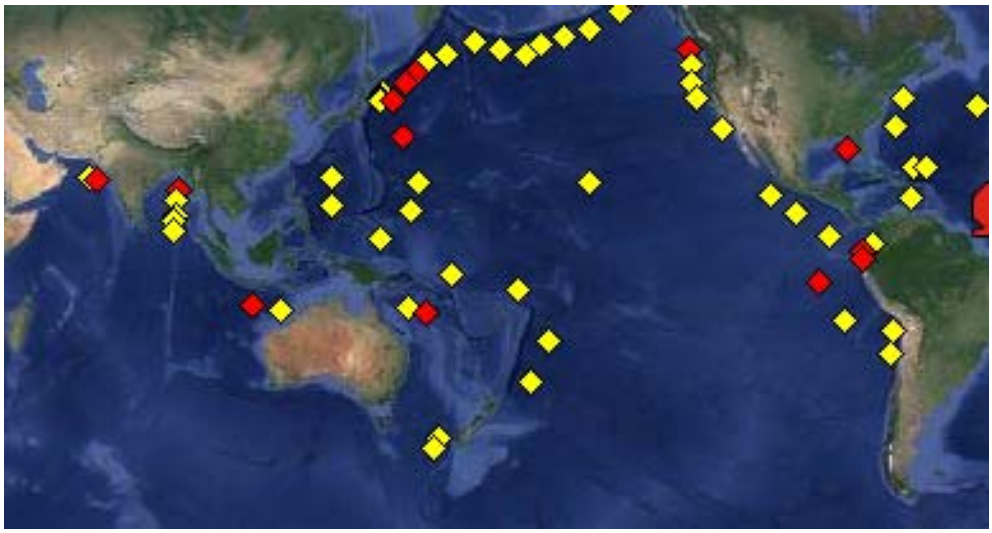

Fig 4: International Tsunami Network status, showing stations reporting in the last 24h (yellow) or not (red). Figure from http://www.ndbc.noaa.gov/obs.shtml. This image is for 20 August 2015.

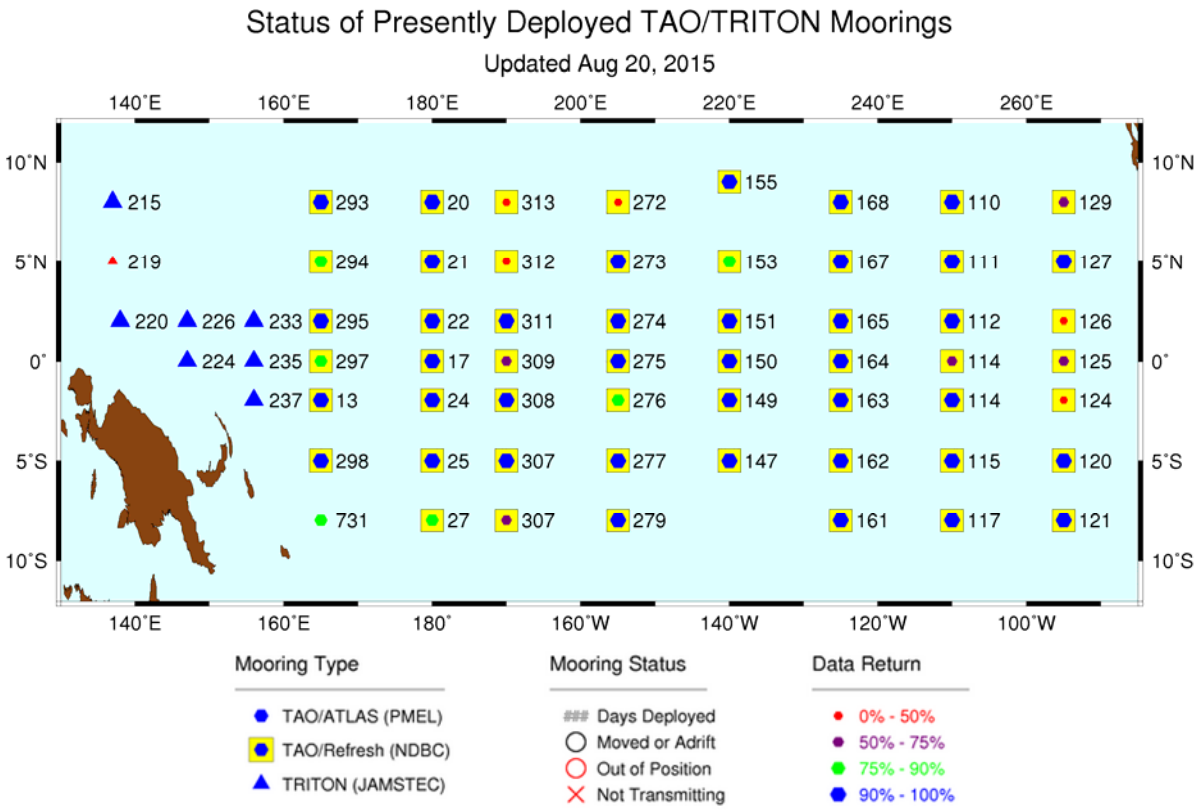

Fig. 5: NDBC Tropical Atmosphere Ocean (TAO) Array and TRITON Array status on 20 August 2015. The numbers indicate how many days have passed since last servicing (ideally <365). Figure from http://www.pmel.noaa.gov/tao/global/status/.

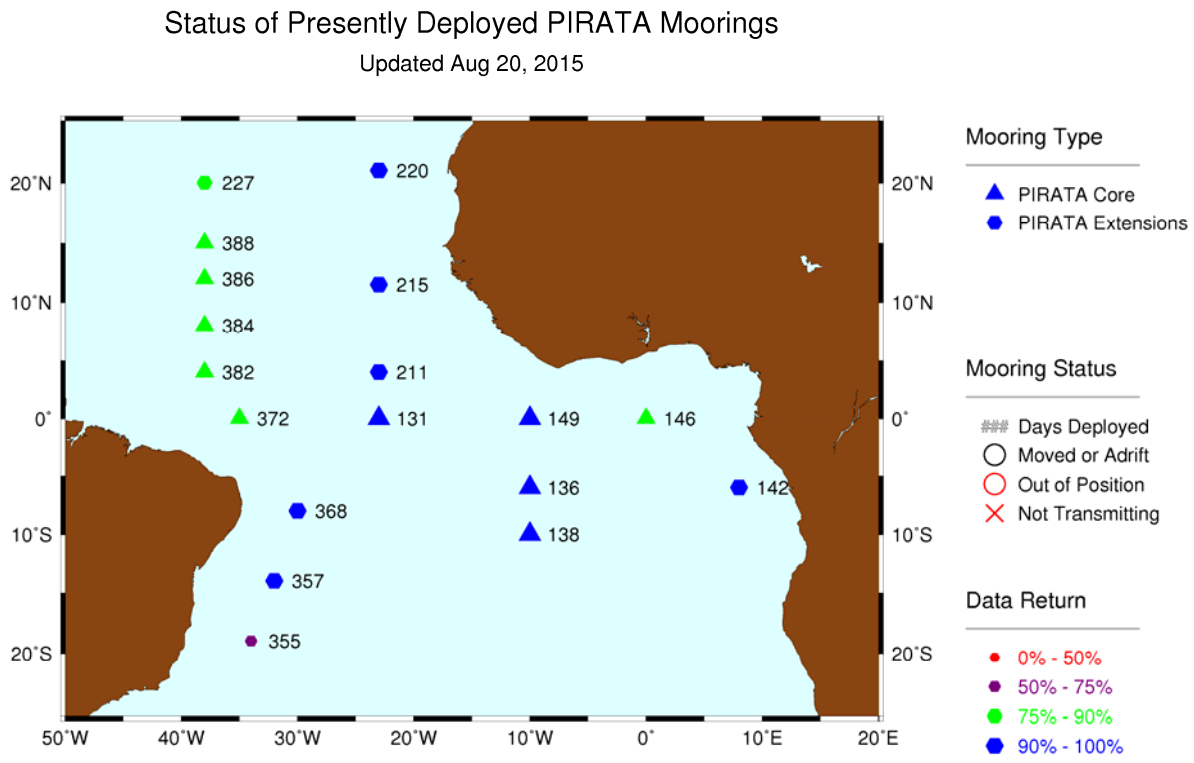

Fig. 6: PIRATA Array including PMEL/AOML Northeast Extension status on 20 August 2015. The numbers indicate how many days have passed since last servicing (ideally <365).). Figure from http://www.pmel.noaa.gov/tao/global/status/.

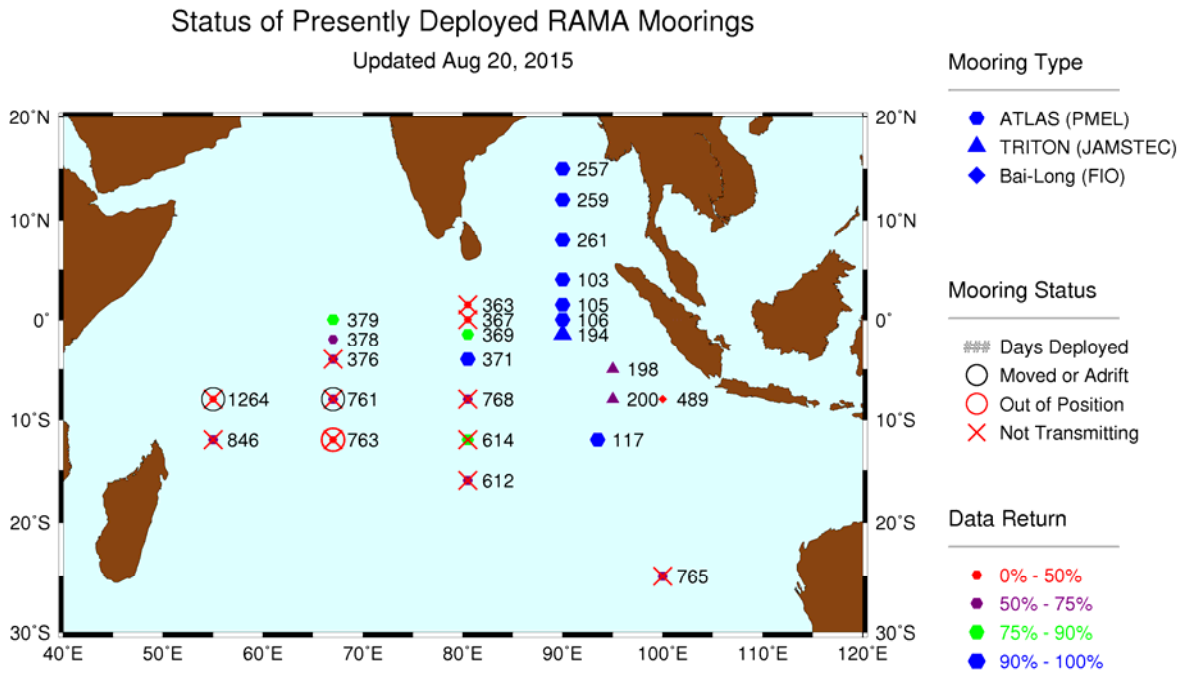

Fig. 7: International RAMA Array status on 20 August 2015. The numbers indicate how many days have passed since last servicing (ideally <365).). Figure from http://www.pmel.noaa.gov/tao/global/status/.

APPENDIX 16

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

DATA BUOY CO-OPERATION PANEL (DBCP)

Country	Germany
Year	2015

1. CURRENT PROGRAMME:

Agency or programme	GEOMAR Kiel, Argo floats, SFB Climate-Biogeochemistry interactions in the tropical ocean (ARGOS-No. 8165)	
Number and type of buoys	(a) deployed during the year	9
	(b) operational as of 31 August	9
	(c) reporting on GTS as of 31 August	9
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Tropical Pacific	
Vandalism incidents	(a) Number of incidents 0 If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

Agency or programme	GEOMAR Kiel, Glider survey, SFB 754, BMBF AWA, EU FP7 GROOM	
Number and type of buoys	(a) deployed during the year	10
	(b) operational as of 31 August	Varies through the year
	(c) reporting on GTS as of 31 August	Varies through the year
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	West African Coast / Cape Verde	
Vandalism incidents	(a) Number of incidents 0 If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

Agency or programme	GEOMAR Kiel, Moored bouys (EU FP7 NACLIM; GEOMAR)	
Number and type of buoys	(a) deployed during the year	3
	(b) operational as of 31 August	1
	(c) reporting on GTS as of 31 August	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	Subpolar North Atlantic & Cape Verde	
Vandalism incidents	(a) Number of incidents If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

Agency or programme	Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung Snow Depth Buoys	
Number and type of buoys	(a) deployed during the year	8
	(b) operational as of 31 August	6
	(c) reporting on GTS as of 31 August	0
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 and Weddell 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.	

Agency or programme	Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung Thermistor Buoys for Sea Ice Mass Balance	
Number and type of buoys	(a) deployed during the year	5
	(b) operational as of 31 August	6
	(c) reporting on GTS as of 31 August	0
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 and Weddell 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.	

Agency or programme	Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung Ice Surface Velocity Profiler	
Number and type of buoys	(a) deployed during the year	6
	(b) operational as of 31 August	4
	(c) reporting on GTS as of 31 August	4
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 and Weddell 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.	

Agency or programme	Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung Gilder survey, DFG FOR1740 WP1.1 EU FP7 GROOM	
Number and type of buoys	(a) deployed during the year	2
	(b) operational as of 31 August	2
	(c) reporting on GTS as of 31 August	2

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	Western 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.	

Agency or programme	Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung Subsurface mooring monitoring (ARGOS-No. 8919)	
Number and type of buoys	(a) deployed during the year	50
	(b) operational as of 31 August	50
	(c) reporting on GTS as of 31 August	0
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Weddell Sea, Arctic	
Vandalism incidents	(a) Number of incidents If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

Agency or programme	Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung Argo Subsurface (ARGOS-No. 10919)	
Number and type of buoys	(a) deployed during the year	0
	(b) operational as of 31 August	1
	(c) reporting on GTS as of 31 August	1
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Weddell Sea, Arctic	
Vandalism incidents	(a) Number of incidents If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

Agency or programme	Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung Migrating seals (ARGOS-No. 1535)	
Number and type of buoys	(a) deployed during the year	29
	(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	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	King George Island (Bellinghausen /Amundsen Seas); Filchner Outflow System (Weddell 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.

Agency or programme	Bundesamt für Seeschifffahrt und Hydrographie, German Argo (ARGOS-No. 1895)	
Number and type of buoys	(a) deployed during the year	60
	(b) operational as of 31 August	107 (14 floats with Iridium)
	(c) reporting on GTS as of 31 August	107
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[]
	(c) developmental	[ ]
Main deployment areas	North Atlantic, Nordic Seas, Weddell Gyre	
Vandalism incidents	(a) Number of incidents If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

Agency or programme	Bundesamt für Seeschifffahrt und Hydrographie, Marnet (ARGOS-No. 2120)	
Number and type of buoys	(a) deployed during the year	xx
	(b) operational as of 31 August	8
	(c) reporting on GTS as of 31 August	8
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[]
	(c) developmental	[ ]
Main deployment areas	North Sea, Baltic	
Vandalism incidents	(a) Number of incidents If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

Agency or programme	Bundesamt für Seeschifffahrt und Hydrographie, Norwave (ARGOS-No. 9981)	
Number and type of buoys	(a) deployed during the year	6
	(b) operational as of 31 August	1
	(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	[]
	(c) developmental	[ ]
Main deployment areas	North Sea, Baltic	
Vandalism incidents	(a) Number of incidents If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

Agency or programme	University of Hamburg, SFB512-E2 (ARGOS-No. 592)	
Number and type of buoys	(a) deployed during the year	0
	(b) operational as of 31 August	1
	(c) reporting on GTS as of 31 August	1
Purpose of programme *(check/uncheck boxes using*	(a) operational	[x]
	(b) met / ocean research	[]

[_] or [x] as appropriate)	(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.	

Agency or programme	Helmholtz-Zentrum Geesthacht, Centre for Materials and Coastal Research: Waverider-buoys	
Number and type of buoys	(a) deployed during the year	3
	(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	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	North Sea	
Vandalism incidents	(a) Number of incidents 0 If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

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

Agency or programme	GEOMAR Kiel, Argo floats, SFB Climate-Biogeochemistry interactions in the tropical ocean (ARGOS-No. 8165)	
Number and type of buoys	planned for deployment in the next 12 months	none
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas		

Agency or programme	GEOMAR Kiel, Glider survey, SFB 754, BMBF AWA, EU FP7 GROOM	
Number and type of buoys	planned for deployment in the next 12 months	2
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	West African Coast / Cape Verde	

Agency or programme	GEOMAR Kiel, Moored bouys (EU FP7 NACLIM; GEOMAR, AtlantOS H2020 proposal)	
Number and type of buoys	planned for deployment in the next 12 months	3
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	Subpolar North Atlantic & Cape Verde	

Agency or programme	Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung Snow Depth Buoys

Number and type of buoys	planned for deployment in the next 12 months	15
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	Arctic Ocean and Weddell Sea	

Agency or programme	Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung Thermistor Buoys for Sea Ice Mass Balance	
Number and type of buoys	planned for deployment in the next 12 months	17
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Weddell Sea	

Agency or programme	Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung Ice Surface Velocity Profiler	
Number and type of buoys	planned for deployment in the next 12 months	21
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Weddell Sea	

Agency or programme	Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung Spectral Radiation Stations	
Number and type of buoys	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	[x]
Main deployment areas	Weddell Sea	

Agency or programme	Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung Subsurface mooring monitoring (ARGOS-no. 8919)	
Number and type of buoys	planned for deployment in the next 12 months	50
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	Weddell Sea	

Agency or programme	Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung Argo Subsurface (ARGOS-no. 10919)	
Number and type of buoys	planned for deployment in the next 12	0

	months	
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	Weddell Sea	

Agency or programme	Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung Glider survey, DFG FOR 1740 WP 1.1, EU FP7 GROOM	
Number and type of buoys	planned for deployment in the next 12 months	2
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	Western Nordic Seas	

Agency or programme	Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung Migrating Seals (ARGOS-no. 1535)	
Number and type of buoys	planned for deployment in the next 12 months	5
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	Drescher Inlet (Weddell Sea)	

Agency or programme	Bundesamt für Seeschifffahrt und Hydrographie, German Argo (ARGOS-No. 1895)	
Number and type of buoys	planned for deployment in the next 12 months	50
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[]
	(c) developmental	[]
Main deployment areas	North Atlantic, Nordic Seas Weddell Gyre	

Agency or programme	Bundesamt für Seeschifffahrt und Hydrographie, Marnet (ARGOS-No. 2120)	
Number and type of buoys	planned for deployment in the next 12 months	11 (replacement and maintance of existing buoys
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[]
	(c) developmental	[]
Main deployment areas	North Sea, Baltic	

Agency or programme	Bundesamt für Seeschifffahrt und Hydrographie, Norwave (ARGOS-No. 9981)	
Number and type of buoys	planned for deployment in the next 12 months	6 (replacement and maintance of existing buoys
Purpose of programme *(check/uncheck boxes using*	(a) operational	[x]
	(b) met / ocean research	[]

[_] or [x] as appropriate)	(c) developmental	[]
Main deployment areas	North Sea, Baltic	

Agency or programme	University of Hamburg, SFB512-E2 (ARGOS-No. 592)	
Number and type of buoys	planned for deployment in the next 12 months	0 has been merged into German Argo
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[]
	(c) developmental	[]
Main deployment areas		

Agency or programme	Helmholtz-Zentrum Geesthacht, Centre for Materials and Coastal Research: Waverider-buoys	
Number and type of buoys	planned for deployment in the next 12 months	3 serviced stations
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	North Sea	

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

(a) Buoy design	• Improvement mast design of Snow Depth buoy •
(b) Instrumentation	• Ongoing development of autonomous measurements of spectral radiation above and under sea ice (first deployments planned in 2015/2016) •
(c) Others	• •

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

(a) Buoy design	• APEX floats (German Argo) • Unmanned lightships, piles, buoys, lighthouses, platforms (Marnet) • Waveridery buoys, communication through Meteosat
(b) Instrumentation	• CTD (TS) • CTD (TS), ADCP, Oxygen • Wave sensors, weather data, swell
(c) Others	• • •

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

Ref	Title	Type16
1 Geomar	Czeschel, R., Stramma, L., Weller, R. A. und Fischer, T. (2015) *Circulation, eddies, oxygen and nutrient changes in the eastern tropical South Pacific Ocean* Ocean Science, 11 . pp. 455-470. DOI 10.5194/os-11-455-2015	8
2	Bornemann H, Oosthuizen WC & Bester MN. Seal research at the Filchner Outflow System (SEAFOS), pp 115-136 in Knust R & Schröder M (eds) The Expedition PS82 of the Research Vessel POLARSTERN to the southern Weddell Sea in 2013/2014, Berichte zur Polar- und Meeresforschung = Reports on polar and marine research, Bremerhaven, Alfred Wegener Institute for Polar and Marine Research, 680, 155 p	3,6,8

(repeat rows in the table above as necessary)

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	• Real-time quality control of Argo physical data via Coriolis data centre •
(b) Communications	•
(c) Buoy lifetimes	• Awi reports that Most sea ice buoy's lifetime depends on ice conditions more than on technical issues or battery lifetime • •
(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

[16]: 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**	**re**
	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