WORLD METEOROLOGICAL ORGANIZATION

DATA BUOY COOPERATION PANEL

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ITEM: 14

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. Australia
2. China SOA
3. Hong Kong China
4. France
5. Germany
6. Japan
7. Netherlands
8. New Zealand
9. Nigeria
10. Peru
11. Republic of Korea
12. South Africa
13. Spain
14. Sweden
15. United Kingdom
16. xUnited States

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

APPENDIX 1

AUSTRALIA

Country	Australia
Year	2016

1. CURRENT PROGRAMME:

Agency or programme	Australian Bureau of Meteorology (ABOM)	
Number and type of buoys	(a) deployed during the year	15 SVP-B 0 SBP-BW
	(b) operational as of 31 July 2016	22
	(c) reporting on GTS as of 31 July 2016	22
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x] To support the Bureau's operational forecasting and warning service.
	(b) met / ocean research	[ ]
	(c) developmental	[ ]
Main deployment areas	Southern and Indian Oceans in support of: - International Buoy Programme for the Indian Ocean - Southern Ocean Buoy Programme - International Programme for Antarctic Buoys.	
Vandalism incidents	(	

Agency or programme	ABOM Barometer Upgrade Program	
Number and type of buoys	(a) deployed during the year	4 SVP-B
	(b) operational as of 31 July 2016	3
	(c) reporting on GTS as of 31 July 2016	3
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	To increase the number of pressure buoys in the Indian Ocean and to support the Bureau's operational forecasting and warning service.
	(b) met / ocean research	[ ]
	(c) developmental	[ ]
Main deployment areas	Southern and Indian Oceans in support of: - International Buoy Programme for the Indian Ocean - Southern Ocean Buoy Programme	
Vandalism incidents	(	

Agency or programme	ABOM deployments for the Global Drifter Program	
Number and type of buoys	(a) deployed during the year	17 SVP-B
	(b) operational as of 31 July 2016	17
	(c) reporting on GTS as of 31 July 2016	17
Purpose of programme	(a) operational	To support the Global

(check/uncheck boxes using [_] or [x] as appropriate)		Drifter Program through the IBPIO, and to support the Bureau's operational forecasting and warning service.
	(b) met / ocean research	
	(c) developmental	
Main deployment areas	Southern and Indian Oceans in support of: - International Buoy Programme for the Indian Ocean - Southern Ocean Buoy Programme	
Vandalism incidents		

Agency or programme	Australian Antarctic Division (AAD)	
Number and type of buoys	(a) deployed during the year	11 4 Stress-gauge buoys 4 Sea-ice mass-balance buoys 3 Sea-ice GPS buoys
	(b) operational as of 31 July 2016	7
	(c) reporting on GTS as of 31 July 2016	3
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	
	(b) met / ocean research	To assist AAD's research program, especially the investigation of sea-ice motion and deformation off East Antarctica, as well as the exploration of internal ice physics
	(c) developmental	
Main deployment areas	Southern Ocean, also contributing to the International Programme for Antarctic Buoys.	
Vandalism incidents		

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

Agency or programme	Bureau of Meterology	
Number and type of buoys	planned for deployment in the next 12 months	25 25 SVP-B
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[ ]
	(c) developmental	[ ]
Main deployment areas	Southern and Indian Ocean	

Agency or programme	Barometer Upgrade Program	
Number and type of buoys	planned for deployment in the next 12 months	15 15 SVP-B
Purpose of programme *(check/uncheck boxes using*	(a) operational	To increase the number of

[_] or [x] as appropriate)		pressure buoys in the Indian Ocean and to support the Bureau's operational forecasting and warning service.
	(b) met / ocean research	[ ]
	(c) developmental	[ ]
Main deployment areas	Indian Ocean	

Agency or programme	Global Drifter Program	
Number and type of buoys	planned for deployment in the next 12 months	20 20 SVP-B
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	To support the Global Drifter Program through the IBPIO, and to support the Bureau's operational forecasting and warning service.
	(b) met / ocean research	[ ]
	(c) developmental	[ ]
Main deployment areas	Indian Ocean	

Agency or programme	Australian Antarctic Division (AAD)	
Number and type of buoys	planned for deployment in the next 12 months	4 Stress-gauge buoys
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	
	(b) met / ocean research	To assist AAD's research program, especially to explore the internal ice physics
	(c) developmental	[ ]
Main deployment areas	Southern Ocean, also contributing to the International Programme for Antarctic Buoys.	

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

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

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

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

5. SPECIAL COMMENTS (if any):

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

APPENDIX 2

NATIONAL REPORTS ON CURRENT AND PLANNED BUOY PROGRAMMES

APPENDIX 2
CHINA

Country	China
Year	2015.08 - 2016.07

1. CURRENT PROGRAMME:

Agency or programme	**State Oceanic Administration**	
Number and type of buoys	(a) deployed during the year	43 buoys, including 3m, 6m and 10m discus moored buoys, Tsunami buoys, drifters, and Argo floats
	(b) operational as of 31 July	43 moored buoys 92 Argo floats
	(c) reporting on GTS as of 31 July	92
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	2	

Agency or programme	**China Meteorological Administration**	
Number and type of buoys	(a) deployed during the year	2
	(b) operational as of 31 August	28
	(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	

2. PLANNED PROGRAMMES:

Agency or programme	**State Oceanic Administration**	
Number and type of buoys	planned for deployment in the next 12 months	24 moored buoys, 3 Argo floats, 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	China Seas and adjacent waters	

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	A new deep sea moored buoy system has been developed based on the need of deep sea mooring. This system combined traditional deep sea observation instrument with a newly developed remote maintenance module. Observations in 6000m depth can be accomplished by using this system together with a 6m environmental monitoring buoy. Real time, observation parameters including wind speed, wind direction, humidity, air pressure, wave, current, SST, chlorophyll and etc, could be obtained with

	the system (Fig1). Two sets of 6m mooring buoys were successfully deployed in South China Sea in Sep 2015.
	A 10m marine environmental monitoring buoy with the ability of automatic marine meteorological and oceanographic data observation has been developed by the Institute of Oceanographic Instrumentation, Shandong Academy of Science. The buoy is compatible with a variety of sensors. It has strong damage resistance ability and data reserve capacity, and a small operation cost.
(b) Instrumentation	
(c) Others	

Figure1 6m deep sea buoy

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

Ref	***Title***	***Type[2]***
1	**DANG Chao-qun ZHANG Suo-ping QI Zhan-hui，et al., 2016：Research on data transmission of deep and remote sea GPS wave buoy based on BeiDou satellites system，Transducer and Microsystem Technologies, 35(1), 46-48.**	Data Management
2	ZHAI Wanlin, CHEN Chuntao, YAN Longhao, et al.,2015: Research on the Influence Factors in the Precision of Height Measured by GNSS Buoy, JOURNAL OF OCEAN TECHNOLOGY., 34(4), 22-27.	Instrumentation
3	ZHOU Ying, WEI Yongxing, YU Jinhua, et al., 2015: Application of ARM and FPGA Buoy Data Acquisition and Storage, Hydrographic surveying and charting.,35(1),79-82.	Operations
4	**YANG Yan, SUN Xiu-jun, WANG Yan-hui, 2016: Design of a Buoyancy Engine for Deep Sea Gliders, Journal Of Ocean Technology, 36(2), 9-14.**	Instrumentation

[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

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

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**						
2015.12.28	21°47′ N	114°12′E	Met-ocean buoy	Ship collision damage	GD3801	210days	83K USD	Yes (Fig.1)
2016.03.8	22°35′N	114°41′E	Met-ocean buoy	Ship collision damage	GD3802	42days	38K USD	Yes (Fig.2)
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 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 buoy management after deployed. 3. To strengthen the education, improve the senses of people in protecting scientific equipment.					
Photos on Vandalism			See attached					

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

Photo on vandalism

Figure 1 Superstructure damage

Figure 2 The damage of met-ocean buoy

APPENDIX 3

HONG KONG, CHINA

Country	Hong Kong, China
Year	2016

1. CURRENT PROGRAMME:

Agency or programme		
Number and type of buoys	(a) deployed during the year	0 (up to 30 June 2016)
	(b) operational as of 30 June	1
	(c) reporting on GTS as of 30 June	1
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[ ]
	(c) developmental	[x]
Main deployment areas	South China Sea	
Vandalism incidents	(a) Number of incidents The drifting buoy deployed over the South China Sea near 16° N 115° E on 26 June 2015 was suspected to be picked up by a boat travelling between the seas west of Luzon and the Subic Bay in early August 2015. Hourly observations of atmospheric pressure recorded along the route of the boat are still being received from the drifting buoy and transmitted to the GTS, which had started since 0600 UTC 22 July 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	5
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	•

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

Ref	*Title*	*Type*[3]
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 deployment. • Real-time buoy data, including position and battery voltage data are closely monitored using a dedicated webpage. • Quality of air pressure data from buoy is considered acceptable after checking against observations from nearby land station at Subic.
(b) Communications	• Hourly data transmission via Iridium
(c) Buoy lifetimes	• Over 1 year from date of deployment and still transmitting data properly as on 13 July 2016.
(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

[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 4

FRANCE

Country	**FRANCE**
Year	**2016 (1 July 2015 – 30 June 2016)**

1. CURRENT PROGRAMME:

Agency or programme	**Météo-France**	
Number and type of buoys	(a) deployed during the year	- AWS system renewed on the 3 french moored buoys (new electronic system(STERELA MERCURY) using Iridium) - 89 SVP-B for E-SURFMAR (20 upgrades) - 15 SVP-B for AtlantOS - 13 SVP-B for MF Atlantic (9 upgrades) - 25 SVP-B (upgrades) for IBPIO
	(b) operational as of July the 1st	- 3 moored buoys (plus 2 in cooperation with UKMO) - 121 SVP-B for E-SURFMAR (39 upgrades and 4 SVP-B HRSST2) - 14 SVP-B for AtlantOS - 15 SVP-B and 2 SVP-BTC for MF Atlantic (12 upgrades) - 58 SVP-B (upgrades) for MF IBPIO
	(c) reporting on GTS as of July the 1st	- 3 moored buoys (plus 2 in cooperation with UKMO) - 121 SVP-B for E-SURFMAR (39 upgrades) - 14 SVP-B for AtlantOS - 15 SVP-B and 2 SVP-BTC for MF Atlantic (12 upgrades) - 58 SVP-B (upgrades) for MF IBPIO
Purpose of programme	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	North Atlantic Mediterranean Sea North of South Atlantic Indian Ocean	
Vandalism incidents	Sensors lost (18 SP2T probes and 2 SBE37 mounting brackets) on the anchor lines of the Mediterranean moored buoys due to longline fishery in the vicinity of the buoys (hooks and lines found on the anchor lines and on the buoys).	

Agency or programme	**IFREMER**	
Number and type of buoys	(a) deployed during the year	13 SVP WOCE drifters deployed in the Pacific 1 SVP WOCE et 2 CODE drifters deployed in the Mediterranean sea.
	(b) operational as of 31 August	0
	(c) reporting on GTS as of 31 August	0
Purpose of programme	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[]
Main deployment areas	Pacific Mediterranean Sea	
Vandalism incidents		

Agency or programme	**INSU – LOCEAN (Salinity drifters)**	
Number and type of buoys	(a) deployed during the year	1 CODE drifter
	(b) operational as of 31 August	0
	(c) reporting on GTS as of 31 August	0
Purpose of programme	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[]
Main deployment areas	North of Tropical Atlantic	
Vandalism incidents		

Agency or programme	**Cerema** (Center for studies and expertise on risks, environment, mobility, and urban and Country planning), ex-CETMEF	
Number and type of buoys	(a) deployed during the year	
	(b) operational as of 31 August	22 waveriders were operational at 30 June 2016
	(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	Continental French coasts, Saint Pierre & Miquelon, French West Indies	
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 2016 during the PIRATA-FR26 cruise). 2 of them have been replaced by new T-Flex systems (Iridium data transmission, potentially more sensors, etc.) 1 one new current meter mooring (ADCP) deployed during the PIRATA-FR26 cruise in April 2016 (at 0°E-0°N). During the PIRATA-FR26 cruise, 15 surface drifters (SVP-B, -as contribution of Meteo-France to AtlantOS-) have been deployed along 23°W and 10°W in the Gulf of Guinea.
	(b) operational as of 31 August	6 buoys were operational at 30 June 2016
	(c) reporting on GTS as of 31 August	6 buoys were reporting on GTS at 30 June 2016
Purpose of programme	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Tropical Atlantic Ocean	
Vandalism incidents	None	

Agency or programme	**SHOM** (Hydrographic and Oceanographic Service of the Navy)	
Number and type of buoys	(a) deployed during the year	19 drifting buoys owned by SHOM were deployed in last 12 months: - 15 WOCE (World Ocean Circulation Experiment) buoys drogued at 50 m; - 4 WOCE (World Ocean Circulation Experiment) buoys drogued at 75 m;
	(b) operational as of 31 August	10 buoys were operational at 30 June 2016
	(c) reporting on GTS as of 31 August	All WOCE were reporting on GTS at 30 June 2016
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 2016
	(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 130 SVP-B (~60 upgrades) About 5 buoys in the frame of MedOS project, if the project is accepted.
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 Mediterranean Sea North of South Atlantic Indian Ocean	

Agency or programme	**IFREMER**	
Number and type of buoys	planned for deployment in the next 12 months	20 SVP WOCE in the Mediterranean Sea
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[]
Main deployment areas	Mediterranean Sea	

Agency or programme	**INSU**	
Number and type of buoys	planned for deployment in the next 12 months	5 salinity drifter SVP-BS 5 surpact drifters (attached to a CODE 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	Mediterranean Sea Equatorial Pacific	

Agency or programme	**Cerema (Center for studies and expertise on risks, environment, mobility, and urban and Country planning) ex-CETMEF**	
Number and type of buoys	planned for deployment in the next 12 months	9 waveriders
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, Guyana	

Agency or programme	**IRD**	
Number and type of buoys	planned for deployment in the next 12 months	To maintain the 6 met-ocean PIRATA Network (3 Atlas and 3 T-Flex planed in 2017, so 1 additional T-Flex replacing 1 Atlas) and 2 currentmeter moorings (23W & 10W-0°N)
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Tropical Atlantic Ocean	

Agency or programme	**SHOM**	
Number and type of buoys	planned for deployment in the next 12 months	18 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. <u>TECHNICAL DEVELOPMENTS:</u>

(a) Buoy design	• MF moored buoys use STERELA MERCURY new AWS, transmitting through Iridium system. These moored buoys are transmitting BUFR messages only.
(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 HRSST2 drifters is going on. • To answer AtlantOS Work Package 3, a new SVP-BS drifter (low cost) is being implemented by a French manufacturer (NKE) and will be tested by INSU-LOCEAN.
(c) Others	• Météo-France bid to EUMETSAT ITT for new HRSST2 buoy

	deployments, all around the world. The winning bidder has not yet been appointed.

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

Ref	*Title*	*Type*[4]
1	Météo-France – Centre de Météorologie Marine, E-SURFMAR Data Buoys Monthly report.	4
2	A.M. Doglioli, G. Grégori, M. Thyssen, T. Wagener, P.Marrec, G.Rougier, N.Bhairy, J.Fenouil, A.Deverneil, L.Rousselet, A.Petrenko In situ observing physical-biogeochemical coupling at the submesoscale: the 2015 OSCAHR cruise in the NW Mediterranean.	7

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	• The Centre de Météorologie Marine (CMM) of Meteo-France continues to operate quality control procedures on drifting buoys data. • 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 CEREMA and Météo-France 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.
(b) Communications	•
(c) Buoy lifetimes	•
(d) Other	• For the twentieth consecutive year, Meteo-France funded barometers to be added to SVP drifters deployed in the Tropical Indian Ocean. 10 of these drifters are devoted to the Southern Ocean, south of 40°S in the Indian Ocean, as a principle. These 25 buoys of 2016 are upgraded to Iridium. These actions will be renewed in 2017.

[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

APPENDIX 5

GERMANY

Country	Germany
Year	2016

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	0
	(b) operational as of 31 August	7
	(c) reporting on GTS as of 31 August	7
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, Autonomous Glider (SFB 754, BMBF AWA SACUS-SPACES, EU-H2020 ATLANTOS, EU-FP7 PREFACE ARGOS-No. 1783)	
Number and type of buoys	(a) deployed during the year	4
	(b) operational as of 31 August	0
	(c) reporting on GTS as of 31 August	0
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas	West African Coast / Cape Verde & Angola	
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 Buoys (EU FP7 NACLIM ARGOS-No. 783 & 4783)	
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	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	15
	(b) operational as of 31 August	6
	(c) reporting on GTS as of 31 August	6
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 AG Meereisphysik Thermistor Buoys for Sea Ice Mass Balance	
Number and type of buoys	(a) deployed during the year	15
	(b) operational as of 31 August	10
	(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 AG Meereisphysik Polar Area Weather Station	
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	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	
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 AG Meereisphysik Ice Surface Velocity Profiler	
Number and type of buoys	(a) deployed during the year	14
	(b) operational as of 31 August	6
	(c) reporting on GTS as of 31 August	6

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	12
	(b) operational as of 31 August	10
	(c) reporting on GTS as of 31 August	7
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	(a) operational	[x]

(check/uncheck boxes using [_] or [x] as appropriate)	(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	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, Autonomous Glider (SFB 754, BMBF AWA SACUS-SPACES, EU-H2020 ATLANTOS, EU-FP7 PREFACE ARGOS-No. 1783)	
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 & Angola, Peru	

Agency or programme	GEOMAR Kiel, Moored Buoys (EU FP7 NACLIM ARGOS-No. 783 & 4783)	
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	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 AG Meereisphysik Snow Depth Buoys	
Number and type of buoys	planned for deployment in the next 12 months	10
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	

Agency or programme	Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung AG Meereisphysik Thermistor Buoys for Sea Ice Mass Balance	
Number and type of buoys	planned for deployment in the next 12 months	10
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 AG Meereisphysik Ice Surface Velocity Profiler	
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	[ ]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Weddell Sea	

Agency or programme	Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung AG Meereisphysik Spectral Radiation Stations	
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	[ ]
	(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	n.a.
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 months	n.a.
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	n.a.
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	n.a.
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	40
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 [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[]
	(c) developmental	[]
Main deployment areas	North Sea, Baltic	

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. TECHNICAL DEVELOPMENTS AWI:

(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 2016/2017) •
(c) Others	• •

3. TECHNICAL DEVELOPMENTS BSH:

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

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

Ref	Title	Type5

[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

1 Geomar	Stramma, L., Czeschel, R., Tanhua, T., Brandt, P., Visbeck, M., und Giese, B.S. (2016) The flow field of the upper hypoxic eastern tropical North Atlantic oxygen minimum zone. Ocean Science, 12, 153-167, doi:10.5194/os-12-153-2016	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 lifetimes depends on ice conditions more than on technical issues or battery lifetime • •
(d) Other	• •

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APPENDIX 6

JAPAN

Country	**JAPAN**
Year	**2016**

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 ・14 profiling floats
	(b) operational as of 31 August	・5 drifting buoys with air pressure, SST, wave height and wave period sensors ・49 profiling floats
	(c) reporting on GTS as of 31 August	・5 drifting buoys with air pressure, SST, wave height and wave period sensors ・49 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	
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	・31 profiling floats ・5 oceanographic drifters
	(b) operational as of 31 August	・175 profiling floats ・10 surface moorings for meteorological and subsurface oceanographic (8 TRITON buoys, 2 RAMA buoys)

	(c) reporting on GTS as of 31 August	・165 profiling floats ・10 surface moorings for meteorological and subsurface oceanographic (8 TRITON buoys, 2 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, Japan Fisheries Research and Education Agency**	
Number and type of buoys	(a) deployed during the year	4 surface drifters
	(b) operational as of 31 August	4 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	0 profiling float
	(b) operational as of 31 August	3 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	

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	・22 profiling floats ・6 meteorological and subsurface oceanographic surface moorings (3 TRITON buoys and 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)	

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

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	

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	• Drifting GPS Buoy with a thermometer (NDB-IT) was developed by Seikai National Fisheries Research Institute, Japan Fisheries Research and Education Agency and NiGK Corporation. • •
(b) Instrumentation	• A Deep-sea float (0-4,000-m depth) equipped with a dissolved oxygen sensor (under development) is developed by JAMSTEC.

	• •
(c) Others	• • •

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

Ref	*Title*	*Type*[6]
1	Argo National Data Management Report of Japan, 2015, Appendix 5, Report of the 16th Argo Data Management Meeting.	(4) Quality Management, (5) Data Management, (7) Data use
2	Kobayashi, T. and K. Amaike (2015): Development of deep profiling float “Deep NINJA”, “The Suiro”, vol. 174, 56-58.	(1) Implementation, (3) Instrumentation
3	Faure,V. and Y. Kawai (2015): Heat and salt budgets of the mixed layer around the subarctic front of the North Pacific Ocean, *Journal of Oceanography*, 527-539, 71[5], 10.1007/s10872-015-0318-0.	(7) Data use
4	Hosoda, S., M. Nonaka,Y. Sasai, and H. Sasaki (2015): Early summertime interannual variability in surface and subsurface temperature in the North Pacific, *Journal of Oceanography*, 10.1007/s10872-015-0307-3.	(7) Data use
5	Katsura, S., E. Oka, and K. Sato (2015): Formation Mechanism of Barrier Layer in the Subtropical Pacific, *Journal of Physical Oceanography*, 2790-2805, 45.	(7) Data use
6	Oka E., B. Qiu, Y. Takatani, K. Enyo, D. Sasano, N. Kosugi, M. Ishii, T. Nakano, and T. Suga (2015): Decadal variability of Subtropical Mode Water subduction and its impact on biogeochemistry, *Journal of Oceanography*, 389-400, 71[4], 10.1007/s10872-015-0300-x.	(7) Data use
7	Osafune, S., S. Masuda, N. Sugiura, and T. Doi (2015): Evaluation of the applicability of the Estimated State of the Global Ocean for Climate Research (ESTOC) data set, *Geophysical Research Letters*, 4903--4911, 42, 10.1002/2015GL064538.	(7) Data use
8	Toyama, K., A. Iwasaki, and T. Suga (2015): Interannual Variation of Annual Subduction Rate in the North Pacific Estimated from a Gridded Argo Product, *Journal of Physical Oceanography*, 2276?2293, 45[9], 10.1175/JPO-D-14-0223.1.	(7) Data use
9	Toyoda, T., Y. Fujii, T. Kuragan, N. Kosugi, D. Sasano, M. Kamachi, Y. Ishikawa, S. Masuda, K. Sato, T. Awaji, F. Hernandez, N. Ferry, S. Guinehut, M. J. Martin, K. A. Peterson, S. A. Good, M. Valdivieso, K. Haines, A. Storto, S. Masina, A. Köhl, Y. Yin, L. Shi, O. Alves, G. Smith, Y.-S. Chang, G. Vernieres, X. Wang, G. Forget, P. Heimbach, O. Wang, I. Fukumori, T. Lee, H. Zuo, and M. Balmaseda (2015): Interannual decadal variability of wintertime mixed layer depths, *Climate Dynamics*, 10.1007/s00382-015-2762-3.	(7) Data use
10	Doi, T., S. Osafune, N. Sugiura, S. Kouketsu, A. Murata, S. Masuda, and T. Toyoda(2015): Multi-decadal change in the dissolved inorganic carbon in a long-term ocean state estimation, *Journal of Advances in Modeling Earth Systems*, 1885-1990, 7[4], 10.1002/2015MS000462.	(7) Data use
11	Inoue, R. and S. Kouketsu (2016): Physical oceanographic conditions around the S1 mooring site, *Journal of Oceanography*, 10.1007/s10872-015-0342-0.	(7) Data use
12	Inoue, R., M. Kitamura, and T. Fujiki (2016): Diel vertical migration of zooplankton at the S1 biogeochemical mooring	(7) Data use

[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

	revealed from acoustic backscattering strength., *Journal of Geophysical Research*, 10.1002/2015JC011352.	
13	Kaneko, H., S. Itoh, S. Kouketsu, T. Okunishi, S. Hosoda, and T. Suga (2015): Evolution and modulation of a poleward-propagating anticyclonic eddy along the Japan and Kuril-Kamchatka trenches, *J. Geophys. Res. Oceans*, 120, 10.1002/2014JC010693.	(7) Data use
14	Kawakami, Y., S. Sugimoto, and T. Suga (2016): Inter-annual zonal shift of the formation region of the lighter variety of the North Pacific Central Mode Water, *Journal of Oceanography*, 225-234, 72[2].	(7) Data use
15	Liu, X., A. Köhl, D. Stammer, S. Masuda, Y. Ishikawa, and T. Mochizuki (2016): Impact of in-consistency between the climate model and its initial conditions on climate prediction, *Geophys. Res. Lett.*, DOI 10.1007/s00382-016-3194-4.	(7) Data use
16	Masuda, S., J. P. Matthews, Y. Ishikawa, T. Mochizuki, Y. Tanaka, and A. Awaji (2015): A new Approach to El Niño Prediction beyond the Spring Season, *Scientific Reports*, 1-9, 5, 10.1038/srep16782.	(7) Data use
17	Mochizuki, T., S. Masuda, Y. Ishikawa, and T. Awaji (2016): Multi-year climate prediction with initialization based on 4D-Var data assimilation, *Geophys. Res. Lett.*, 43, DOI: 10.1002/2016GL067895.	(7) Data use
18	Nagano, A., M. Wakita, and S. Watanabe (2016): Dichothermal layer deepening in relation with halocline depth change associated with northward shrinkage of North Pacific western subarctic gyre in early 2000s, *Ocean Dynamics*, 163-172, 66, 10.1007/s10236-015-0917-8.	(7) Data use
19	Palmer, M.D., C. D. Roberts, M. Balmaseda, Y.-S. Chang, G. Chepurin, N. Ferry, Y. Fujii, S. A. Good, S. Guinehut, K. Haines, F. Hernandez, A. Köhl, T. Lee, M. J. Martin, S. Masina, S. Masuda, K. A. Peterson, A. Storto, T. Toyoda, M. Valdivieso, G. Vernieres, O. Wang, and Y. Xue (2015): Ocean heat content variability and change in an ensemble of ocean reanalyses, *Clim. Dyn*, 1-22, 45, 10.1007/s00382-015-2801-0.	(7) Data use
20	Shi, L., O. Alves, R. Wedd, M. A. Balmaseda, Y. Chang, G. Chepurin, N. Ferry, Y. Fujii, F. Gaillard, S. A. Good, S. Guinehut, K. Haines, F. Hernandez, T. Lee, M. Palmer, D. Peterson, S. Masuda, A. Storto, T. Toyoda, M. Valdivieso, G. Vernieres, X. Wang, and Y. Yin (2015): An Assessment of Upper Ocean Salinity Content from the Ocean Reanalyses Inter-Comparison Project (ORA-IP), *Clim. Dyn*, 1-21, 45, 10.1007/s00382-015-2868-7.	(7) Data use
21	Storto, A., S. Masina, M. Balmaseda, S. Guinehut, Y. Xue, T. Szekely, I. Fukumori, G. Forget, Y.-S. Chang, S. A. Good, A. Köhl, G. Vernieres, N. Ferry, K. A. Peterson, D. Behringer, M. Ishii, S. Masuda, Y. Fujii, T. Toyoda, Y. Yin, M. Valdivieso, B. Barnier, T. Boyer, T. Lee, J. Gourrion, O. Wang, P. Heimback, A. Rosati, R. Kovach, F. Hernandez, M. J. Martin, M. Kamachi, T. Kuragano, K. Mogensen, O. Alves, K. Haines, and X. Wang (2015): Steric sea level variability (1993-2010) in an ensemble of ocean reanalyses and objective analyses, *Clim. Dyn.*, 1-21, 45, 10.1007/s00382-015-2554-9.	(7) Data use
22	Quantifying dispersal from hydrothermal vent fields in the western Pacific Ocean	(6) Data collection and/or location, (7) Data use

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

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**						
2016	1.5S	90E	Met-Ocean Buoy	Drift	18508 / 53057	0		
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 7

NETHERLANDS

Country	Netherlands
Year	2016

1. CURRENT PROGRAMME:

Agency or programme	Argo – Dutch Argo Programm	
Number and type of buoys	(a) deployed during the year	0
	(b) operational as of 31 August	11
	(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) None	

2. PLANNED PROGRAMMES:

Agency or programme	**2016/17**	
Number and type of buoys	planned for deployment in the next 12 months	14
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	

3. TECHNICAL DEVELOPMENTS:

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

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

Ref	***Title***	***Type***[7]

5. SPECIAL COMMENTS (if any):

[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

(a) Quality of buoy data	• Excellent
(b) Communications	• •
(c) Buoy lifetimes	•
(d) Other	• change to a different float provider (NKE instead of Teledyne)

* no updated information received

APPENDIX 8

NEW ZEALAND

Country	NEW ZEALAND
Year	2016

1. <u>CURRENT PROGRAMME:</u> ***(for period 1st Aug 2015 – 31st July 2016)***

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	7
	(c) reporting on GTS as of 31st July	7
Purpose of programme	Provide real-time data for MetService weather forecasting needs.	
Main deployment areas	Tasman Sea, Pacific Ocean.	
Vandalism incidents	None.	

B. Agency or programme	MSNZ / Global Drifter Program (GDP)	
Number and type of buoys	(a) deployed during the year	8 SVP-B
	(b) operational as of 31st July	16
	(c) reporting on GTS as of 31st July	16
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	15 SVP-B
	(b) operational as of 31st July	14
	(c) reporting on GTS as of 31st July	14
Purpose of programme	NOAA / GDP - assist NZ MetService forecasting.	
Main deployment areas	10 deployed east of NZ towards the mid-Pacific and 5 deployed in Ross Sea, Antarctica – South of 60S.	
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.	8 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	15 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 Tasman Sea and Southern Ocean, Antarctica.	

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[8]***
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 data delay issues.
(b) Communications	• No major communication errors detected.

(c) Buoy lifetimes	• Buoys lifetimes limited by groundings and not by instrument problems.
(d) Other	N/A

[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

APPENDIX 9
NIGERIA

Country	**NIGERIA (NIOMR)**
Year	2016

1. CURRENT PROGRAMME:

Agency or programme	Nigerian Institute for Oceanography and Marine Research.	
Number and type of buoys	(a) deployed during the year	Nil
	(b) operational as of 31 August	Nil
	(c) reporting on GTS as of 31 August	Nil
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[]
	(b) met / ocean research	[]
	(c) developmental	[]
Main deployment areas	-- -- --	
	(a) Number of incidents Not Applicable 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	Nigerian Institute for Oceanography and Marine Research.	
Number and type of buoys	planned for deployment in the next 12 months	1 (ONE)
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[]
	(b) met / ocean research	[X]
	(c) developmental	[]
Main deployment areas	6.082784ºN 3.382047ºE	

(repeat table above as often as necessary)

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	The buoy design is intended to host Oceanographic sensors, Physical sensors, Biochemical sensors, Central Processing Unit (CPU) and Storage, Telemetry, etc. The sensors are intended to measure all relevant Oceanographic parameters.
(b) Instrumentation	For the purpose of data validation and periodic sensor calibration, the newly acquired Institute's Research Vessel (RV Bayagbona) is equipped with necessary facilities for deep sea *in-situ* oceanographic data collection. This will complement data derived from deployed buoy.
(c) Others	Technical Staff / Competence: The Institute is endowed with highly skilled manpower capable of handling the intended buoy project. These ranges from MSc / PhD holders in various Oceanographic areas, to technical personnel in the engineering department.

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

Ref	*Title*	*Type*[9]
1	None as at present.	
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	We are aware that the meteorological buoy deployed by Nigerian Meteorological Agency (our sister agency) in 2015 was reported to have got missing a couple of months after it was deployed in the Atlantic Ocean. It is a statement of fact that there is paucity of information with respect to some physical / biochemical processes in under-sampled and poorly understood Gulf of Guinea region. In order to implement our proposed Oceanographic Buoy Project and also get fully integrated into the DBCP network, we would like to solicit for collaborations / technical support from all DBCP member states/organisation. This is with the view to facilitate oceanographic data gathering for this region. We would like to nominate Nigerian Institute for Oceanography and Marine Research (NIOMR) as the National Focal Point for Nigeria.

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

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

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

APPENDIX 10
PERU

Country	**PERU**
Year	2016

1. CURRENT PROGRAMME:

Agency or programme		
Number and type of buoys	(a) deployed during the year	
	(b) operational as of 31 August	
	(c) reporting on GTS as of 31 August	
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	
	(b) met / ocean research	[x]
	(c) developmental	
Main deployment areas	Northern and Central coastal ocean off Peru:	
Vandalism incidents	(a) Number of incidents If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

2. PLANNED PROGRAMMES:

Agency or programme		
Number and type of buoys:	planned for deployment in the next 12 months (at the end of period)	04, KIOST type
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	
	(b) met / ocean research	[x]
	(c) developmental	
Main deployment areas	**Northern Peru**. Lat/Long: **B1**:5°0´0¨S, 81°20´24¨W; **B2**:5°0´0¨S, 81°27´36¨W **Central Peru**. Lat/long: **B3**:7°51´0¨S, 79°45´36¨W; **B4**:8°13´48¨S, 80° 33´36¨W	

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	The moorings are surface buoys, anchored in place with a taut-line mooring design. The surface float is a fiberglass-over-foam discus buoy, with a central instrument well. It has an aluminum tower, and a stainless steel bridle. The mooring include Inductive cable (16mm), Super Max 12mm wire rope, 17¨glass float balls, and chain. Anchors (2ton).
(b) Instrumentation	• Weather system • 8 part of 37-IMP (C, T, P) and 3 parts of 37 IMP-ODO (C, T, P, DO). • ADCP • Acoustic release (2ea)
(c) Others	

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

Following publications are planned and not limited to:

Ref	*Title*	*Type*[10]
1	Report on the implementation plan of the “Capacity building of the Ocean Variability and El Niño Observation in Peru¨	Implementation (1)
2	Technical note on buoy setup and deployment	Operation (2)
3	Technical specifications of Imarpe-KIOST mooring sites	Instrumentation (3)
4	Data Quality and Data Management procedures	(5, 6)

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	• IOC and WMO standards will be applied.
(b) Communications	• Real-time data transmission system
(c) Buoy lifetimes	• 3 years (after implementation). • To be extended by Imarpe, after 3 year operation
(d) Other	•

[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 11
REPUBLIC OF KOREA

Country	**REPUBLIC OF KOREA**
Year	**2016**

1. CURRENT PROGRAMME:

Agency or programme	**Korea Meteorological Administration**	
Number and type of buoys	(a) deployed during the year	11 Moored Buoy 11 Drift Buoy
	(b) operational as of 31 August	66 Moored Buoy 2 Drift Buoy
	(c) reporting on GTS as of 31 August	17 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	16 Argo floats
	(b) operational as of 31 August	62 Argo floats
	(c) reporting on GTS as of 31 August	62 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 Pacific Ocean	
Vandalism incidents		

Agency or programme	**Korea Hydrographic and Oceanographic Administration**	
Number and type of buoys	(a) deployed during the year	1 Moored Buoy 13 Drift Buoy
	(b) operational as of 31 August	30 Moored Buoy XX Drift Buoy
	(c) reporting on GTS as of 31 August	[x] To provide real time information and compare with model predictions Marine envioronment mornitoring and Verification schematic currents around the Korean peninsula]
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	Yellow Sea(the western coast of Korea) and East Sea(the eastern and southern coast of Korea), East China Sea	
Vandalism incidents		

2. PLANNED PROGRAMMES:

Agency or programme	**Korea Meteorological Administration**

Number and type of buoys	planned for deployment in the next 12 months	4 Moored Buoys
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Yellow Sea(the western 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	10 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 Pacific Ocean	

Agency or programme	**Korea Hydrographic and Oceanographic Administration**	
Number and type of buoys	planned for deployment in the next 12 months	1 Moored Buoy 13 Drift Buoy
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[Ditto]
	(b) met / ocean research	[x]
	(c) developmental	[x]
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[11]***
1	Monthly Report of Korea Oceanographic Observation Network	Book
2	Annual Report of Korea Oceanographic Observation Network	Book

[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 12
SOUTH AFRICA

Country	South Africa
Year	2015/2016

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	37 x SVP-B 4 x Sea gliders* 4 x Wave gliders* 1 x Slocum glider*
	(b) operational as of 31 August	59 x SVP-B 4 x Sea gliders* 4 x Wave gliders* 1 x Slocum glider*
	(c) reporting on GTS as of 31 August	59 x 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) None	

* no updated information received

2. PLANNED PROGRAMMES:

Agency or programme	**2016/17**	
Number and type of buoys	planned for deployment in the next 12 months	IBPIO = 10 ISABP = 25 IPAB = 15 Total (50) x SVP-B drifters 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	

* no updated information received

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	• SVP-B are mainly Clearwater and Metocean drifters. • 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 • 2 SVP-B drifters include salinity
(c) Others	• None

* no updated information received

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

Ref	***Title***	***Type[12]***
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	Monteiro, P., Gregor, L., Lévy, M., Maenner, S., Sabine, C.L. and Swart, S., 2015. Intraseasonal variability linked to sampling alias in air-sea CO2 fluxes in the Southern Ocean. *Geophysical Research Letters*, *42*(20), pp.8507-8514.	2, 3, 7
4	Ansorge, I.J., Jackson, J.M., Reid, K., Durgadoo, J.V., Swart, S. and Eberenz, S., 2015. Evidence of a southward eddy corridor in the south-west Indian ocean. *Deep Sea Research Part II: Topical Studies in Oceanography*,*119*, pp.69-76.	2, 3, 7
5	Dong, S., Goni, G. and Bringas, F., 2015. Temporal variability of the South Atlantic Meridional Overturning Circulation between 20° S and 35° S.*Geophysical Research Letters*, *42*(18), pp.7655-7662.	2, 3, 7
6	Castellanos, P., Campos, E.J.D., Giddy, I. and Santis, W., 2016. Inter-comparison studies between high-resolution HYCOM simulation and observational data: The South Atlantic and the Agulhas leakage system.*Journal of Marine Systems*, *159*, pp.76-88.	2, 3, 7
7	Hutchinson, K., Swart, S., Meijers, A., Ansorge, I. and Speich, S., 2016. Decadal-scale thermohaline variability in the Atlantic sector of the Southern Ocean. *Journal of Geophysical Research: Oceans*.	2, 3, 7

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	

* no updated information received

[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 13
SPAIN

Country	SPAIN
Year	2016

1. CURRENT PROGRAMME:

Agency or programme	PUERTOS DEL ESTADO	
Number and type of buoys	(a) deployed during the year	0
	(b) operational as of 31 August	15
	(c) reporting on GTS as of 31 August	15
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas		
Vandalism incidents	(7 DeepWater Network + 2 Coastal Network during 2015)Number of incidents If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

Agency or programme	Balearic Island Observing and Forecasting System (SOCIB) Fixed Mooring	
Number and type of buoys	(a) deployed during the year	
	(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		
Vandalism incidents	(a) Number of incidents No vandalism incidents during 2015 If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

Agency or programme	Balearic Island Observing and Forecasting System (SOCIB) Surface drifters	
Number and type of buoys	(a) deployed during the year	1
	(b) operational as of 31 August	5
	(c) reporting on GTS as of 31 August	5
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[x]
Main deployment areas		
Vandalism incidents	(a) Number of incidents No vandalism incidents during 2015 If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

Agency or programme	Balearic Island Observing and Forecasting System (SOCIB) Argo profilers	
Number and type of buoys	(a) deployed during the year	1
	(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		
Vandalism incidents	(a) Number of incidents No vandalism incidents during 2015 If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

Agency or programme	Euskalmet, Basque Metocean Network	
Number and type of buoys	(a) deployed during the year	
	(b) operational as of 31 August	1 Metocean buoy (2016)
	(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	Basque Coast (Spain)	
Vandalism incidents	(a) Number of incidents (Zero in 2016) If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

Agency or programme	Instituto Español de Oceanografía (IEO)	
Number and type of buoys	(a) deployed during the year	
	(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	[x]
	(c) developmental	[x]
Main deployment areas		
Vandalism incidents	(a) Number of incidents No vandalism incidents during 2015 If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

Agency or programme	PLOCAN-ESTOC	
Number and type of buoys	(a) deployed during the year	1
	(b) operational as of 31 August	0
	(c) reporting on GTS as of 31 August	0
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Eastern North Atlantic Central	
Vandalism incidents	No incidents	

Agency or programme	PLOCAN-HC buoys	
Number and type of buoys	(a) deployed during the year	2
	(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	Macaronesian region	
Vandalism incidents	No incidents	

2. PLANNED PROGRAMMES:

Agency or programme	Balearic Island Observing and Forecasting System (SOCIB)	
Number and type of buoys	planned for deployment in the next 12 months	6 surface 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		

Agency or programme	Euskalmet, Basque Metocean Network	
Number and type of buoys	planned for deployment in the next 12 months	1 Metocean buoy more (as in the past)
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[
Main deployment areas		

Agency or programme	PLOCAN- ESTOC	
Number and type of buoys	2	Fall 2016/ Spring 2017
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	[ ]
Main deployment areas	Eastern North Atlantic Central	

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	Euskalmet, Basque Metocean Network • WAVESCAN BUOYS (FUGRO/OCEANOR)
(b) Instrumentation	Puertos del Estado

	• Change a few wave sensors from Datawell (DWR) to WaveSense Euskalmet, Basque Metocean Network • Wave sensor (Oceanor, Integrated wave sensor and datalogger, 300012) • Doppler Surface currentmeter (Aanderaa, DCS 4100R) • ADCP (RD Instruments, Workhorse quatermaster, 150kHz) • CTD chain with 7 instruments from 0 down to 200m water depth (Seabird Electronics, 6xCT+1xCTD, SBE 37IM) • Wind velocity (Aanderaa, 2740) • Wind direction (Aanderaa, 3590) • Air Temperature (Aanderaa, 3555) • Sun radiation (Aanderaa, 2770) • Net Radiation (Aanderaa, 2811) • Air pressure (Aanderaa, 2810) Instituto Español de Oceanografía (IEO) • Wind Speed/Direction (04106-19, Wind monitor JR-MA. Young) • Air Temperature (300006. Omega/Fugro Oceanor) • Air Pressure (PTB220A. Vaisala) • Humidity sensor (HMP45A. Aanderaa) • Sensor de Oleaje DWR (Directional Waverider MK II. Datawell) • Water Conductivity/temperature (SBE 37SIP MicroCAT. Sea-Bird Electronics, Inc) • Fluorescence (ECO FL 3971. Wetlabs) • Dissolved Oxygen (Optode 4165. Aanderaa) • ADCP (Sentinel 300 KHz WH5300. RDI)
(c) Others	Puertos del Estado • Change some satellite antennas from INMARSAT C to IRIDIUM Instituto Español de Oceanografía (IEO) • Change sensors from Datawell • Change data transmission from INMARSAT C to IRIDIUM

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

Ref	*Title*	*Type*[13]
1	Report on best practice in conducting operations and maintaining D4.4, EU project JERICO	European project deliverable
2		
3		
4		

(repeat rows in the table above as necessary)

5. SPECIAL COMMENTS (if any):

(a) Quality of buoy data	•
(b) Communications	Puertos del Estado • Moving to IRIDIUM, cheaper and faster than INMARSAT C Instituto Español de Oceanografía (IEO) • Improving communication by Moving from INMARSAR C to IRIDIUM PLOCAN • Mainly using gprs and iridium satellite communications
(c) Buoy lifetimes	PLOCAN • Ranging from a few months to several years (depending on buoy maintenance possibilities)
(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

[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

ANNEX - FORM FOR REPORTING INCIDENTS OF VANDALISM ON DATA BUOYS

Country		SPAIN						
Contact person e-mail		Coastal Buoy Network (María Isabel Ruiz Gil de la Serna) DATA NOT AVAILABLE ON GTS (Not WMO-ID) Deep Water Buoy Network (Marta de Alfonso, mar@puertos.es) Data available on GTS (WMO numbers assigned)						
	Buoy Location							
Year	**Latitude**	**Longitude**	**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)**
2015	43,35º N	8,56º W	Moored coastal buoy	No damages, drifting	n/a	4	12 k€	mooring line cut off
2015	36,00º N	5,59º W	Moored Coastal buoy	No damages, drifting	n/a	4	12 k€	Mooring line cut off
2015	44º 7,685' N	7º 40,030 W	Moored deep water Met-Ocean buoy	Drift, Solar flash light damaged	62082	5	Covered by the insurance	Floating line seems to be cut by a propeller of a sport vessel
2015	43º 29,713´N	9º 12,610´W	Moored deep water Met-Ocean buoy	Bottom frame destroyed ACM sensor disappeared and solar flash light destroyed	62083	90	Covered by the insurance	
2015	43º 30,028´N	9º 12,594´W	Moored deep water Met-Ocean buoy	Drift	62083	5	Covered by the insurance	16mm rope is scrapped several meters before the point of broken. Fishermen activities seem to be the cause
2015	42º 7.157`N	9º 25.779`W	Moored deep water Met-Ocean buoy	Serious damages, legs bent	62084	24	Covered by the insurance	Probably due to a hit against a vessel
2015	36° 34,204' N	2° 20,353' W	Moored deep water Met-Ocean buoy	Drift	61198	16	Covered by the insurance	Fishing lines with hooks was present entangled on rubber cord

2015	39º 31,170' N	0º 12,250' E	Moored deep water Met-Ocean buoy	Wave sensor (Datawell DWR) damaged	61281		Covered by the insurance	We suspect that small boats tie up in the buoy causing damages in the wave sensor
2015	39º 42,579´ N	4º 25,050´	Moored deep water Met-Ocean buoy	Both radar reflectors were broken, electronic flash light was destroyed and rest of fouling was present on WS´s mast. Pmu was damaged by humidity.	61197	6	Covered by the insurance	Very probably, a vessel impacted against the buoy
Efforts taken against vandalism			Requested collaboration to Port Community in order to inform about data collecting by the buoy. Installed an AIS warning system in some buoys to warn the vessels.					
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 14
SWEDEN

COUNTRY	SWEDEN
YEAR	2016

1. CURRENT PROGRAMME:

AGENCY OR PROGRAMME		
Number and type of buoys	(a) deployed during the year	
	(b) operational as of 31 August	3 wave buoys, 1 ocean buoy, 1 coastal 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		
Vandalism incidents	(a) Number of incidents If vandalism incidents have occurred during the year, please provide the details using the form in the annex.	

2. PLANNED PROGRAMMES:

AGENCY OR PROGRAMME		
Number and type of buoys	planned for deployment in the next 12 months	1 coastal 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		

(repeat table above as often as necessary)

3. TECHNICAL DEVELOPMENTS:

(a) Buoy design	• Ocean buoy from Axys, http://www.axys.com under water (5-80m) measurement chain consisting of a conductive wire equipped with SeaBird 37 instruments for salinity (conductivity) and temperature measurements. • Wave buoys from Datawell. 0.7 m hull, also measuring SST • Coastal buoys from Tech Works Marine
(b) Instrumentation	• Ocean Buoy: Met: Air temp, humidity, pressure and wind Oce: surface: oxygen, temperature, chlorophyll fluorescence, salinity, current and wave. (in NRT) 5-80m: salinity and temp (in NRT). • Wave buoy: Wave sensor and SST • Coastal buoys: : Met: Air temp, pressure and wind Oce: surface: oxygen, temperature, chlorophyll fluorescence, salinity and current. (in NRT) 5 - bottom: salinity and temperature

(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	• Wave buoy: Good. Well-tested and calibrated sensors. • Ocean buoy: Good. Biological sensors have to be verified. • Coastal buoy: Good. Well-tested and calibrated sensors.
(b) Communications	• Ocean buoy: Iridium • Wave buoys: Two with Iridium and one with Orbcomm • Coastal buoys: GSM
(c) Buoy lifetimes	• Ocean buoys estimated lifetime is about 10-15 years. But individual sensors 1-5 years. • Wave buoys estimated lifetime is about 10 years • Coastal bouy estimated lifetime is about 10 years
(d) Other	• Long term goal - to operate: o Two ocean buoys, with one complete spare unit. o Three wave buoys, with two spare units. o Two coastal buoys with one spare unit • Add new parameters to both ocean and coastal buoys.

[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 15
UNITED KINGDOM

Country	UK
Year	2016

1. CURRENT PROGRAMMES:

Met Office	Marine network deep ocean moored buoys*	
Number and type of buoys	(a) deployed during the year	No new sites
	(b) operational as of 3 August	7
	(c) reporting on GTS as of 3 August	7)
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	
	(c) developmental	
Main deployment areas	North-east Atlantic (2 buoys in Biscay jointly operated with Meteo-France)	
Vandalism incidents	None	

* 1 site (K7) mainly funded through the offshore oil & gas industry

Met Office	Instrumented light vessels*	
Number and type of buoys	(a) deployed during the year	7 sites
	(b) operational as of 3 August	6
	(c) reporting on GTS as of 3 August	6
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	
	(c) developmental	
Main deployment areas	Along the Channel	
Vandalism incidents	None	

* light vessels operated by Trinity House with Met Office provided instrumentation (same as for most of the moored buoys)

Met Office/NOCS	Porcupine Abyssal Plain OceanSITES mooring Celtic Sea moored buoy	
Number and type of buoys	(a) deployed during the year	No new sites
	(b) operational as of 3 August	0*
	(c) reporting on GTS as of 3 August	0
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	Pre-operational
	(b) met / ocean research	[x]
	(c) developmental	
Main deployment areas	North-east Atlantic	
Vandalism incidents	None	

* Celtic Sea moored buoy went adrift Nov 2015 and recovered in Dec 2015, not yet reinstated. PAP replacement deployed in Apr 2015 but failed soon after

PML/Met Office	Western Channel Observatory moored buoys	
Number and type of buoys	(a) deployed during the year	No new sites
	(b) operational as of 3 August	2
	(c) reporting on GTS as of 3 August	2
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	Pre-operational
	(b) met / ocean research	[x]
	(c) developmental	
Main deployment areas	Western Channel	
Vandalism incidents	None	

Cefas	SmartBuoy monitoring sites (moored buoys)	
Number and type of buoys	(a) deployed during the year	No new sites
	(b) operational as of 3 August	4
	(c) reporting on GTS as of 3 August	0 (data available via Cefas website*)
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x] for monitoring
	(b) met / ocean research	[x]
	(c) developmental	
Main deployment areas	North Sea and Liverpool Bay	
Vandalism incidents	None	

*https://www.cefas.co.uk/cefas-data-hub/smartbuoys/

Cefas	WaveNet (waverider buoys)	
Number and type of buoys	(a) deployed during the year	
	(b) operational as of 3 August	56 (19 Cefas plus 37 others)
	(c) reporting on GTS as of 3 August	0 (data available via WaveNet website*)
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x] for coastal flood management
	(b) met / ocean research	
	(c) developmental	
Main deployment areas	Around coast of Great Britain	
Vandalism incidents	None	

* https://www.cefas.co.uk/cefas-data-hub/wavenet/

Met Office	Drifting buoys	
Number and type of buoys	(a) deployed during the year	15
	(b) operational as of 3 August	22
	(c) reporting on GTS as of 3 August	22*
Purpose of programme *(check/uncheck boxes using [_] or [x] as appropriate)*	(a) operational	[x]
	(b) met / ocean research	[x]
	(c) developmental	
Main deployment areas	South Atlantic, Southern Ocean and subtropical North Atlantic (for GHRSST drifters)	
Vandalism incidents	N/A	

* 5 with no pressure data, 3 with no SST

2. PLANNED PROGRAMMES:

None at present.

During the last year the two Met Office moored buoys operated off south-west Wales were decommissioned as external funding for these was withdrawn. However, the Aberporth buoy will be replaced by a Datawell waverider and the data will be processed by Cefas through WaveNet.

3. TECHNICAL DEVELOPMENTS:

Met Office

Four new design Hydrosphere/Mobilis buoys with dual Axys Watchman data collection systems, Iridium transmission systems and autonomous Triaxys spectral wave systems are presently in operation at K7, E1, Brittany and Gascogne. The system at E1 (operated with Plymouth Marine Laboratory) has a single meteorological system as the 'other side' is used by PML to handle data from their oceanographic sensors. In addition the buoy has a winching system designed to lower/raise their bio-geochemical sensors out of the water for cleaning.

The system at L4 utilizes a Met Office AMOS (Autonomous Marine Observing System - as used on ships) alongside an AirMar weather station, on a Hippo Marine buoy hull.

All the other Met Office moored buoys are legacy systems (Balmoral hulls, CR10x/PC42) still in operation (at K2, K4, K5 and PAP), these will be replaced by new design systems over the coming years. During the year the moored buoys at Aberporth (to be replaced by a waverider) and Turbot Bank were decommissioned as funding was withdrawn.

Issues: (i) Proliferation of different configurations (Triaxys/Watchman) with different transmitted data formats (binary format for Triaxys wave data introduced which will replace all other formats); (ii) Plan to replace Watchmans with a CR1000-based system (still under development); (iii) Plan to migrate data processing to the 'converged' Observations Processing System (Hermes/MDG) which will deliver moored buoy data to GTS in BUFR (TM 3-15-008), but not expected until 2017.

Wave data: we have collected 3 months of collocated data from a legacy Balmoral buoy (with heave sensor) and a waverider at Aberporth, and also 5 months of data from a Hydrosphere/Mobilis buoy with both Triaxys and MOSE sensors fitted, for 2 of these months we also have collocated waverider data. The data needs to be processed into a format suitable for use with CDIP waveEVAL tool.

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

None known of.

5. SPECIAL COMMENTS (if any):

The Met Office contributes to the E-SURFMAR programme which deploys drifters in the North Atlantic and Arctic Oceans. During the year to 31st July the Met Office arranged deployments of 14 drifters for E-SURFMAR. The Met Office also organised deployment of 10 barometer upgraded US GDP drifters.

All UK Met Office buoys are routinely monitored by Meteo-France as part of their E-SURFMAR responsibility. Meteo-France also handle GTS data distribution for all operating Met Office drifters.

The Met Office facilitates data distribution to GTS for the Irish M6 moored buoy and the Jersey moored buoy.

The Met Office shares in WMO coordinated monitoring of the Global Observing System, by acting as a lead centre for monitoring the quality of surface marine observations. This includes observations from ships, drifters, moored buoys and other fixed platforms, see http://research.metoffice.gov.uk/research/nwp/observations/monitoring/marine/index.html. The work associated this role is presently under review.

APPENDIX 16
UNITED STATES OF AMERICA