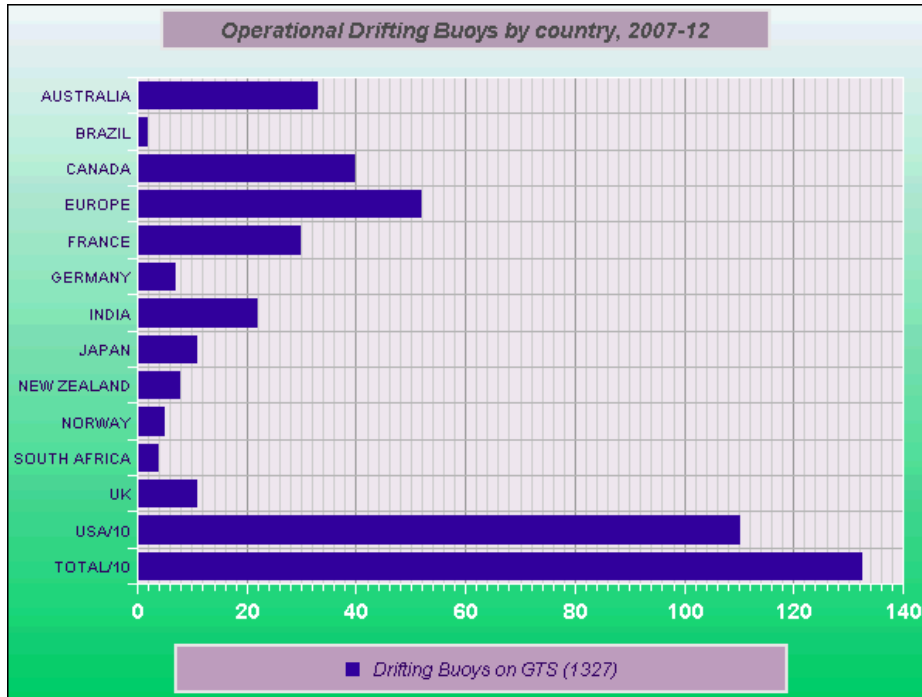


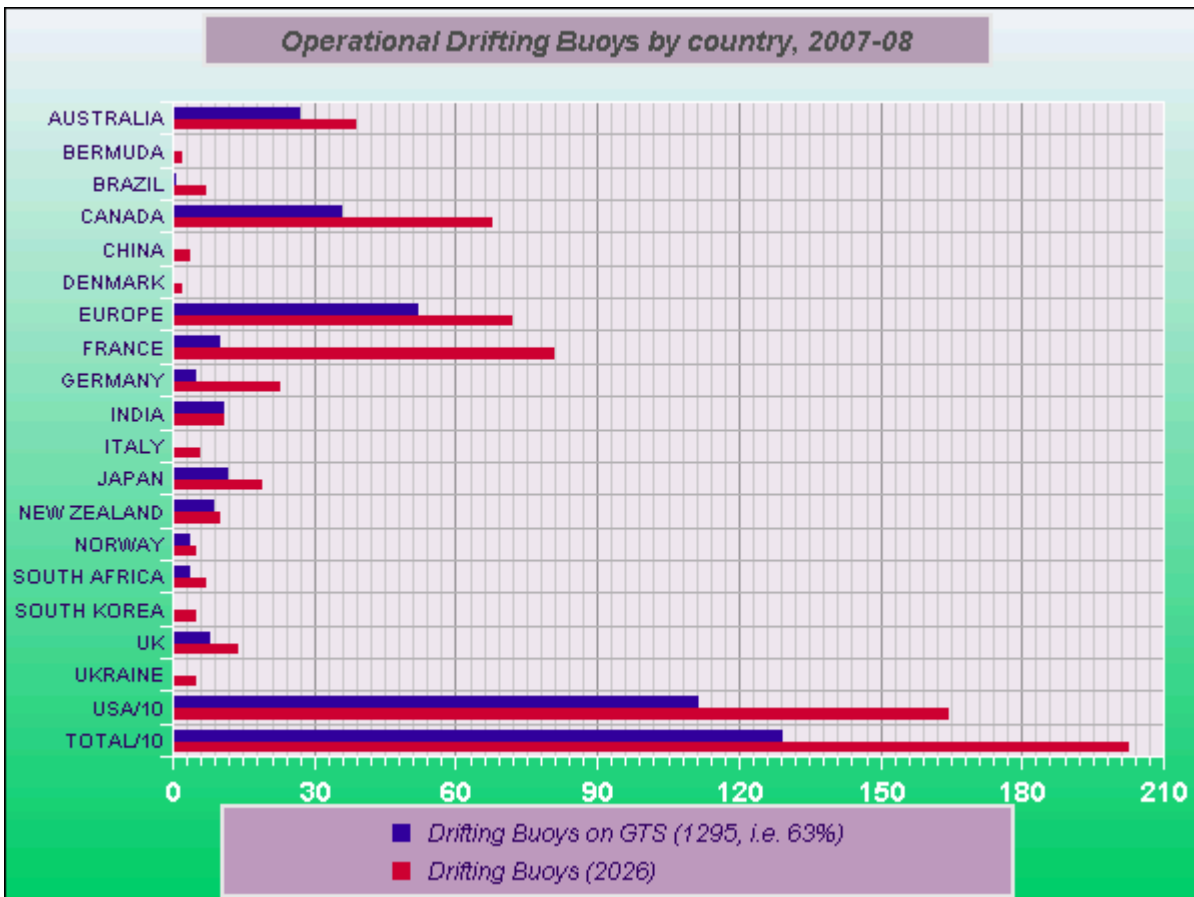
# DBCP Annual report for 2007

## GTS report

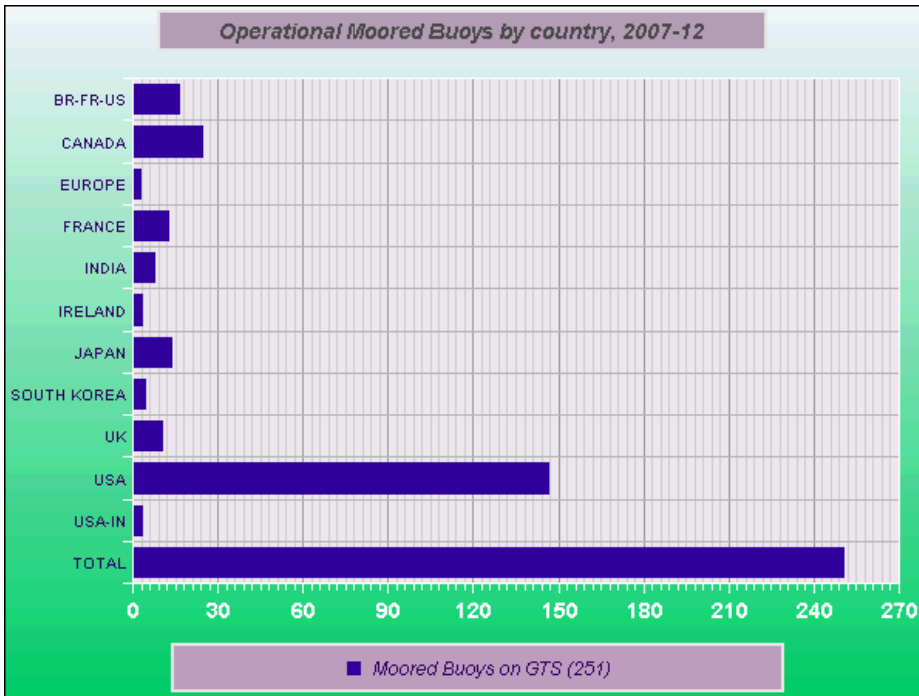
### 1.1 Present status of buoy platforms



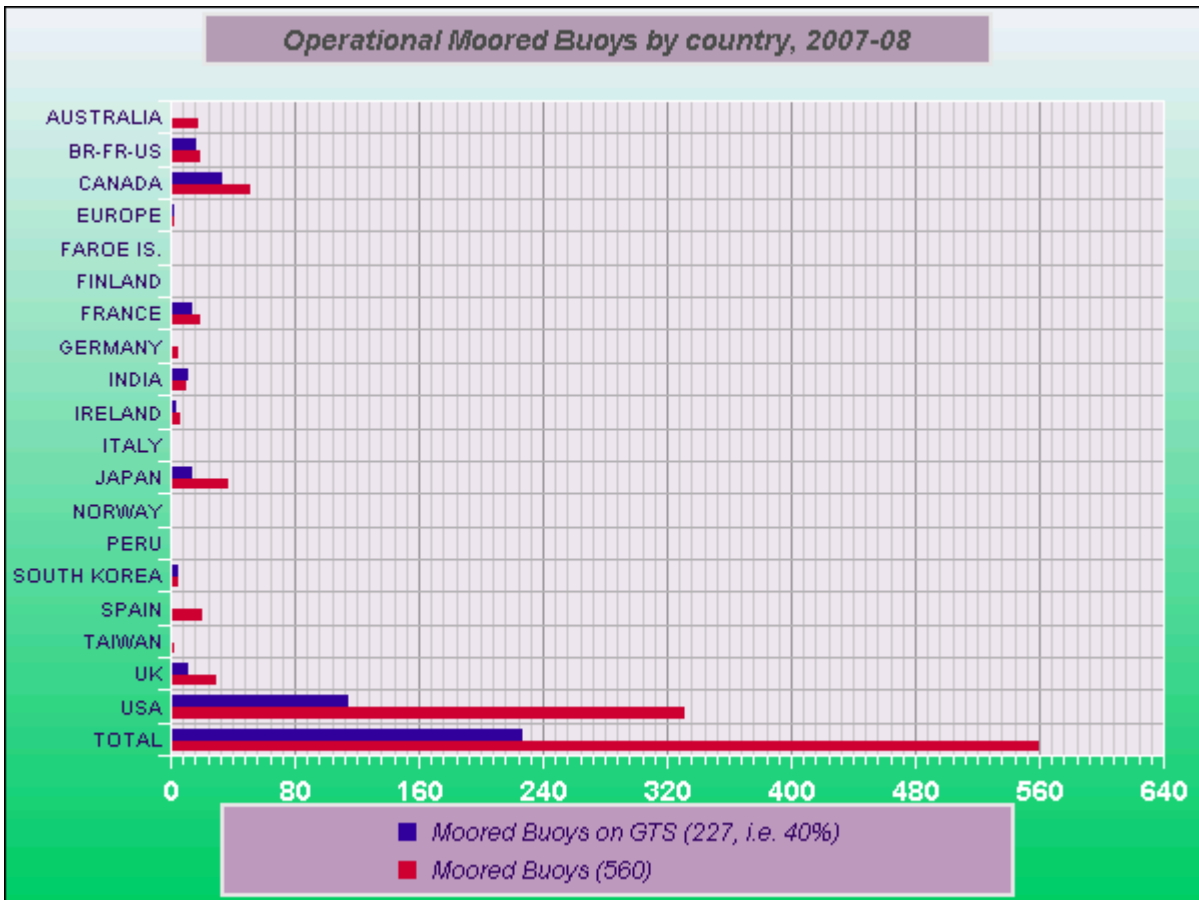
Graph 1: Drifting Buoys and those on GTS by country, December 2007



Graph 2. Drifting Buoys reporting via Argos and those on the GTS by country for August 2007:



Graph 3: Moored Buoys in the high seas (plus US and Canadian buoys and moorings reporting via Argos) and those on GTS by country, December 2007:



Graph 4. Moored Buoys reporting via Argos and those on the GTS by Country for August 2007.

Amongst the drifting and moored buoys reporting on the GTS in BUOY (and SHIP) message

formats; the following variables were measured in August 2007. There has been a significant growth in the number of buoys reporting Air Pressure in the last year, owing mainly to the US programme (110 added - some of which are barometer upgrades by other programmes, which show as US buoys), but also to Canada (29 added) and in part to Australia (7 added) and South Africa (5 added). For Moorings, however, a big drop was experienced between September and October 2006 in the number of US buoys sending data onto the GTS.

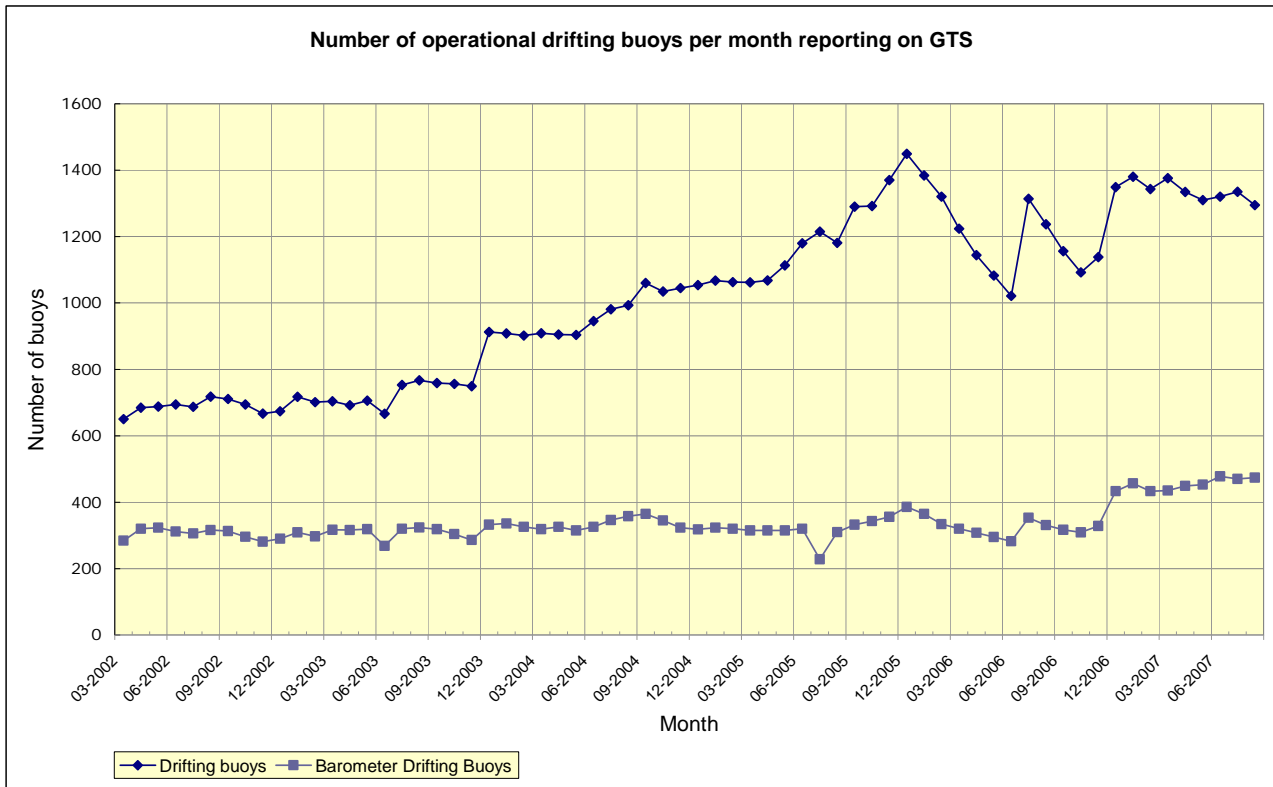
<b>Variable</b>	<b>Any</b>	<b>Air P</b>	<b>Tend.</b>	<b>SST</b>	<b>Air T</b>	<b>Hum.</b>	<b>Wind</b>	<b>Waves</b>	<b>Sub/T</b>
<b>Drifting Buoys</b>	<b>1295</b>	<b>474</b>	<b>424</b>	<b>1139</b>	<b>46</b>	<b>1</b>	<b>11</b>	<b>9</b>	<b>12</b>
<b>Moorings</b>	<b>227</b>	<b>73</b>	<b>45</b>	<b>127</b>	<b>120</b>	<b>73</b>	<b>111</b>	<b>64</b>	<b>65</b>
<b>Remarks</b>									TAO, PIRATA, TRITON.

Table 1. Drifting and Moored buoys – variables being reported on the GTS

## 1.2 Global Implementation

### 1.2.1 Status of operational buoys on the GTS

The graph below shows the number of operational drifting buoys over the last 5 years.

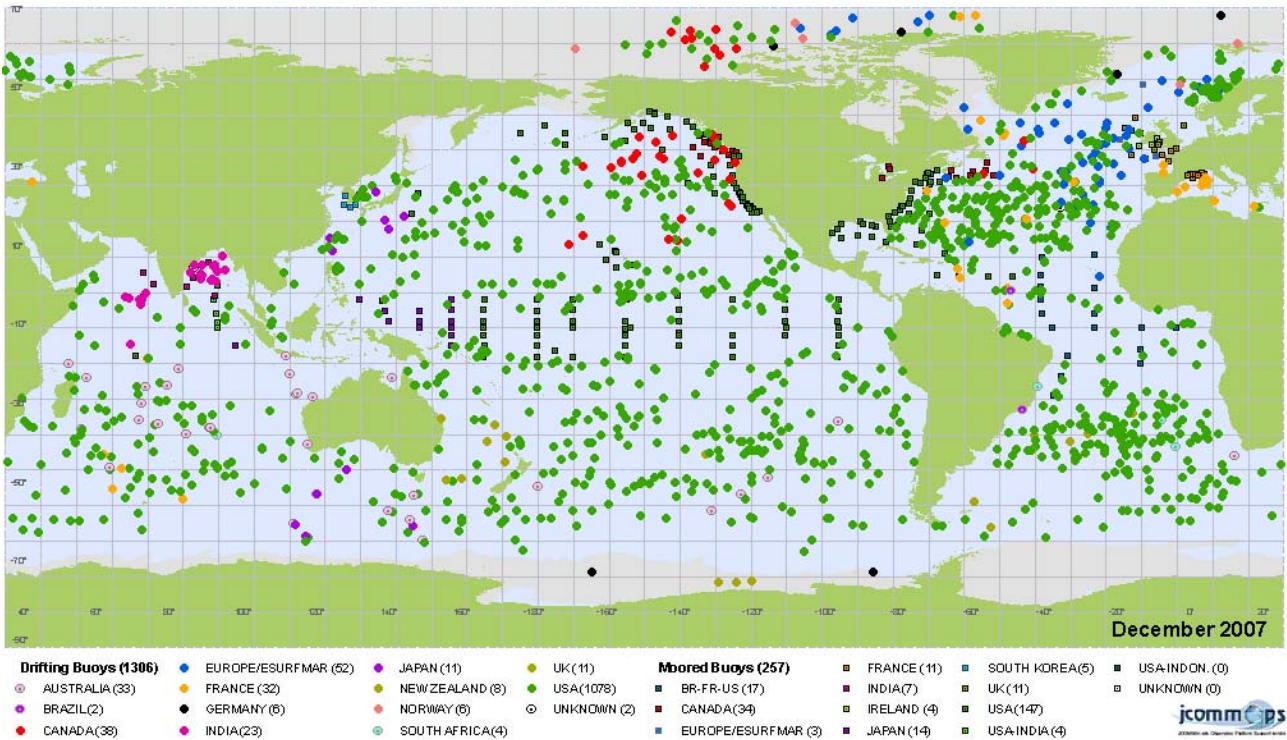


Graph 5: Monthly evolution of the number of operational drifting buoys reporting on GTS from March 2002 to August 2007 and those reporting air pressures.

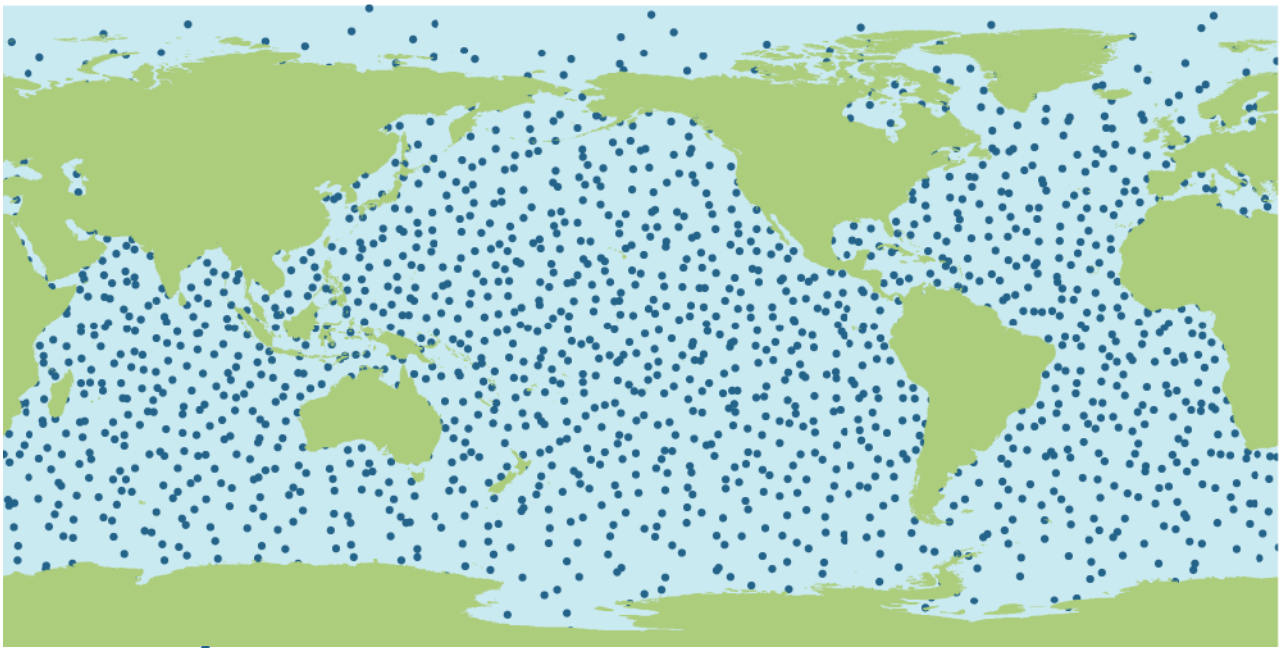
Data derived by statistics computed from GTS *in situ* marine data provided by Météo France.

N.B. data for this chart was derived differently to the charts prior to 2006

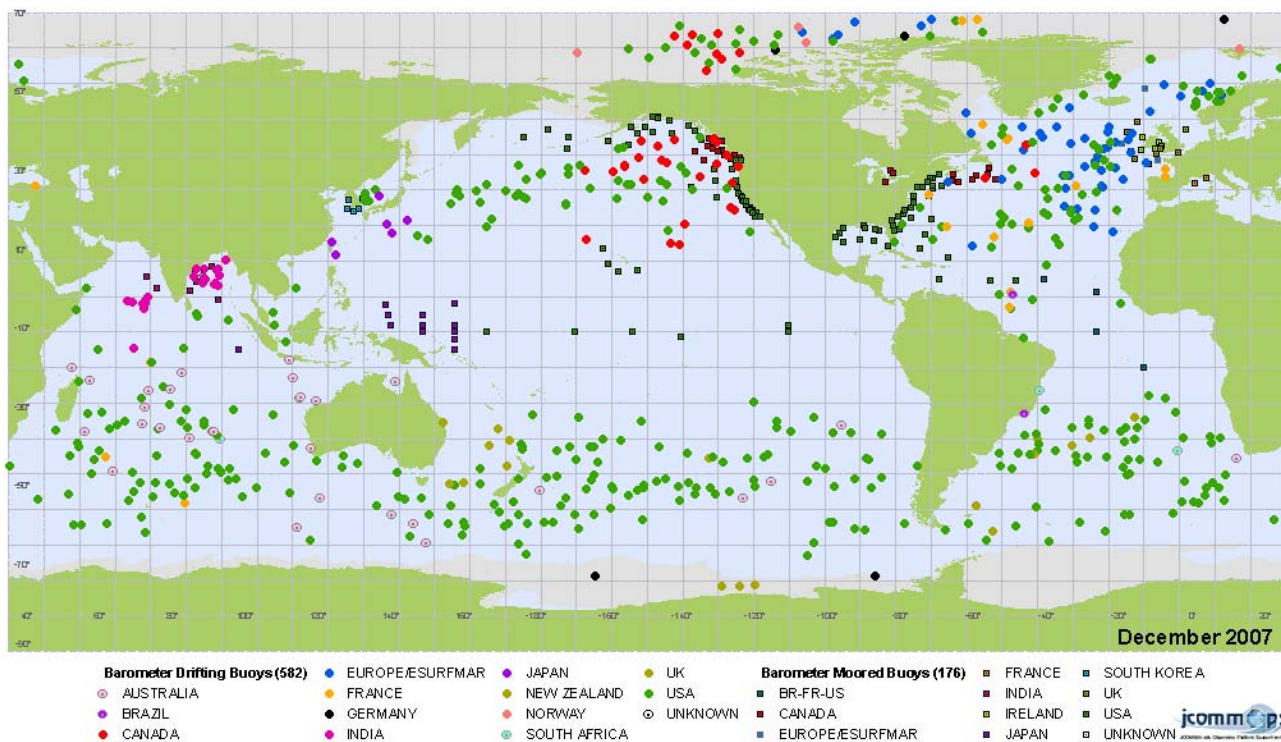
This graph shows the significant growth in the number operationally reporting air pressure measurements in the last year. The number of operational buoys has fluctuated a lot in the last 2 years, but the increase in the number of barometers on those buoys is a very positive sign for the panel. It shows that the barometer upgrade scheme offered by the USA is working and that the recommendation by the JCOMM Observations Programme Area to equip all buoys with barometers is being well supported. The graph does seem to show that the number of buoys has become more stable in the last few months though, presumably as buoy operators become more used to how many buoys need to be deployed to stay in 'maintenance mode' for the network. It appears that it will be a challenge for the panel to maintain its network above 1250 buoys, so efforts must be made in optimizing deployment opportunities (within DBCP and with other programmes), buoy lifetimes and also assessing where buoys need to be placed, to ensure an even coverage across the globe. International cooperation and good planning are the only way to ensure the maintenance of the network.



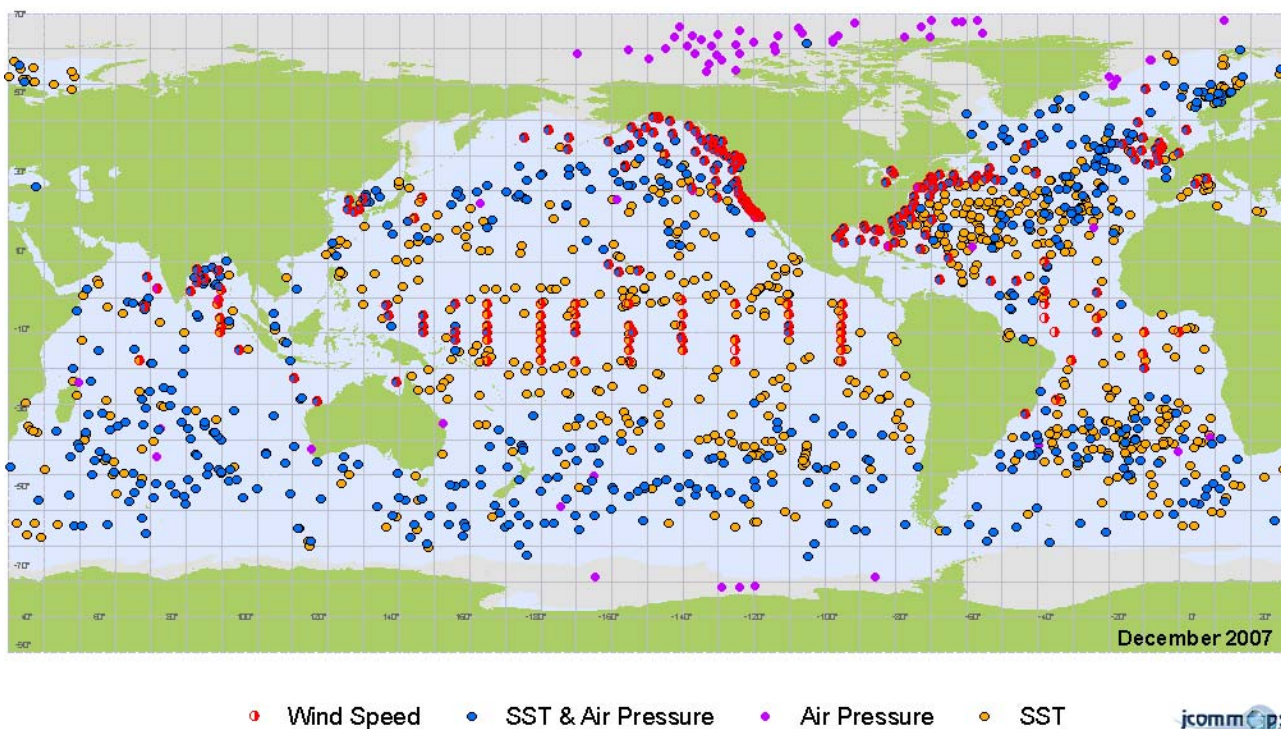
Map 1. DBCP monthly status by country for December 2007. (Data Buoys reporting on the GTS via Météo France)



Map 2. A theoretical network of drifting buoys randomly distributed at a resolution of 500km x 500km



Map 3. DBCP Barometer Buoy monthly status by country for December 2007. (Data Buoy reporting Pressure measurements on the GTS via Météo France)



Map 4. Drifting and moored buoys reporting SST, Air Pressure and Wind in December 2007. (Data Buoy reporting on the GTS via Météo France)

### 1.2.2 Evolution of drifting buoys reporting onto the GTS:

Year	Operational drifting buoys	On GTS	% on GTS
July 1991	718	264	36.8%
July 1992	1162	474	40.8%
August 1993	1269	548	43.2%
September 1994	1246	587	47.1%
September 1995	1429	631	44.2 %
September 1996	1180	638	54.1%
September 1997	1159	581	50.1%
August 1998	1230	543	44.1%
July 1999	1270	728	57.3%
July 2000	1385	807	58.3%
July 2001	1338	763	57%
July 2002	919	459	49.9%
August 2003	1436	752	52.3%
July 2004	1727	950	55%
June 2005	2396	1157	48%
August 2006	2218	1237	55%
August 2007	2026	1295	64%
December 2007	2156	1327	61.5%

Table 2. Evolution of GTS Buoy data percentage

Météo-France provided the Data Availability Index Maps on a monthly basis. The maps are useful to identify the data sparse ocean area for each kind of geo-physical variable and therefore to assist the various data buoy programmes in adjusting deployment strategies. The maps show clearly the impact of the TAO array ATLAS moored buoys (wind), of DBCP regional action groups such as the ISABP (air pressure), or of specific national programmes such as MSNZ (air pressure).

### 1.2.3 GTS bulletin headers:

All Local User Terminal sources comply with WMO regulations regarding GTS bulletin headers. See Annex A for a complete list of GTS bulletin headers used to date.

### 1.2.4 Platforms in the Southern Ocean – Air Pressure

The Southern Ocean Buoy Programme, as part of the DBCP Implementation Strategy, aims to have 80 operational drifting buoys with barometers distributed across the Seas south of 40°S. Currently the number of operational buoys is around 100 out of 168 (with an all-time high of 118 buoys in March 2007) which means this target is achieved and is successfully continuing in 'maintenance mode'.

The broader plan as part of the JCOMM Observations Coordination Group's phased-in implementation plan is to eventually equip at least 700 drifting buoys with barometers outside of the tropics – meaning about 300 for the Southern Ocean.

The main participants were:

- NOAA/AOML, USA
- Alfred Wegener Institute, Germany,
- Bureau of Meteorology, Australia
- Dunstaffnage Marine Laboratory, UK
- Met Office, UK

- Météo France
- New Zealand Meteorological Service
- South African Weather Service

It is noted that this year, being part of the International Polar Year, a lot more buoys were deployed around Antarctica than usual (the Global Drifter Center deployed 124 in the Southern Atlantic), however many of these were not equipped with barometers and have subsequently moved out of the Southern Ocean region into the Atlantic.

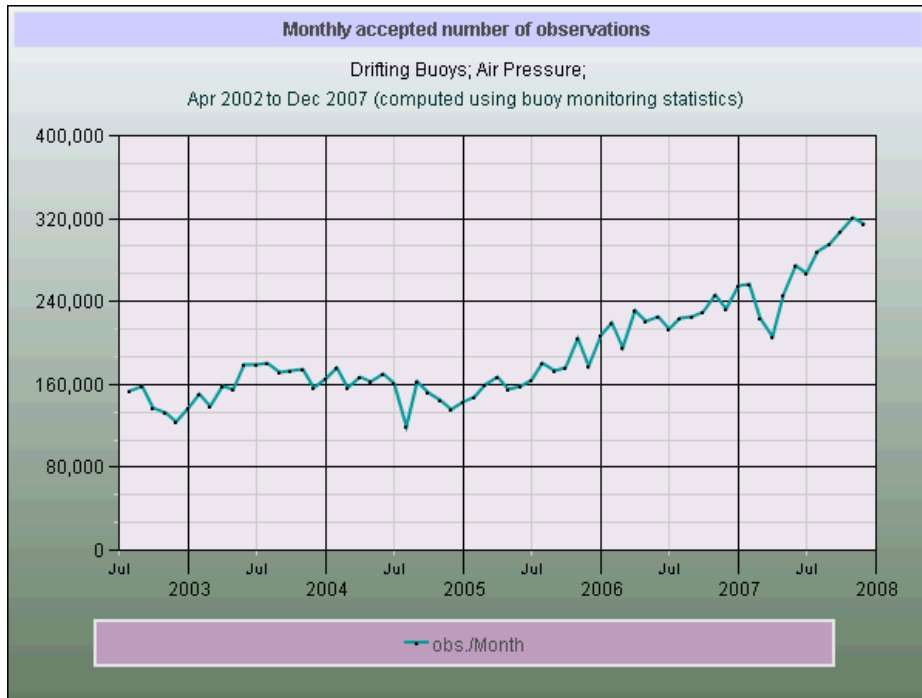
Country	Buoys purchased	Additional upgrades	Total
Australia	5	5	5
France	0	14	14
Germany	4	-	4
New Zealand	0	10	10
South Africa	0	40	40
UK	6	-	6
USA*	225 SVP&SVPB Buoys in total	-	45 At least
<b>Total</b>		<b>69</b>	<b>124</b>

Table 3. SOBP Proposed Commitments for the period September 2007 to August 2008  
The Global Drifter Center commented on the fact that deployment opportunities are very unpredictable in this region, so whilst commitments are made for a total of 225 SVP/SVPB drifters, the actual implementation is not assured.

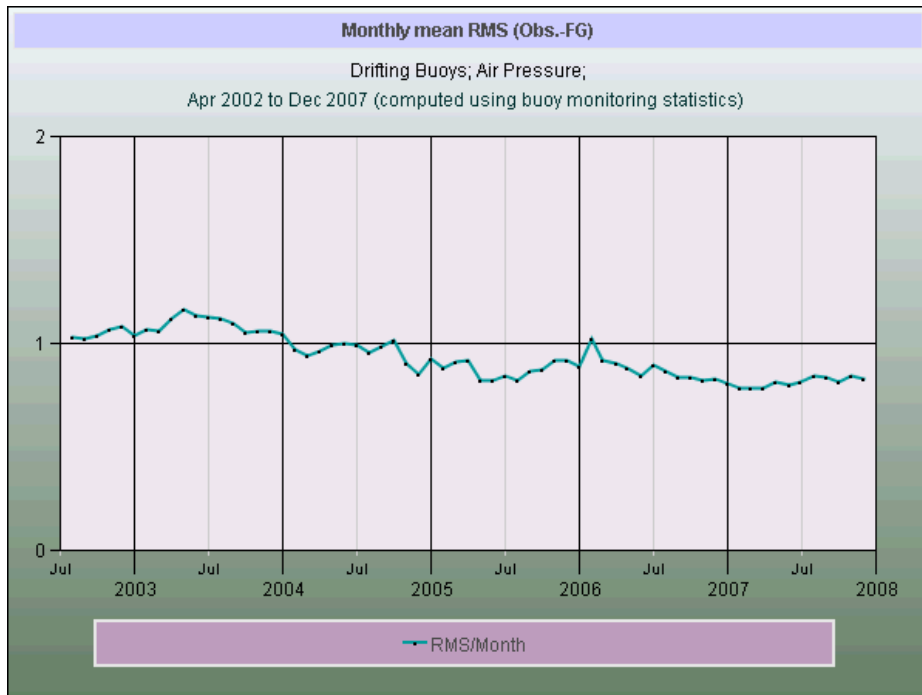
The Global Drifter Centre, supported by NOAA, continues to offer the Barometer upgrade opportunity for standard SVP drifters for ~\$1000 per unit (see: [http://www.jcommops.org/dbcp/svpb\\_upgrade.html](http://www.jcommops.org/dbcp/svpb_upgrade.html))



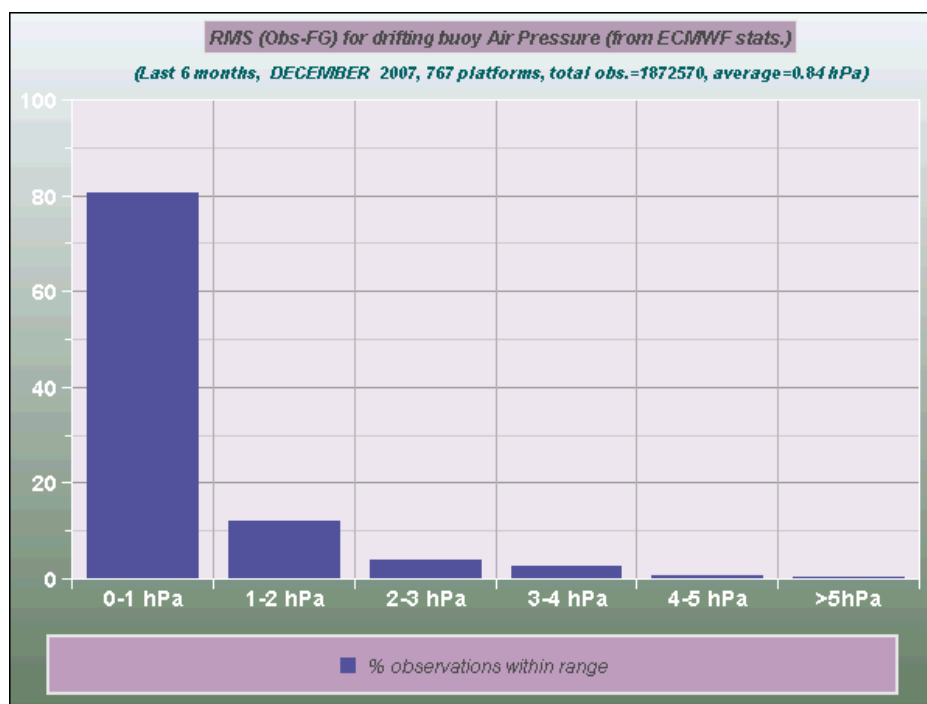
### 1.3 Quality Management



Graph 6: of number of drifting buoy air pressure observations distributed on GTS per month for the period April 2002-December 2007 (from ECMWF monitoring statistics)



Graph 7: Evolution of mean RMS (Obs.-First guess) per month for the period April 2002 to December 2007 for global GTS air pressure drifting buoy data (from ECMWF monitoring statistics)



Graph 8: Histogram of distribution of RMS (Obs. - First Guess) for drifting buoy air pressure for the period 07/2007 to 12/2007.

### 1.3.1 Q.C. Guidelines

The TC monitored the list [buoy-gir@vedur.is](mailto:buoy-gir@vedur.is) and forwarded messages appropriately, as well as and facilitated new subscriptions and maintaining contact details in the JCOMMOPS database to ensure that the correct people are contacted with this Quality Feedback. Created new users in the web application for entry of Quality feedback, at <http://wo.jcommops.org/cgi-bin/WebObjects/QCRelay>.

### 1.3.2 Buoy Monitoring Statistics

These statistics, provided by UKMO, NCEP, Meteo France, Australian BOM, ECMWF and Canada were uploaded when received into the JCOMMOPS database. These are queried using the tools provided on the website

<http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/statsSeries?prog=DBC> or  
<http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/histogram?prog=DBC>

### 1.3.3 New buoys on GTS

The TC updated the web page describing the benefits of disseminating their data on the GTS and provided the update for CLS to use in its user office when creating a new programme or adding a new Argos User. See <http://www.jcommops.org/DBC/gts>

All new Argos (Ocean) programmes are reported to the JCOMMOPS TCs monthly, by CLS user office, so that JCOMMOPS can be aware of potential new buoys which may not be on the GTS.

This should help to identify new buoy programme managers in order

- (i) to convince them to authorise GTS distribution of their buoy data and
- (ii) to offer assistance for that purpose.

The TC assists programme managers who authorise GTS distribution of their buoy data themselves.

#### 1.4 Argos GTS Sub-System

The GTS sub-system permits the data to be processed, if adequate information is precisely implemented in the system. The TC is becoming more familiar with Argos' technical files for buoys and advanced forms of Argos messages.

The new Argos GTS system will be embedded in the application, so will be more integrated into CLS' business processes. The TC will undertake testing of this system when it is ready. There were serious delays in this system's processing experienced during March-June of 2007. It is a focus of the TC to ensure that the new system will not be subject to this sort of problem.

#### 1.5 DBCP web server

For the DBCP web site, the Technical Coordinators' work concerned the following topics:

- Keeping regular files on the web server up-to-date (transfer files).
- Attempting to keep links to other servers up-to-date.

Refer to related DBCP session agenda item (Information exchange) for details.

#### 1.6 Technical Coordination - statistics and graphs.

##### 1.6.1 Maps

The technical Coordinators produced monthly maps (JCOMMOPS), including:

Dynamic maps:

- Maintained monthly dynamic map:
- <http://w4.jcommops.org/WebSite/DBCP>
- Maintained daily dynamic map (drifter trajectories):
- [http://w4.jcommops.org/WebSite/DBCP\\_RT](http://w4.jcommops.org/WebSite/DBCP_RT)
- Maintained dynamic map of all JCOMM observing systems
- <http://wo.jcommops.org/WebSite/JCOMM>

Static maps:

#### **DBCP**

*Buoys by Country:*

[http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/map?type=DBM\\_CNTRY](http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/map?type=DBM_CNTRY)

*Barometer Drifting Buoys by Country with SST and Wind:*

[http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/map?type=DBPM\\_CNTRY](http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/map?type=DBPM_CNTRY)

*SST, Barometer and Wind Buoys:*

[http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/map?type=DBM\\_SPW](http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/map?type=DBM_SPW)

#### **JCOMM**

*All in situ marine observations:*

[http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/map?type=GTSM\\_FMT](http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/map?type=GTSM_FMT)

*All Floats, Drifting and Moored Buoys:*

<http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/map?type=BUOYS>

*All Floats, Drifting and Moored Buoys - Polar areas:*

[http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/map?type=BUOYS\\_POLES](http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/map?type=BUOYS_POLES)

*Sub-surface temperature profiles:*

[http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/map?type=GTSM\\_TZ](http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/map?type=GTSM_TZ)

## 1.7 *Miscellaneous*

### 1.7.1 *Argos monthly status report.*

The TC checked the Argos monthly status report which was prepared by CLS, Service Argos for WMO.

### 1.7.2 *WMO/Argos number cross-reference list and PGC list.*

Monthly list of active buoy WMO numbers is available via JCOMMOPS through

- (i) a dynamic web page which permits to query the JCOMMOPS database (<http://wo.jcommops.org/cgi-bin/WebObjects/JCOMMOPS.woa/wa/wmo>)
- (ii) a file updated daily which can be downloaded from the JCOMMOPS ftp site. ([ftp://ftp.jcommops.org/JCOMMOPS/GTS/wmo/wmo\\_list.txt](ftp://ftp.jcommops.org/JCOMMOPS/GTS/wmo/wmo_list.txt)).

The database includes WMO numbers for buoys transmitting on GTS via Argos and Local User Terminals (LUT). For each WMO number, one can obtain the Argos or platform number, the drifting buoy owner and the dates the WMO numbers have been introduced or removed from the system (Argos or LUT).

The creation of this file was migrated to the new server.

## Annex A

### GTS bulletin headers used for GTS distribution of data in BUOY code

- Table A1: The headers for data distributed by the US Argos Global Processing Centre, Largo, USA

Bulletin header (BUOY)	Bulletin header (BUFR)	Deployment area	Remark
SSVX02 KARS	IOZX02 KARS	GDP	New
SSVX04 KARS	IOZX04 KARS	North Atlantic and EGOS	Same
SSVX06 KARS	IOZX06 KARS	Northern Hemisphere	Same
SSVX08 KARS	IOZX08 KARS	TAO, PIRATA	Was SSVX40 for TAO
SSVX10 KARS	IOZX10 KARS	Southern Hemisphere and ISABP	Same
SSVX12 KARS	IOZX12 KARS	Arctic, Antarctic, sea ice	Arctic, Antarctic merged
SSVX14 KARS	IOZX14 KARS	Indian Ocean and IBPIO	New
SSVX16 KARS	IOZX16 KARS	Navoceano	Same
SSVX18 KARS	IOZX18 KARS	Pacific Ocean	New
SSVX20 KARS	IOZX20 KARS	Navoceano	Same
SSVX22 KARS	IOZX22 KARS	Mediterranean sea	New
SSVX42 KARS	IOZX42 KARS	NOAA/NDBC, Southern Hemisphere	Was SSVX02
SSVX44 KARS	IOZX44 KARS	NE Pacific Ocean (USA and Canada)	Was SSVX18
SSVX48 KARS	IOZX48 KARS	NOAA/NDBC, Northern Hemisphere	Was SSVX08
SSVX96 KARS	IOZX96 KARS	NDBC	Same

- Table A2: Headers for data distributed by the French Argos Global Processing Centre, Toulouse, France

Bulletin header (BUOY)	Bulletin header (BUFR)	Deployment area	Remark
SSVX01 LFWW	IOZX01 LFWW	North Atlantic and EGOS	Same
SSVX03 LFWW	IOZX03 LFWW	Southern Hemisphere and ISABP	Same
SSVX05 LFWW	IOZX05 LFWW	Northern Hemisphere	Same
SSVX07 LFWW	IOZX07 LFWW	Arctic, Antarctic and sea ice	Arctic, Antarctic merged
SSVX09 LFWW	IOZX09 LFWW	Indian Ocean and IBPIO	New
SSVX11 LFWW	IOZX11 LFWW	TRITON	New
SSVX13 LFWW	IOZX13 LFWW	GDP	New
SSVX15 LFWW	IOZX15 LFWW	Pacific	New
SSVX21 LFWW	IOZX21 LFWW	Mediterranean Sea	New
SSVX39 LFWW	IOZX39 LFWW	French West Indies	Was SSVX19

#### Backup procedure:

The backup procedure in case one of the two Argos global processing centres fails has not changed. If one centre fails, the other centre processes all of the data, i.e. the data it normally processed plus the data the other centre normally processes. Hence, when an Argos centre is in “backup mode”, it will generate bulletins with even and odd numbers (in normal mode, only even numbers are used by Largo and odd numbers by Toulouse). For Example:

- In the case where the French Argos Global Processing Centre, in Toulouse, fails, the US Argos Processing Centre in Largo is switched to “backup mode”. In that case, GTS bulletins normally distributed from Toulouse (under TTAAii LFWW bulletin headers) are distributed from Largo (under TTAAii KARS bulletin headers so, SSVX01 LFWW becomes SSVX01 KARS) and vice versa.

**A remark concerning GDP:**

Since all GDP drifters deployed worldwide may also participate in a DBCP regional action groups (e.g. ISABP, if deployed in the South Atlantic), the data users have to agree on a policy on which GTS bulletin header to choose. Considering that a GDP header was created for tracking Lagrangian drifters, it would be reasonable to recommend having all Lagrangian drifters participating in GDP report under the GDP bulletin header and not under the other DBCP Action Groups’ headers. For example, a Lagrangian drifter participating in both GDP and ISABP (South Atlantic) and which data are distributed from the French Argos Global Processing Centre would report under SSVX13 LFWW (i.e. GDP) bulletin header and not under SSVX03 LFWW (i.e. Southern Hemisphere).

Table A3: Data routed from the National Data Buoy Centre (NDBC), Mississippi, USA, based on data received from Service Argos Inc. (SAI), Landover MD, USA

Bulletin header (BUOY)	Deployment area	Remark
SSVX42 KWBC	NOAA/NDBC, Southern Hemisphere	Was SSVX02 KWBC
SSVX48 KWBC	NOAA/NDBC, Northern Hemisphere	Was SSVX08 KWBC

Table A4: Data routed from NOAA, Washington DC, USA, based on data received from Service Argos Inc. (SAI), Landover MD, USA

Bulletin header (BUOY)	Deployment area	Remark
SSVX12 KWBC	Arctic Ocean	

Table A5: Data routed from Edmonton Local User Terminal (LUT)

Bulletin header (BUOY)	Deployment area	Remark
SSVX02 CWEG	Arctic Ocean	
SSVX03 CWEG	Hudson Bay	
SSVX04 CWEG	Northeast Pacific Ocean	

Table A6: Data routed from Halifax Local User Terminal (LUT)

Bulletin header (BUOY)	Deployment area	Remark
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SSVX01 CWHX	North-West Atlantic Ocean	
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Table A7: Data routed from the Centre de Meteorologie Marine, Brest

Bulletin header (BUOY)	Deployment area	Remark
SSVX07 LFPW	Arctic	
SSVX13 LFPW	EGOS	
SSVX51 LFPW	North Atlantic Ocean (Bodega-TOGA)	
SSVX55 LFPW	Equatorial Pacific Ocean (Bodega-TOGA)	

Table A8: Data routed from the Sondre Stromfjord Local User Terminal (LUT)

Bulletin header (BUOY)	Deployment area	Remark
SSVX01 BGSF	North Atlantic Ocean (EGOS)	

Table A9: Data routed from the Japan Meteorological Agency

Bulletin header (BUOY)	Deployment area	Remark
SSVX01 RJTD	Pacific Ocean (Japan, marine stations and buoys)	
SSVB01 - SSVB19 RJTD	Pacific Ocean (Japan, marine stations and buoys)	

Table A10: Data routed from the India

Bulletin header (BUOY)	Deployment area	Remark
SSVX01 DEMS	Indian Ocean (India, North Indian Ocean)	

Table A11: Data routed from the Korean Meteorological Administration

Bulletin header (BUOY)	Deployment area	Remark
SSWB19 RKSL	North Pacific	
SSWB41 RKSL	North Pacific	

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Table A12: Data routed from Oslo, Norway

Bulletin header (BUOY)	Deployment area	Remark
SSVX01 ENMI	North Atlantic	

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