

**INTERGOVERNMENTAL OCEANOGRAPHIC  
COMMISSION (OF UNESCO)**

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DATA BUOY COOPERATION PANEL

TWENTY-SIXTH SESSION

OBAN, UNITED KINGDOM  
27 – 30 SEPTEMBER 2010

**WORLD METEOROLOGICAL ORGANIZATION**

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DBCP-XXVI/Doc. 10.2 rev 1  
(17.IX.2010)

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ITEM: 10.2

ENGLISH ONLY

**REPORT BY THE BUOY DATA MANAGEMENT CENTRES**

*(Submitted by Mr Jean Rolland (Météo-France) for SOC/DB and Mr Bruce Bradshaw (ISDM) for  
RNODC/DB)*

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**Summary and purpose of the document**

This document contains reports by the two buoy data management centres, the Responsible National Oceanographic Data Centre for Drifting Buoys, operated by ISDM, Canada, and the Specialized Oceanographic Centre for Drifting Buoys, operated by Météo-France.

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**ACTION PROPOSED**

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

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- Appendices:**
- A. Report of the IODE RNODC for Drifting Buoys (August 2009 – July 2010);
  - B. JCOMM SOC for Drifting Buoys Report 2009 – 2010.

**-A- DRAFT TEXT FOR INCLUSION IN THE FINAL REPORT**

10.2.1 The Panel reviewed the report of the IOC International Oceanographic Data and Information Exchange (IODE) Responsible National Oceanographic Data Centre (RNODC) for drifting buoys (RNODC / DB), operated by the Integrated Science Data Management (ISDM, formerly MEDS) of Canada. Mr Bruce Bradshaw, ISDM presented the report.

10.2.2 The Panel then reviewed the report of the JCOMM Specialized Oceanographic Centre (SOC) for drifting buoys, operated by Météo-France, presented by Mr Jean Rolland.

10.2.3 The Panel thanked both centres for their reports. The full reports are provided in Appendices A and B and will be included in the CD-ROM that will be distributed with the Session final report.

10.2.4 As noted at the previous DBCP Session, the two respective IODE and JCOMM centres are completely separate but provide similar functions. The Panel noted the following outcome of the fourth session of the JCOMM Data Management Coordination Group (DMCG-IV, Ostend, Belgium, 8-9 April 2010) regarding this issue:

1. DMCG-IV considered that the status of IODE Responsible National Oceanographic Data Centres (RNODCs), JCOMM Specialized Oceanography Data Centres (SOCs), and the VOSclim Real Time Monitoring Centre (RTMC) should be addressed. It would be beneficial to develop a proposal for integrating them into a single system of dedicated centres contributing to the ODP, and with specialized functions (archive, QC, monitoring, etc.). DMCG-IV agreed that feedback from those centres was needed – tentatively by September 2010 – before initiating a proposal, and requested the IOC Secretariat to contact the RNODCs:
  - IGOSS (BATHY and TESAC) *operated by Japan, USA and Russian Federation.*
  - MARPOLMON *operated by Japan, USA and Russian Federation*
  - WESTPAC *operated by*
  - ADCP Japan *operated by Japan*
  - Drifting Buoy Data *operated by Canada*
  - INDO *operated by India*
  - JASIN *operated by United Kingdom*
  - Persian Gulf *operated by Iran*
2. DMCG-IV requested S. Woodruff to contact RTMC and seek feedback from them by September 2010. It requested The WMO Secretariat to contact the SOCs. Greg Reed was also requested to contact the ISDM, and discuss what tasks they are still carrying one as RNODC/DB. Based on the feedback, it will be possible to identify those centres with historical function to be connected to ODP, and those centres carrying other activities (e.g. QC, monitoring). DMCG-IV requested that the feedback information be submitted to the DMCG Chairperson; and the Chairperson to convene an *ad hoc* task group to address the issue and possibly make a proposal. The *ad hoc* task Group should make a proposal by the end of 2010 so that IODE elements can be addressed at IODE-XXI. The *ad hoc* Task Group will be tasked to draft a Recommendation for JCOMM-IV, including ToR of such centres, plus background information.

10.2.5 The Panel agreed with these developments and invited the SOC/DB, and the RNODC/DB to collaborate in those developments as appropriate (***action; SOC/DB & RNODC/DB; end 2010***).

## APPENDIX A

### REPORT OF THE IODE RESPONSIBLE NATIONAL OCEANOGRAPHIC DATA CENTRE (RNODC) FOR DRIFTING BUOYS (AUGUST 2009 – JULY 2010)

Integrated Science Data Management (ISDM)

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Integrated Science Data Management (ISDM), previously the Marine Environmental Data Service (MEDS) of the Department of Fisheries and Oceans Canada became a Responsible National Oceanographic Data Centre (RNODC) for Buoy Data on behalf of the Intergovernmental Oceanographic Commission (IOC) and the World Meteorological Organization (WMO) in January 1986. As part of its role, RNODC-ISDM acquires, processes, quality controls and archives real-time buoy messages reporting over the GTS, as well as delayed mode data acquired from other sources. All data are made available to the international scientific community through online products, a web based request system or direct telephone and email requests. An in-depth discussion of the RNODC can be found in the document DATA MANAGEMENT SYSTEM FOR SURFACE DRIFTERS referenced later in this report.

ISDM continues to use GTS data circulating in buoy code as its primary source for QC and archival, additionally for the past two years we have been decoding and storing data circulating in BUFR format. Initial examinations of the differences between the two data streams have been encouraging; results are being shared with Hester Viola (JCOMMOPS) who is taking the lead in following up on the discrepancies. We encourage all centers to continue working towards complete integration of the BUFR message format for data dissemination through the GTS and we will continue to report on our findings.

During the period from August 2009 to July 2010 ISDM archived 12,375,733 buoy messages from 2248 platforms (six percent greater than the same period last year). On average each buoy is reporting 21.6 messages per day. Drifting buoy tracks and moored buoy locations can be seen in Figure 6. Of the BUOY messages received, 99% of the locations were quality flagged as good and required on average 29 days from observation time to reach the archive after our monthly QC and updates. The size of the drifting buoy archive is currently 40 GB with 87 million drifting and moored buoy records from 1978 to July 2010.

Due to a GTS routing problem all messages from the bulletin header SSVX13 LFPW for the period of September 24 2009 to August 23 2010 were not received at ISDM until the routing rule was re-established in Washington. Pierre Blouch (Météo-France) has provided ISDM with the missing data and our archives are presently being restored with the missing data. This event has highlighted a need for improved monitoring of our GTS data feed. We will be posting a new report on our web site that summarizes our data sources by WMO Buoy ID and GTS Bulletin Header. We hope to develop a process in collaboration with others like JCOMM-OPS and the SOC to routinely look for exceptions and possible problems in our GTS data sources and content. Recommendations and advice welcome.

Data collected and processed by the Atlantic Oceanographic and Meteorological Laboratory (AOML) under the Global Drifter Program formerly World Ocean Circulation Experiment - Surface Velocity Programme (WOCE-SVP) is available from ISDM by agreement with AOML. We expect an update later this year to the SVP collection which

currently covers the period 1979 to 2008 (<http://isdm.gc.ca/isdm-gdsi/drib-bder/svp-vcs/index-eng.asp>).

ISDM had to discontinue the use of SVG maps and other web products that do not comply with Government of Canada web publishing standards. A new set of XML/KML/Google Earth on-line applications with improved meta-data and access to new graphical products and source data is now available at <http://isdm.gc.ca/isdm-gdsi/drib-bder/kml/monthlykml.htm>. These products are still being developed and refined and we welcome any comments or suggestions for improvement and integration with other products.

ISDM continues to respond to data requests and provides access to all data in a variety of formats free of charge. The AOML SVP and other online products are increasingly useful to a wide community of users. ISDM continues to improve data access and online products and services in response to community requirements and feedback.

We are looking forward to enhancing existing processing systems and developing new processes that will improve the timeliness of database updates and allow for data discovery and integration with other initiatives like ODP, WIGOS/WIS, WMS and others.

Previous DBCP sessions and the JCOMM Data Management Coordination Group (DMCG-IV/Doc. 10.2, Appendix A, p. 4) have noted that the two respective IODE (RNODC) and JCOMM (SOC) centres responsible for buoy data are completely separate but provide similar functions... We look forward to working collaboratively with IODE, JCOMM, WMO, SOC and others to map out functional requirements and identify areas of duplication and overlap in functions and services in order to improve the overall delivery of timely high quality services for data acquisition, duplicates and merging, QC, archival, dissemination and the overall management of buoy data. The document DATA MANAGEMENT SYSTEM FOR SURFACE DRIFTERS submitted to OceanObs09 provides significant details on the operations and processes of the RNODC-ISDM. This important document was developed to initiate meaningful dialog for future discussions later this year ([http://www.aoml.noaa.gov/phod/docs/keeley\\_etal.pdf](http://www.aoml.noaa.gov/phod/docs/keeley_etal.pdf)).

Please note that Robert Keeley has retired from ISDM after many years of dedicated and noteworthy contributions to our community. Bob's absence from ISDM will be profound but he has spent a great deal of effort over the past couple of years in knowledge transfers and staff development. We wish Bob every happiness and success in his future endeavors.

Figure 1 - Reports from Drifting and Moored Buoys by Month

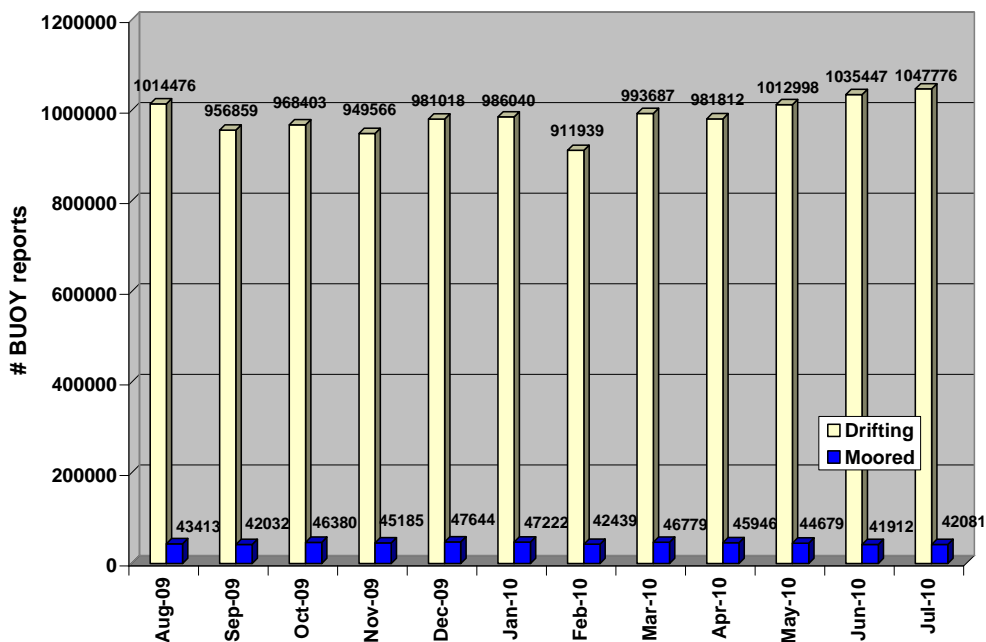


Figure 2 - Number of Drifting and Moored Buoys by Month

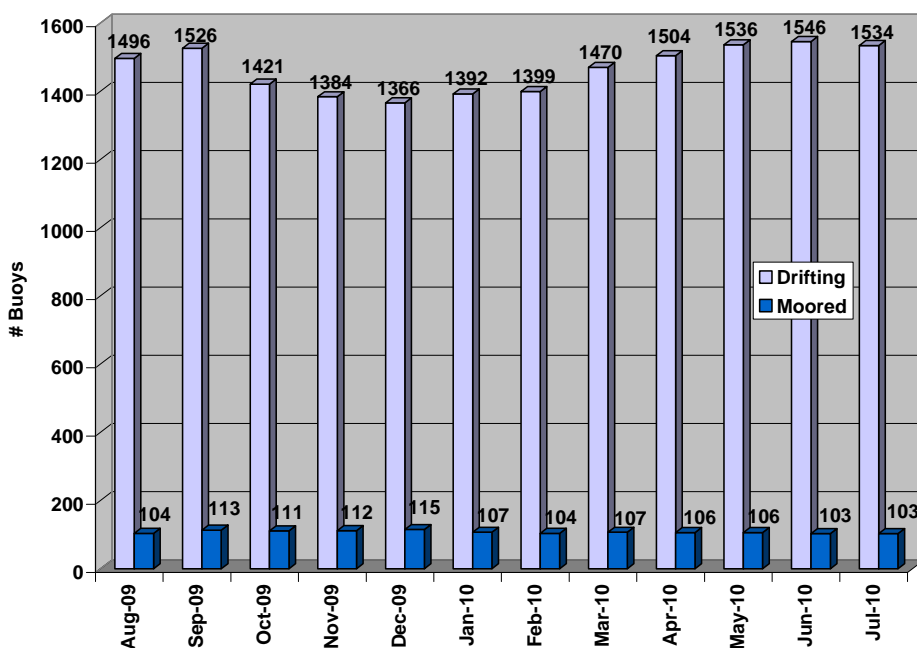


Figure 3 – Reports from Buoys with SST and Met Data

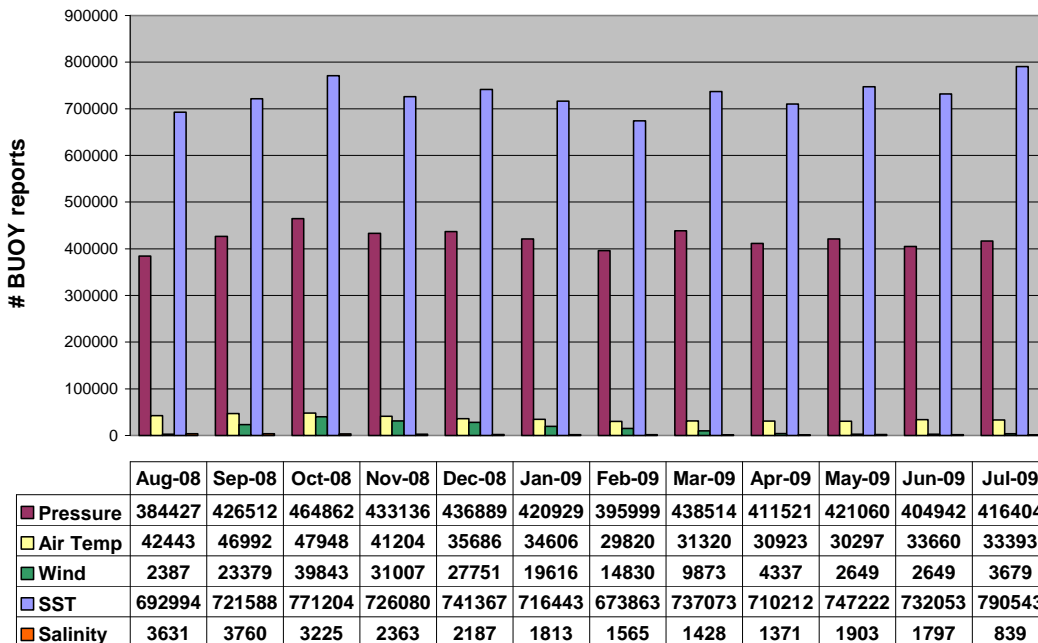
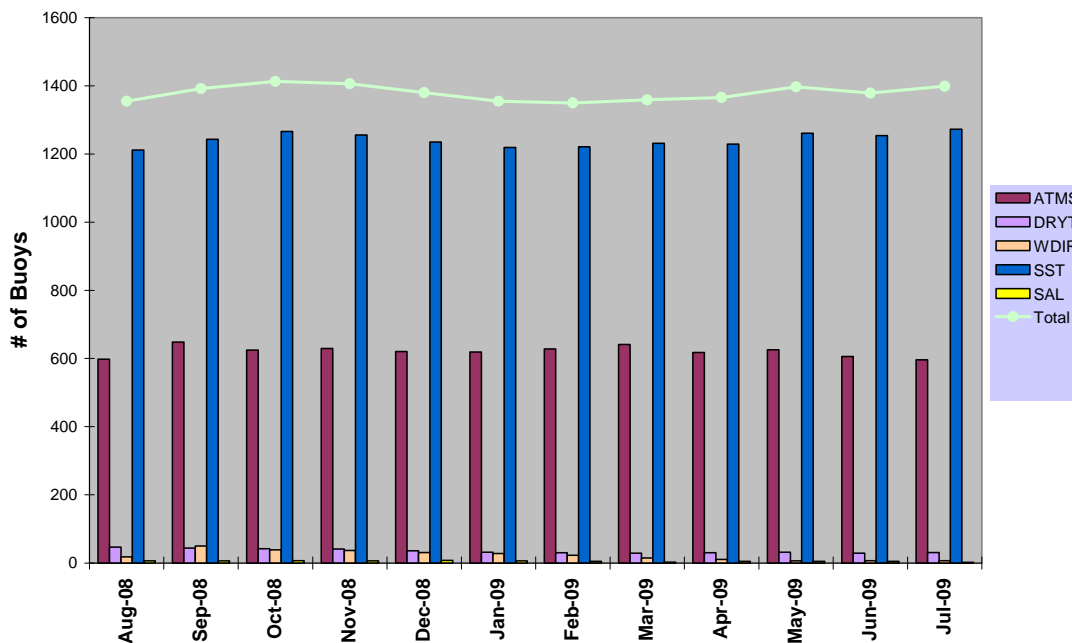
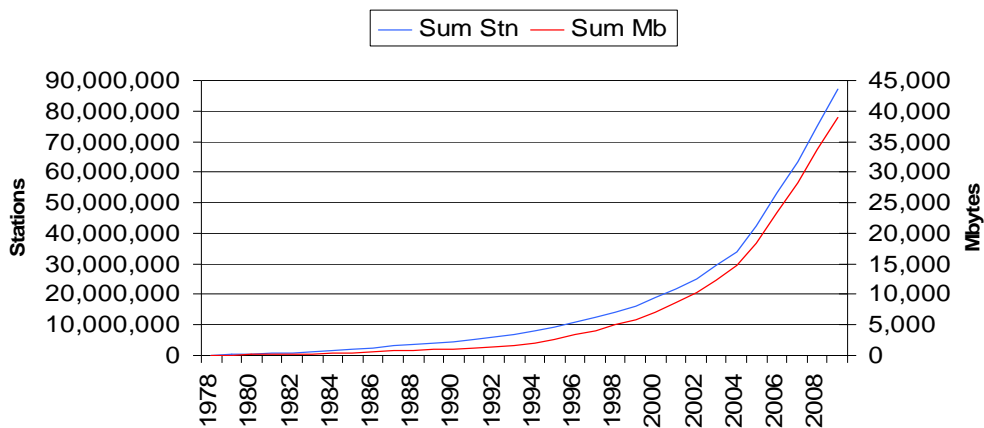


Figure 4 – Number of Drifting and Moored Reporting SST and Met Data

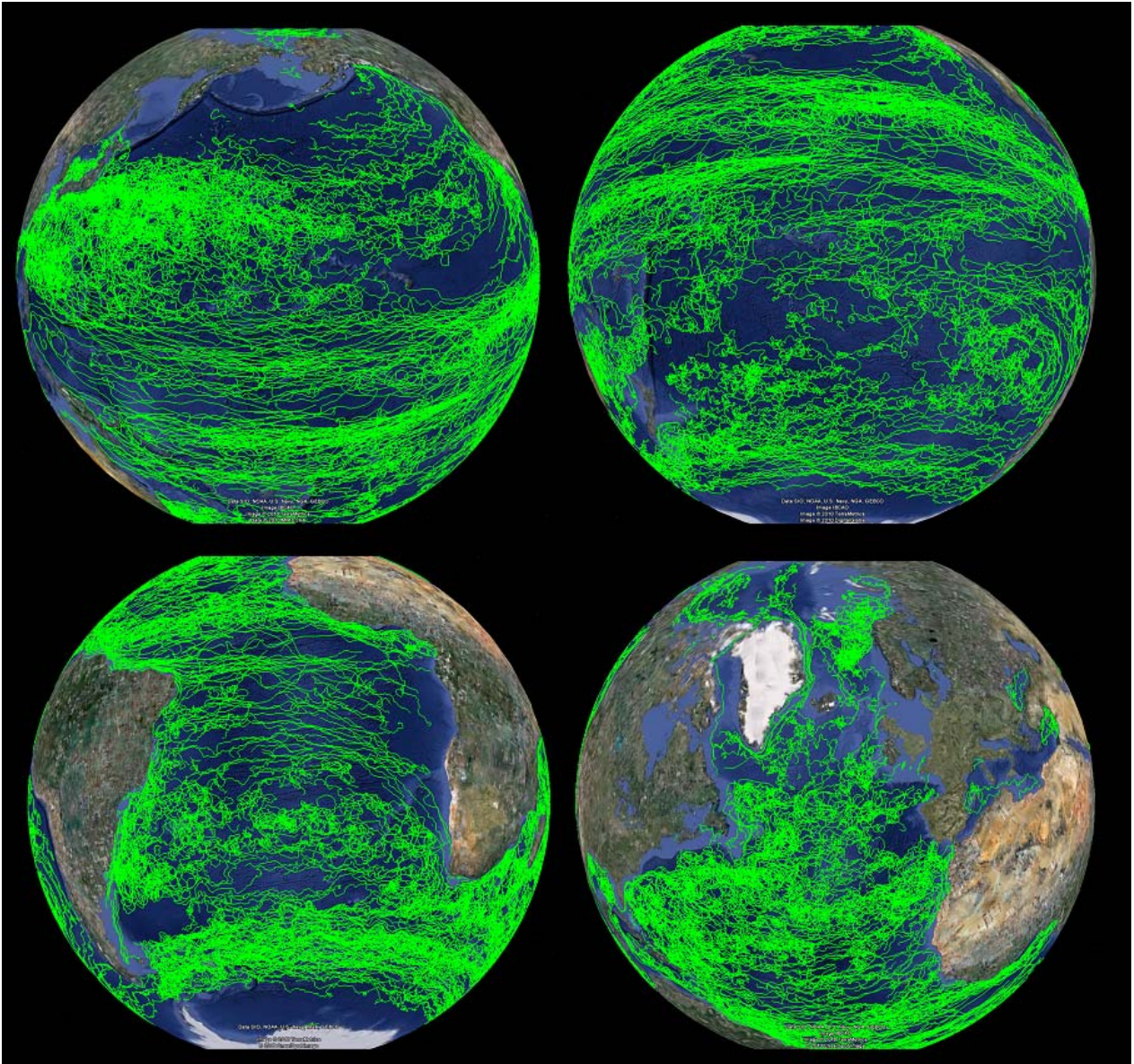


**Figure 5 – Buoy Archive Growth by Year**



**Figure 6 – Pacific and Atlantic Buoy Location and Track Maps**





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## APPENDIX B

# REPORT OF THE JCOMM SPECIALIZED OCEANOGRAPHY CENTRE (SOC) FOR DRIFTING BUOYS REPORT 2009 – 2010

*Météo France*



SOC for Drifting Buoys Report

2009 – 2010

The Specialized Oceanographic Center (SOC) for Drifting Buoys has been run continuously during year 2009-2010. SOC is made of Météo-France teams in Toulouse and Brest as well as teams involved in the inter-agency program Coriolis (Ifremer leading the program, and in charge for delayed mode aspects, portal to external users, etc). A daily collection and archiving of buoy reports from the global ocean is performed by Météo-France. Collaboration within the Coriolis project ([www.coriolis.eu.org](http://www.coriolis.eu.org)), with JCOMMOPS and also CLS-Argos are main aspects of this SOC, beside regular exchanges with other data centres, measurement teams and agencies, and with users.

Météo-France operates quality control (QC) procedures on drifting buoys data. Warning messages are sent to the [buoy-qir@vedur.is](mailto:buoy-qir@vedur.is) mailing list of Internet, when a problem appears (e.g. bad location detected, wrong acceleration and loss of drogoue, sensor drift, etc) or when a modification seems needed (i.e. to recalibrate or to remove a sensor from GTS) via the JCOMMOPS interface. Statistics on comparisons with analysis fields are set up for each buoy. Monthly statistics are sent to the [buoy-qir@vedur.is](mailto:buoy-qir@vedur.is) mailing list too.

Buoy data QC tools developed by Météo-France are available on the Internet ([www.meteo.shom.fr/qctools](http://www.meteo.shom.fr/qctools)) to help buoy operators to check their own buoys: monthly statistics carried out by 4 meteorological centres for individual buoys; plots of data and differences with model outputs; blacklists of buoys reporting dubious air pressure values or being perhaps ashore can be found. The TESAC QC has been modified during the second half of 2009 in the following way : in the previous version, reports with incomplete levels (temperature or salinity missing) were fully rejected ; now they are kept, missing data being indicated by slash groups). Few more tenths of reports pass through QC every day.

In addition to the products linked to buoy QC, the SOC for Drifting Buoys produces monthly products for buoys, moored buoys, drifting buoys, ships. Data are delivered on request, or on a regular basis and via Internet (<http://esurfmar.meteo.fr/doc/o/daim>). Examples are given for the last year.

- Figures 1, 2, 3 and 4 show the time evolution of reports for wind and for pressure respectively for all BUOY reports (showing all buoys, moored buoys and Drifting Buoys) and SHIP reports, since January 2009.
- Figure 5 shows the time evolution of WAVEOB reports and sensors since January 2009.

Each month, mapping position plot charts and Marsden square distribution are produced for BATHY, TESAC, SHIP, BUOY and TRACKOB.

- Figures 6a,b to 10a,b show these products for June 2010. "a" stands for mapping position plot charts, and "b" for Marsden square distribution. Figures 6a and 6b: BATHY, Figures 7a and 7b: TESAC, Figures 8a and 8b: SHIP, Figures 9a and 9b: BUOY, and Figures 10a and 10b: TRACKOB.

Each month, Marsden square distribution charts of mean monthly data availability (top) and percentage of BUOY reports compared to SHIP + BUOY reports (bottom) for wind, pressure, air temperature, sea surface temperature are produced.

- Figures 11 to 14 show such products for June 2010. Figure 11: Wind, Figure 12: Pressure, Figure 13: Air temperature, Figure 14: Sea surface temperature.

Since the 1<sup>st</sup> of January 2002, Météo-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, obtained from the GTS, are interpolated every 3 hours. Surface current data are computed over 6 hours, on a weekly basis. Data are flagged with drogoue presence indexes. Since mid-2004, wind speed and wind stress data from ECMWF analysis model coupled with sampled surface current data are delivered too and used by operational oceanography centres (such as Mercator, French component of the Godae international experiment).

Figure 1

Time evolution of BUOY reports for wind and pressure

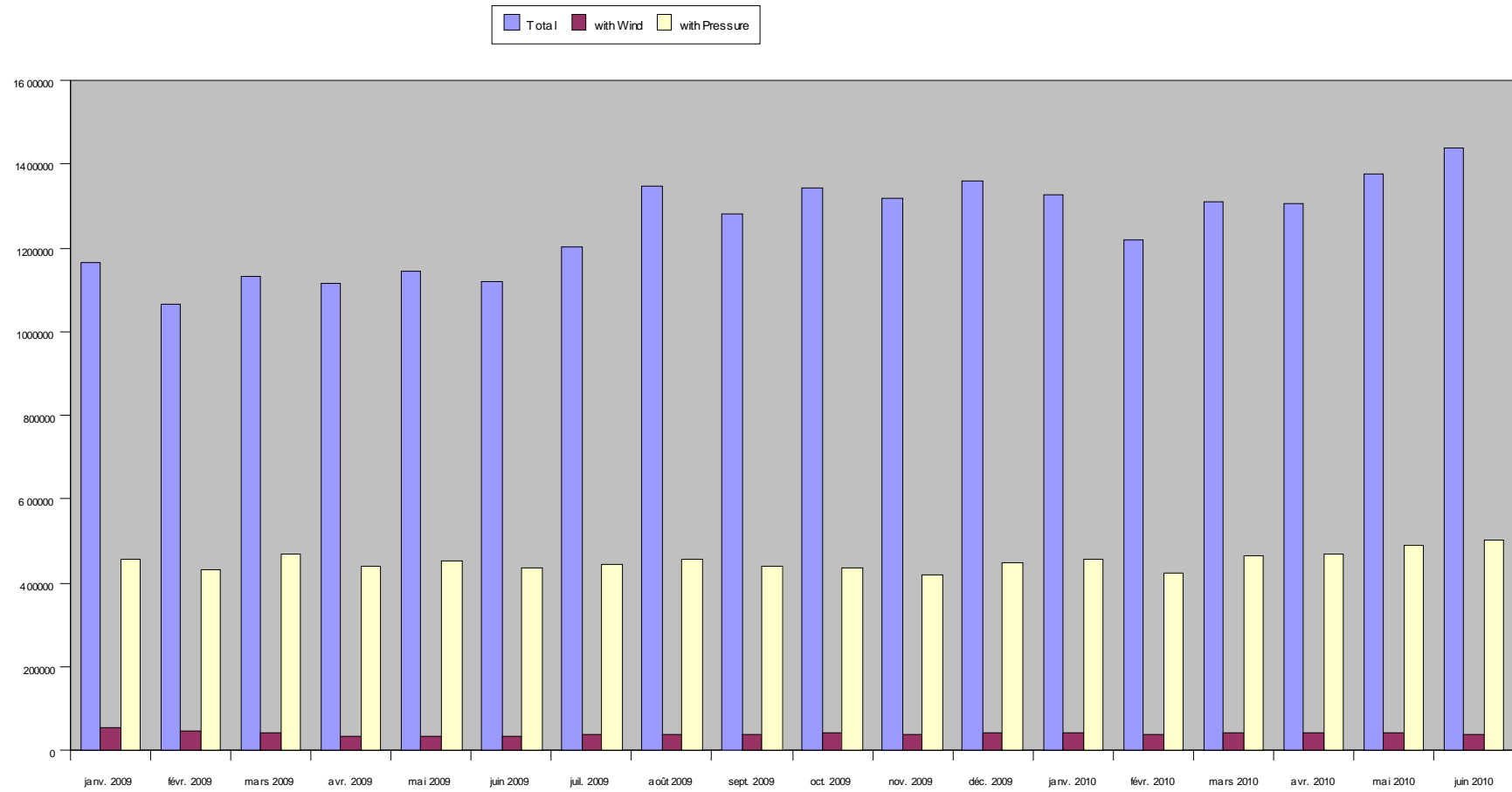


Figure 2

Time evolution of Moored BUOY reports for wind and pressure

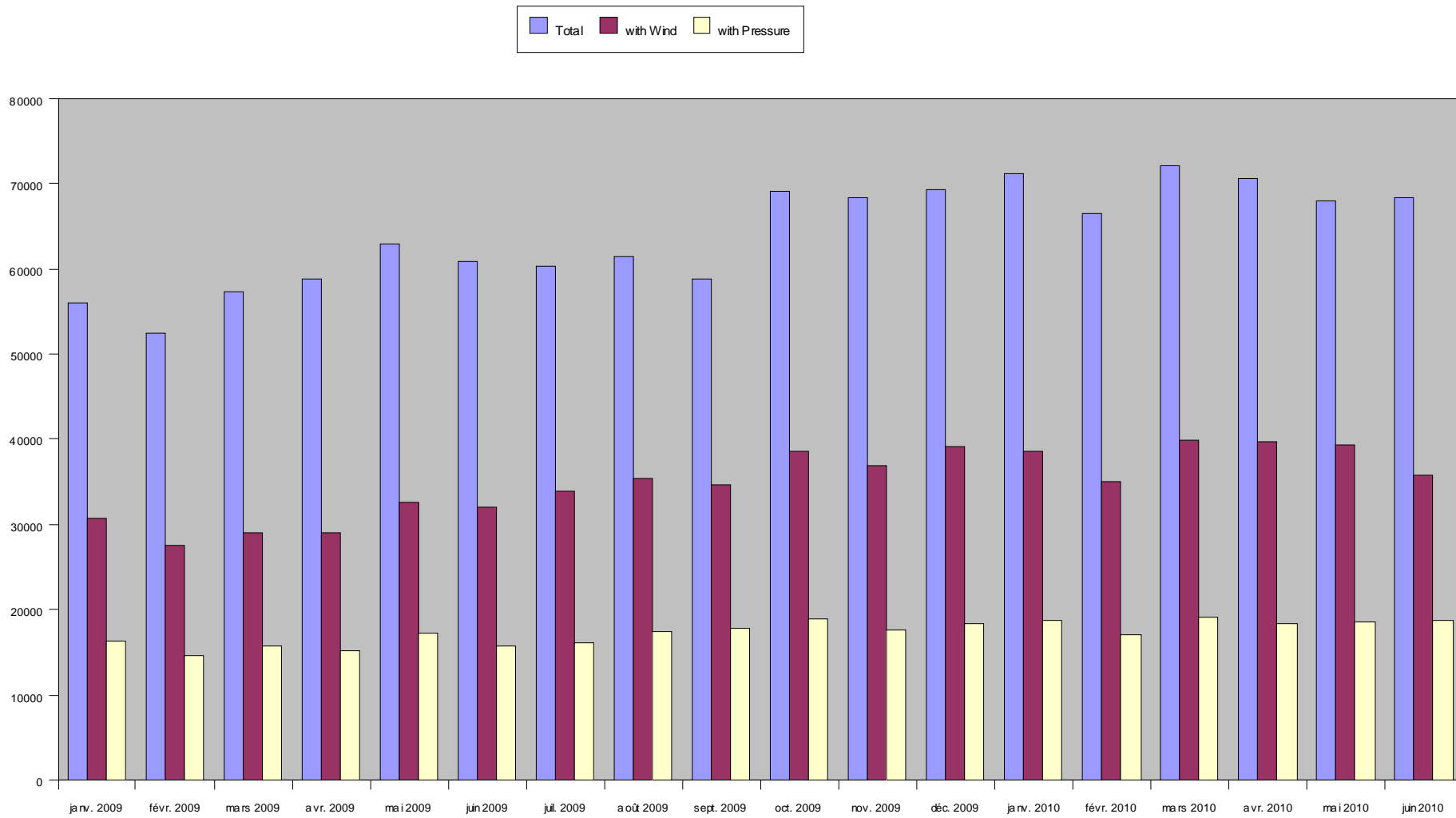


Figure 3

Time evolution of SHIP reports for wind and pressure

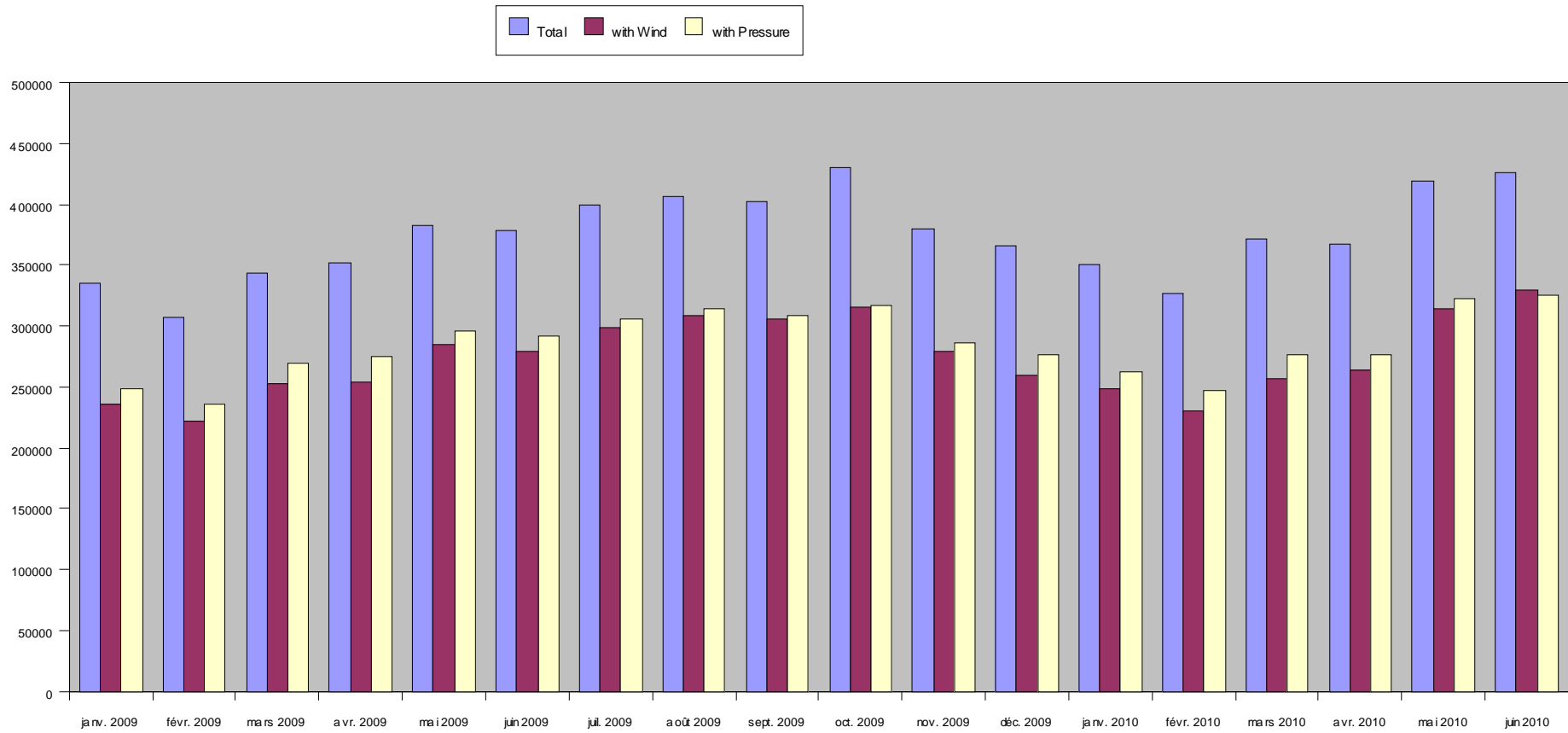


Figure 4

Time evolution of Drifting BUOY reports for wind and pressure

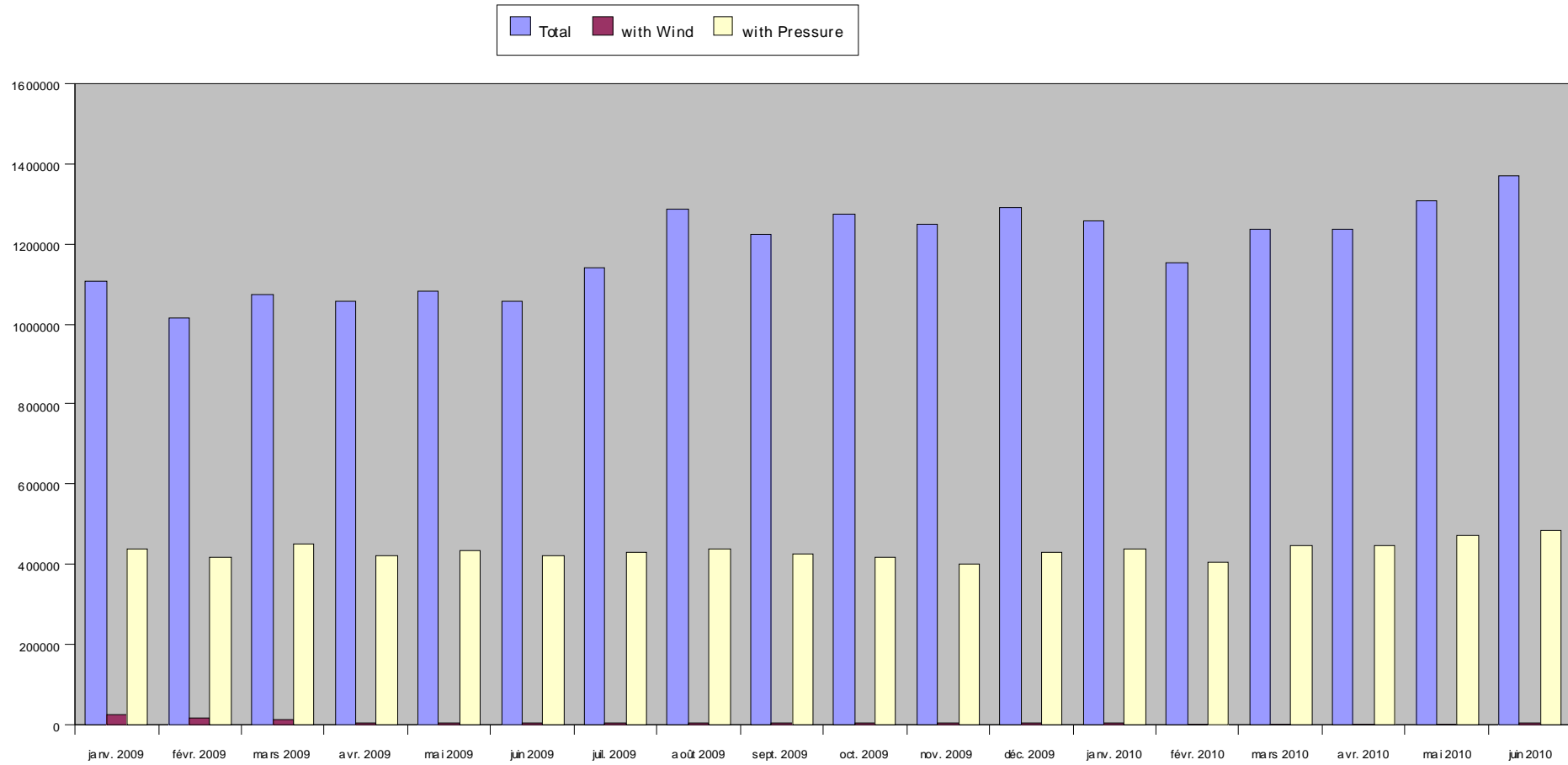


Figure 5

Time evolution of WAVEOB reports and sensors

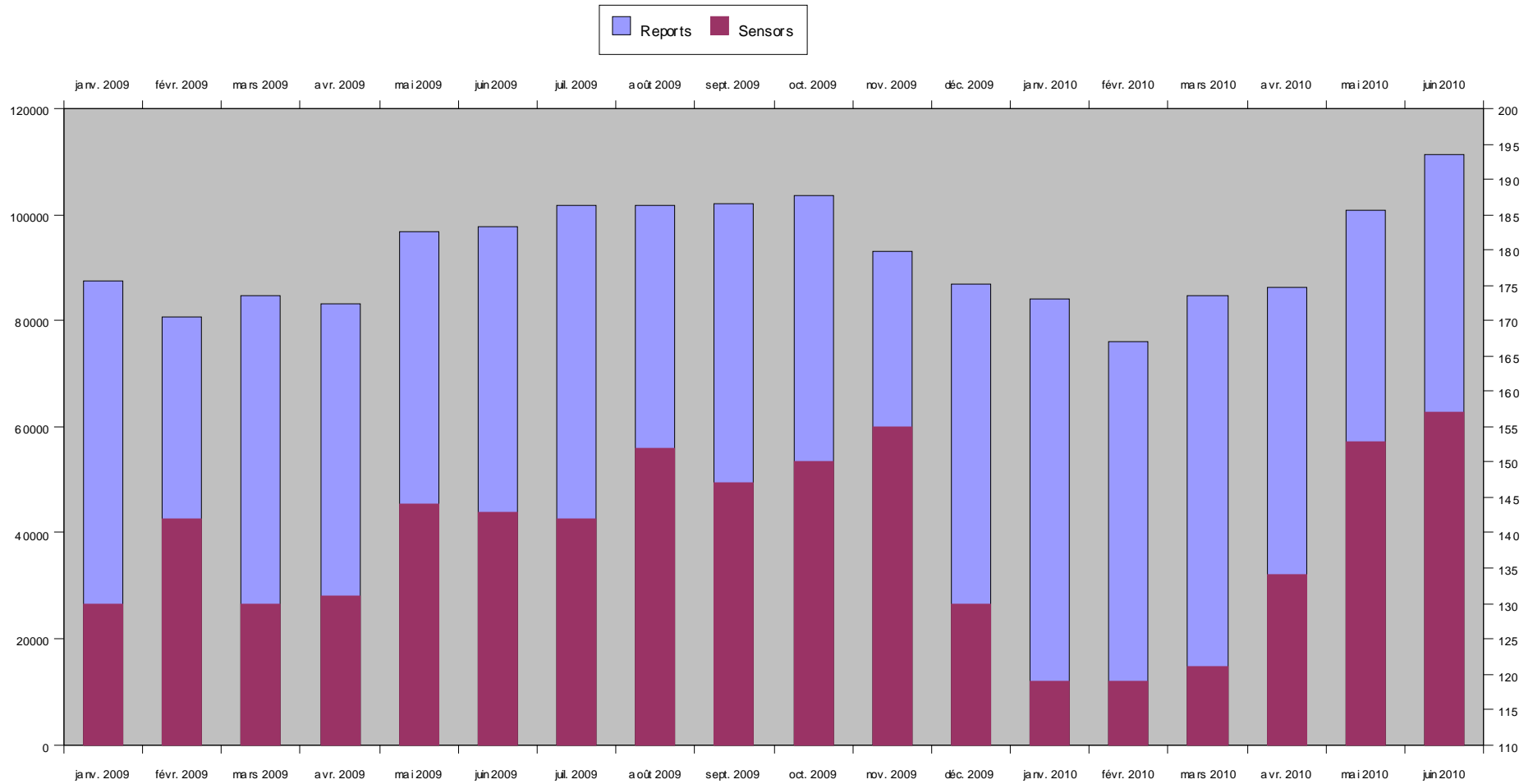


Figure 6a : Map of BATHY reports received in June 2010

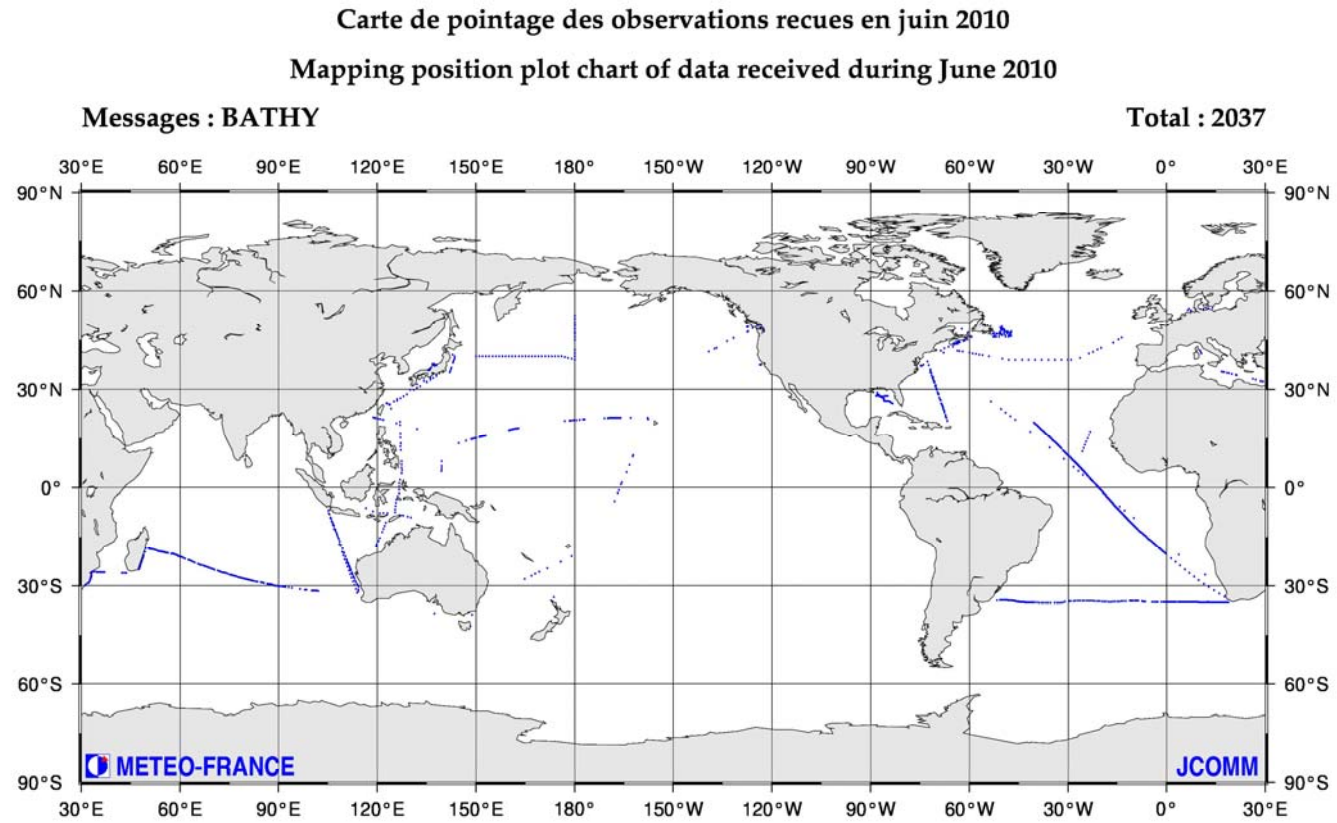






Figure 7a : Map of BUOY reports received in June 2010

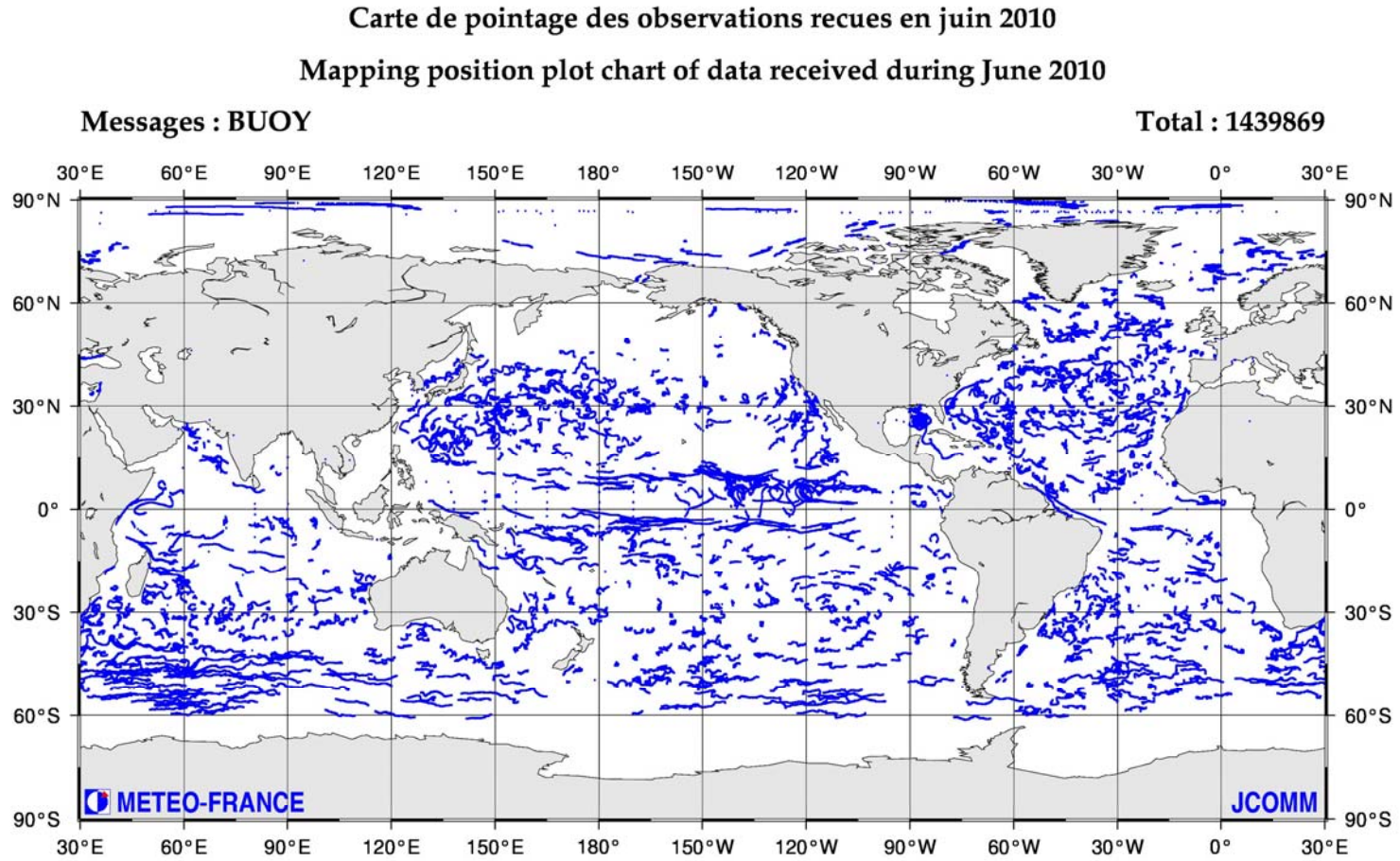


Figure 7b: Map showing the number of BUOY reports received in June 2010 by Marsden Square

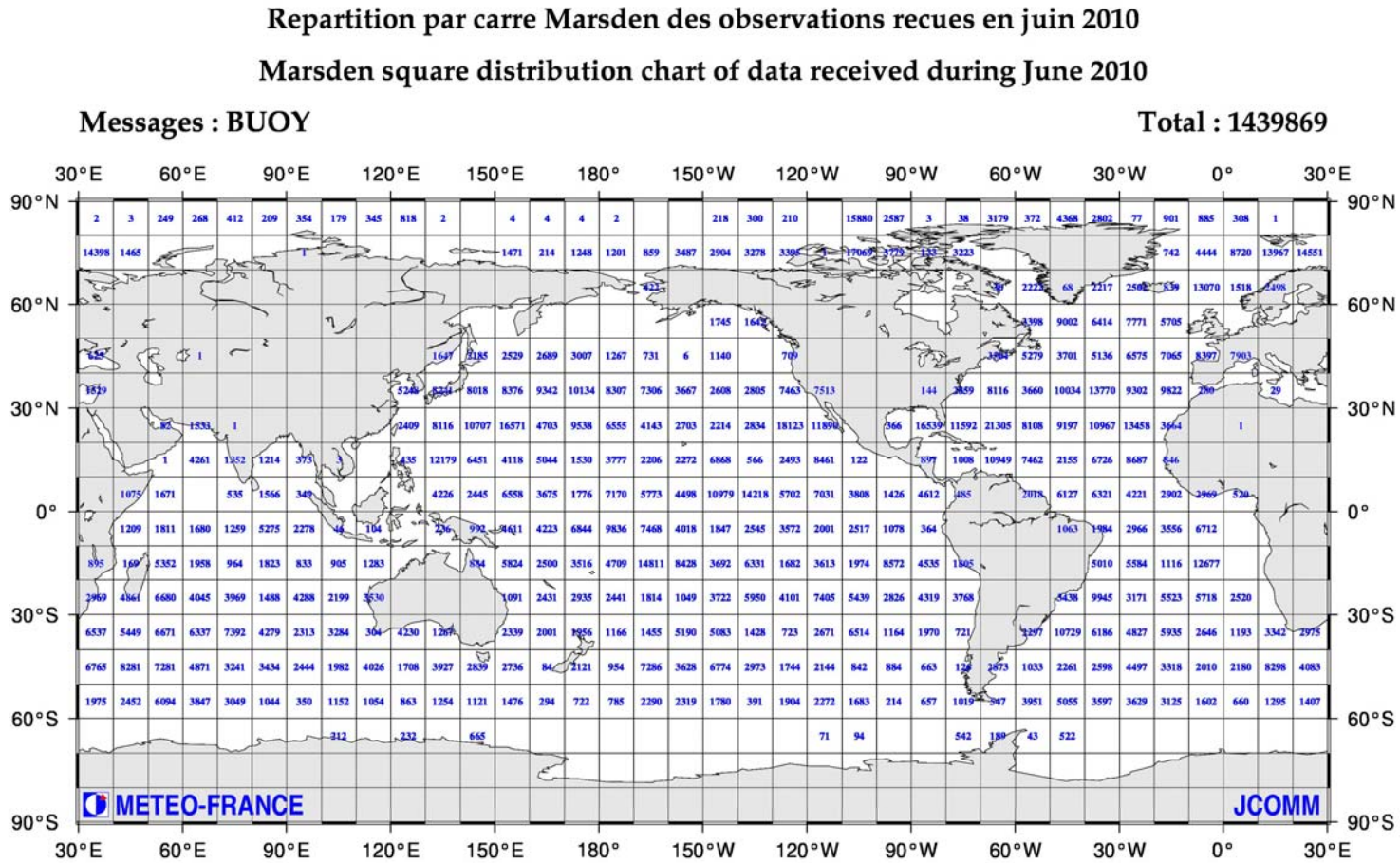




Figure 8a : Map of SHIP reports received in June 2010

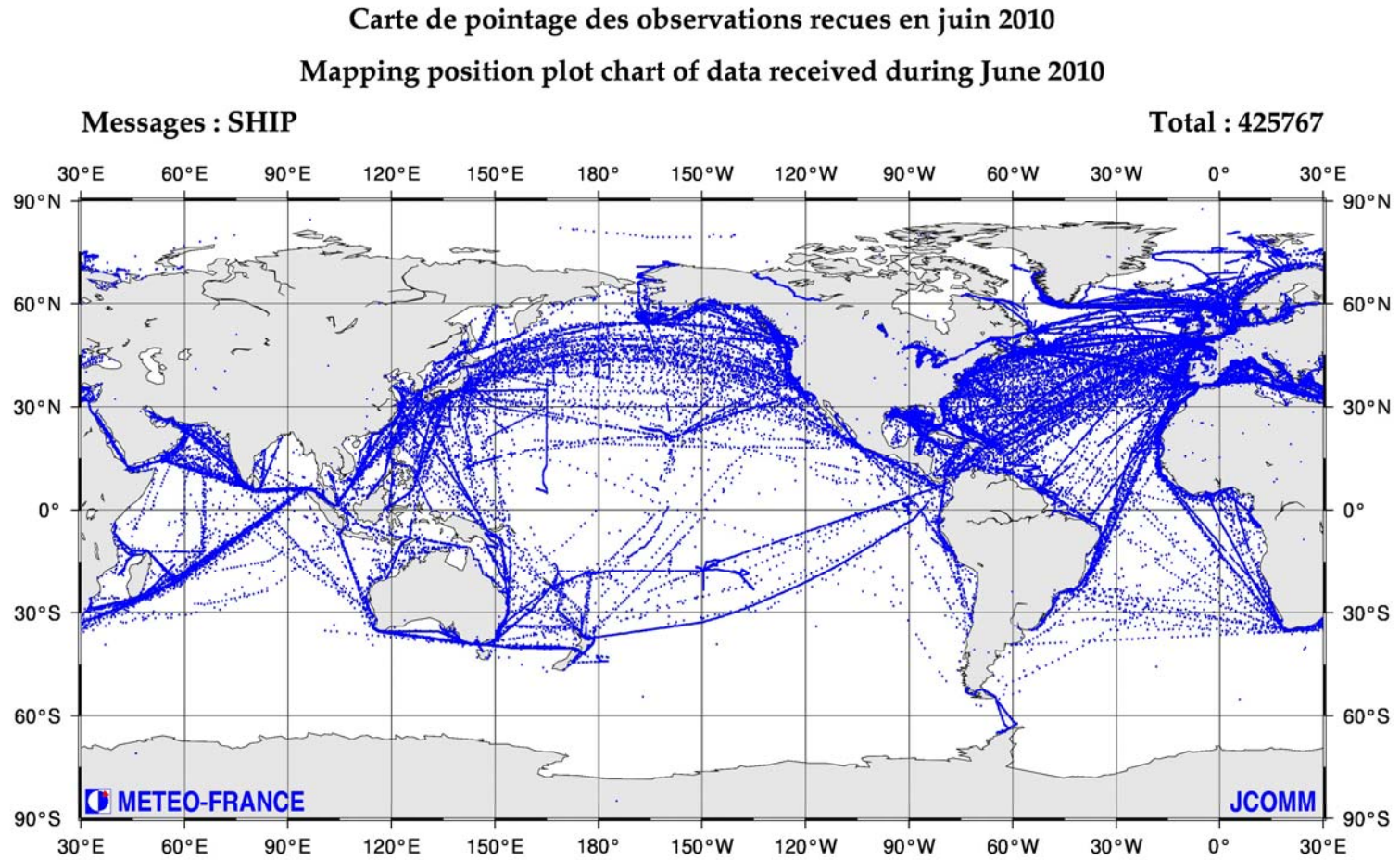


Figure 8b: Map showing the number of SHIP reports received in June 2010 by Marsden Square

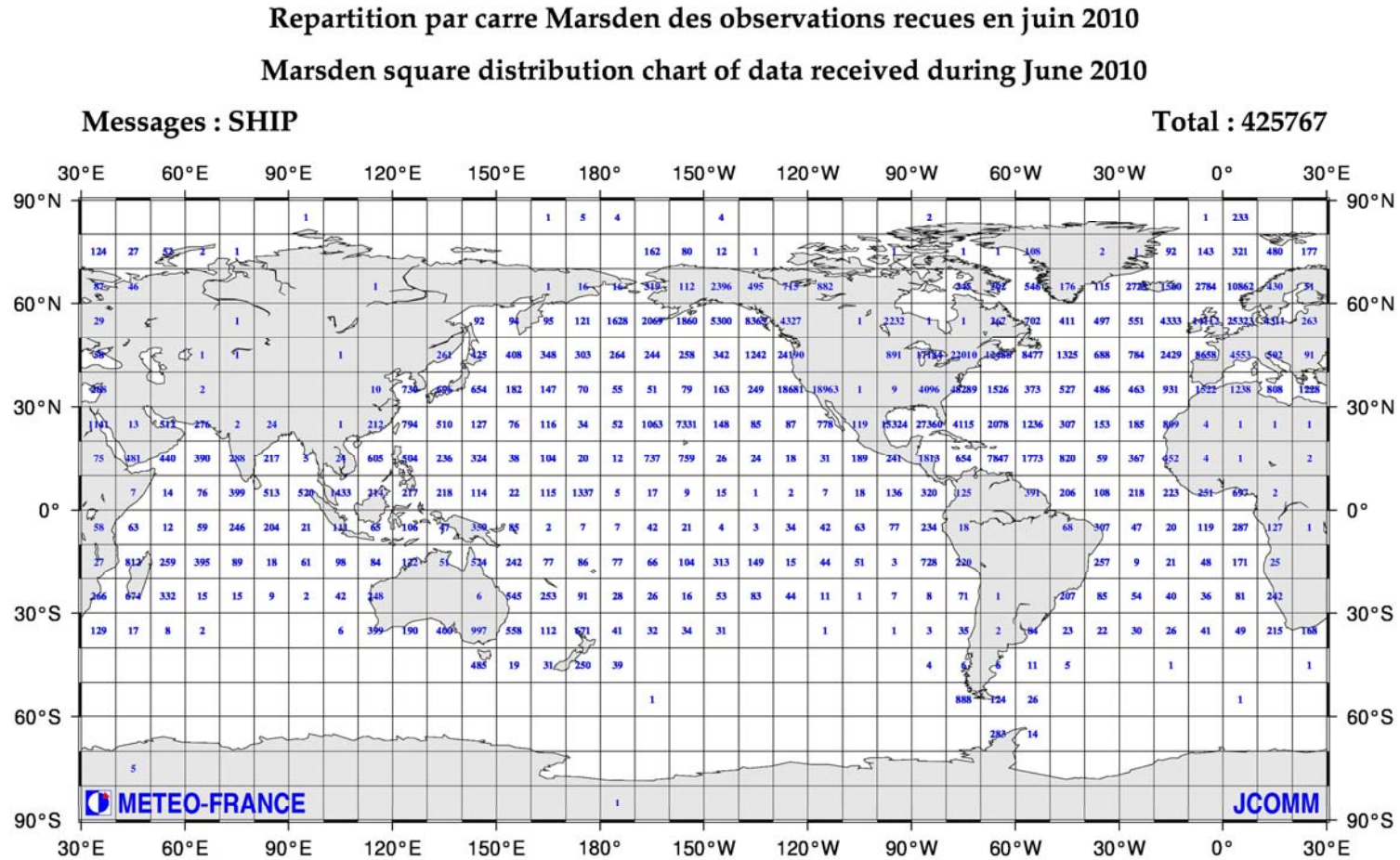


Figure 9a : Map of TESAC reports received in June 2010

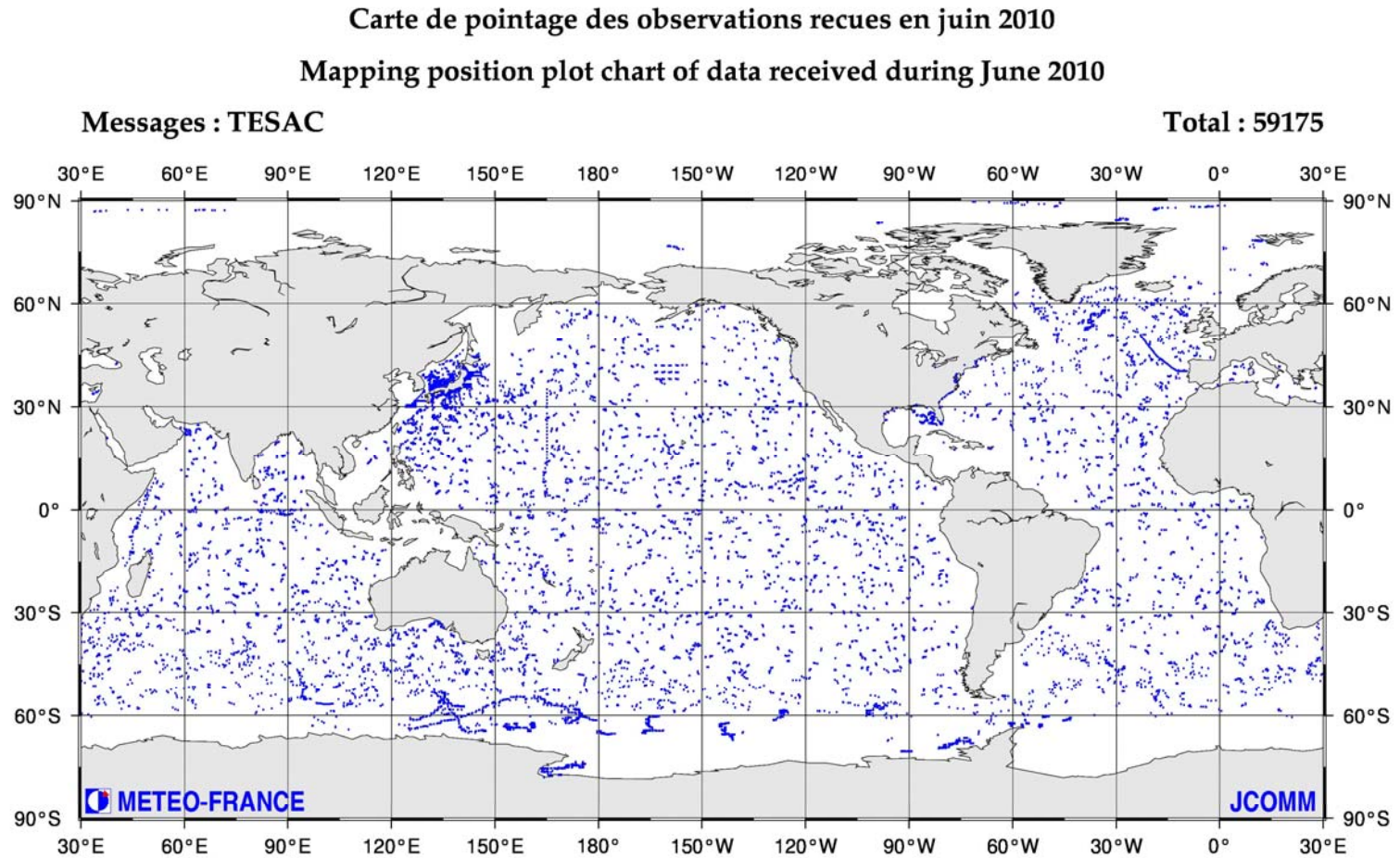




Figure 9b: Map showing the number of TESAC reports received in June 2010 by Marsden Square

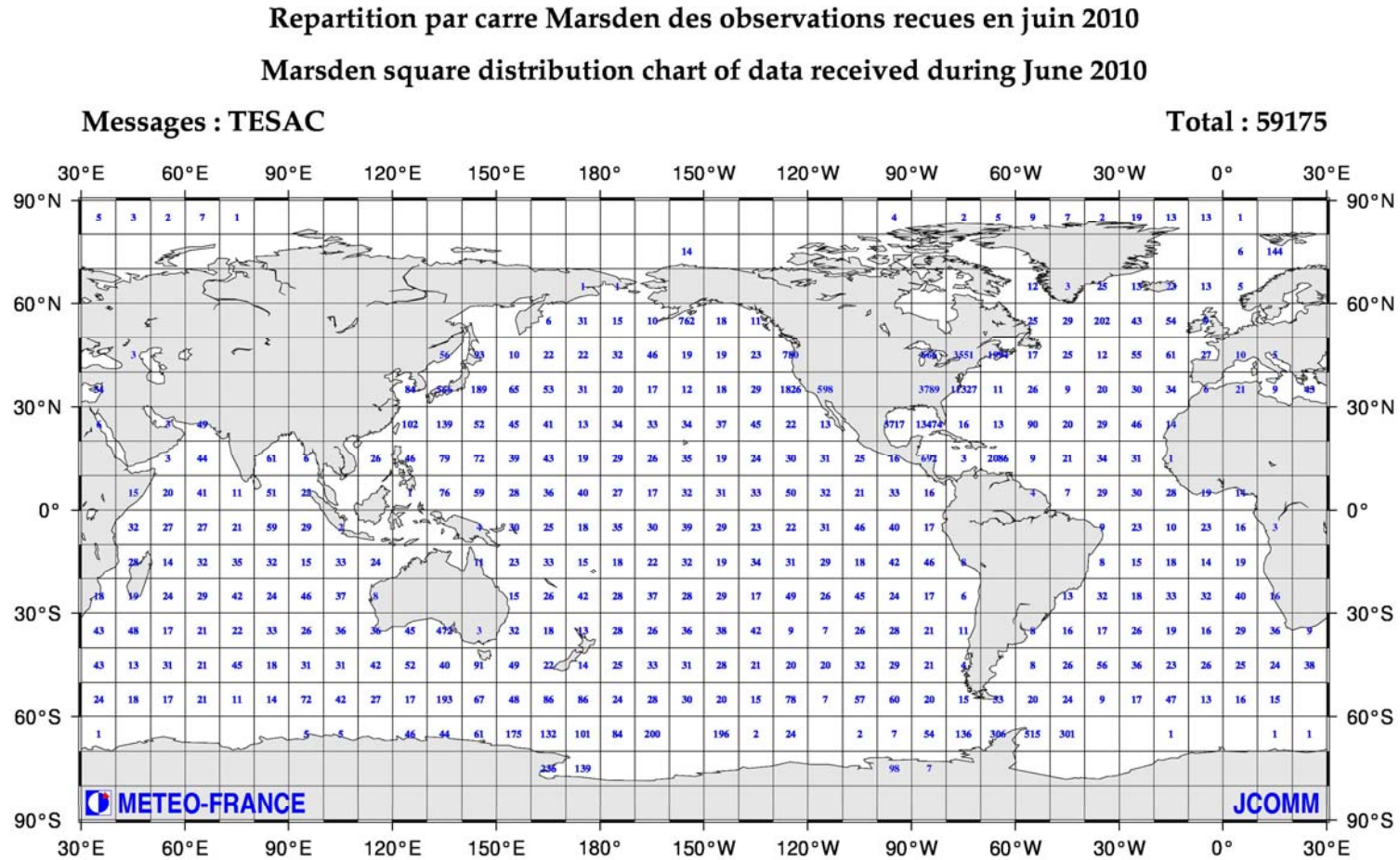




Figure 10a : Map of TRACKOB reports received in June 2010

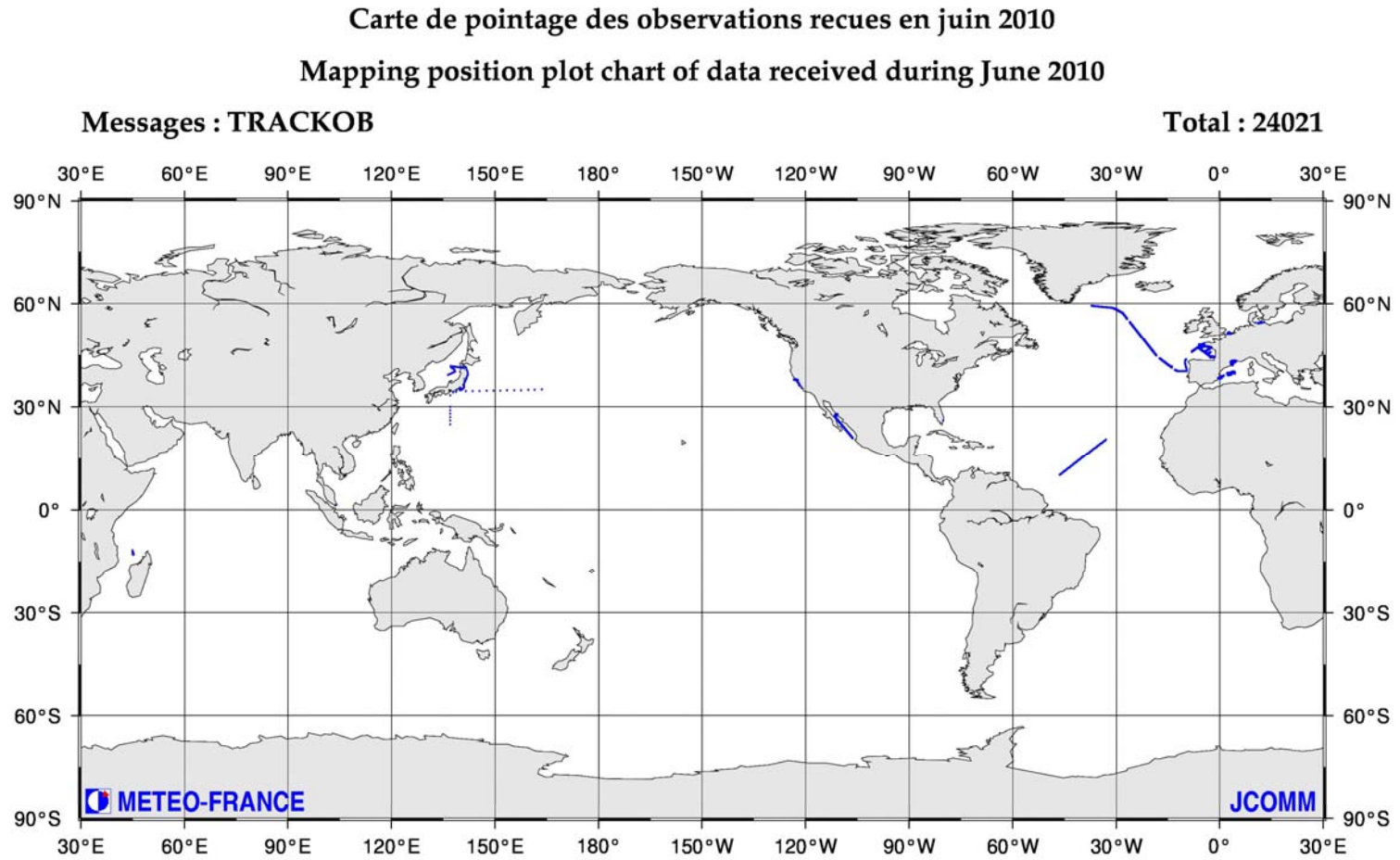


Figure 10b: Map showing the number of TRACKOB reports received in June 2010 by Marsden Square

