

DATA BUOY COOPERATION PANEL

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TWENTY-FIFTH SESSION

ITEM: 8.1

IOC of UNESCO, PARIS, FRANCE
28 SEPTEMBER – 1 OCTOBER 2009

ENGLISH ONLY

DBCP IRIDIUM PILOT PROJECT UPDATE

(Submitted by Hester Viola, DBCP Technical Coordinator)

Summary and purpose of the document

This document provides information on

- the DBCP Iridium Pilot project status and deployments,
- file formats, lifetimes and project goals
- coverage across the global ocean for the project to-date
- GTS processing and management of metadata at JCOMMOPS for all Iridium Buoys

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. Iridium PP website
B. Iridium PP daily status files and metadata

-A- DRAFT TEXT FOR INCLUSION IN THE FINAL REPORT

8.1.1 The Technical Coordinator presented the current status of the buoy network within the Iridium Pilot Project : There were 78 active buoys as of August 2009 (out of ~150 declared under the project). There was a peak of 87 buoys active in May 2009. The coverage of the buoys so far was presented and it was noted that there were still deployments needed in the Central and Southern Pacific and in the Central Atlantic. The updates made to the project website were then outlined (Appendix A).

8.1.2 The Technical Coordinator thanked the project participants for emailing one another to notify deployment information and said it was working well so far, to assist in managing metadata about buoys.

8.1.3 The Technical Coordinator then presented some simple statistics about lifetimes of project buoys by manufacturer.

8.1.4 She noted that the data format recommended for the project had been updated in the inter-sessional period (Version 4.0) and some extra data formats created for new buoys types. Several programs are using the CLS data processing system without issue. She explained the new services being offered by JouBeh with iridium telecommunications. A draft of a Technical Document has been produced for organizations which plan to distribute data onto the GTS, to explain the Real-time quality control that is required.

Analysis of results and project success factors

8.1.5 At DBCP24 (Cape Town, 2008) the panel suggested that the project participants provide more detail about the analysis required by the end of the project and the success factors for the project as a whole, in order to ensure the project goals reflect the buoy operators needs. The Goals of the project as initially expressed in 2006 were updated.

Approaches to managing Iridium information globally

8.1.6 The DBCP might consider whether it needs to set down some guidelines for those Data Centers processing Iridium data, to assist in sharing of metadata with the international community, so that the DBCP and other groups will continue to have access to useful information about platforms. This may be as simple as defining a file format for a daily/weekly report from each Centre which they could share via FTP.

8.1.7 The Panel made the following recommendations:

- *Manufacturers are requested to supply information about new Iridium IMEI numbers to JCOMMOPS either via email (iridium-pp@jcommops.org) or through the Metadata Entry tool (<http://wo.jcommops.org/cgi-bin/WebObjects/meta>) when they are testing new buoys.*
- *To be considered part of the project and for buoys to appear on maps and in status reports the notification of deployment must be completed by the buoy operator, as soon as possible after the deployment.*
- *Buoy operators are encouraged to communicate via email (iridium-pp@jcommops.org) with approximate deployment areas for all new IMEI numbers once they are manufactured (plus ships they are going on) ahead of time.*
- *Update the Terms of Reference to include key success factors and the analysis required in 2010.*

8.1.8 The Panel decided on the following action items:

[Actions agreed by the Panel...]

B- BACKGROUND INFORMATION

Network Status

There were 78 active buoys as of August 2009. There was a peak of 87 buoys active in May 2009. (Appendix A).

So far, around 150 buoys have been declared under the project. The breakdown of Model and Manufacturers are as follows:

	All models	SVPB	SVPBS	SVPB-TC	ICEBUOY
METOCEAN	116	115	1		
MARLIN-YUG	13	10		3	
CLEARWATER	10	10			
PACIFIC GYRE	5	5			
SAMS	1				1
TECHNOCEAN *					
UDELAWARE	1				1
Total	146	137	1	3	2

Table 1. Models and Manufacturers for Iridium Buoys

* Technocean has begun to manufacture Iridium Buoys in recent months.

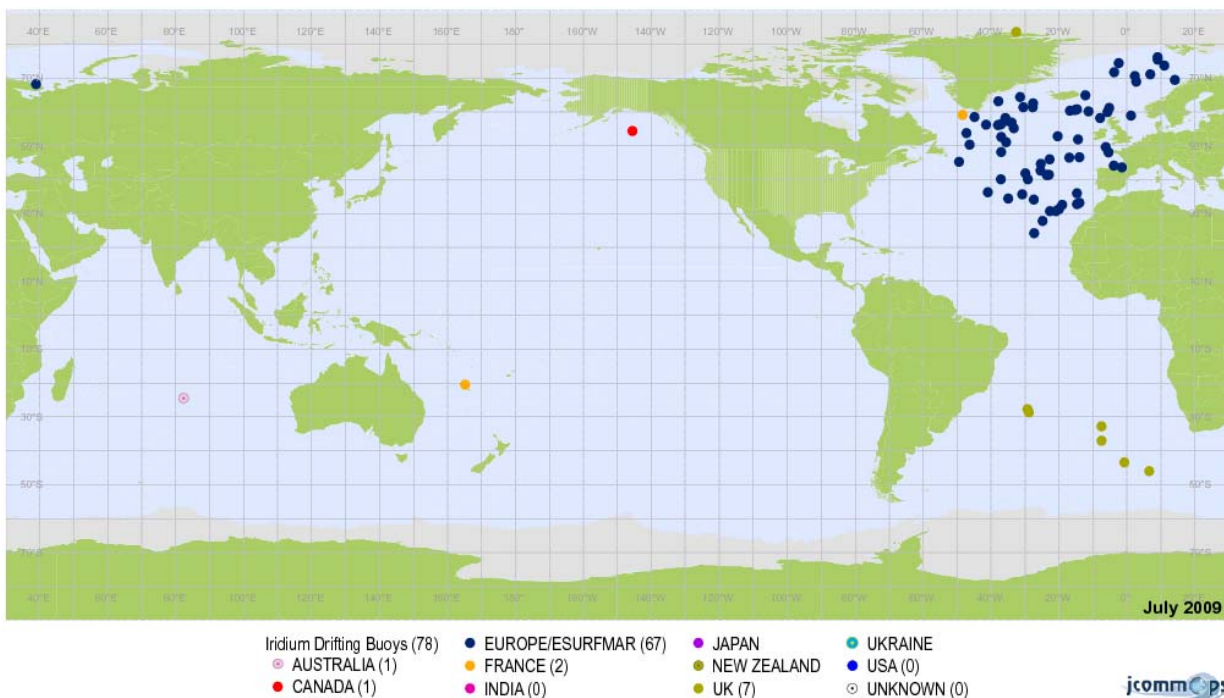


Figure 1. Status of iridium Pilot Project drifting buoys - July 2009

Network Coverage

The coverage of the buoys so far is presented in Figure 2, which shows current positions of the buoys and historical tracks of all buoys in the project.

The coverage is restricted to the Northern Atlantic, Southern Atlantic, Indian Ocean and small regions of the Northern Pacific. The European program extends further than last year and now covers a good area of the northern Atlantic and up into the Arctic. The first buoy was deployed in the Southern Pacific, by Meteo France.

However, deployments are needed in the Central and Southern Pacific and in the Central Atlantic.

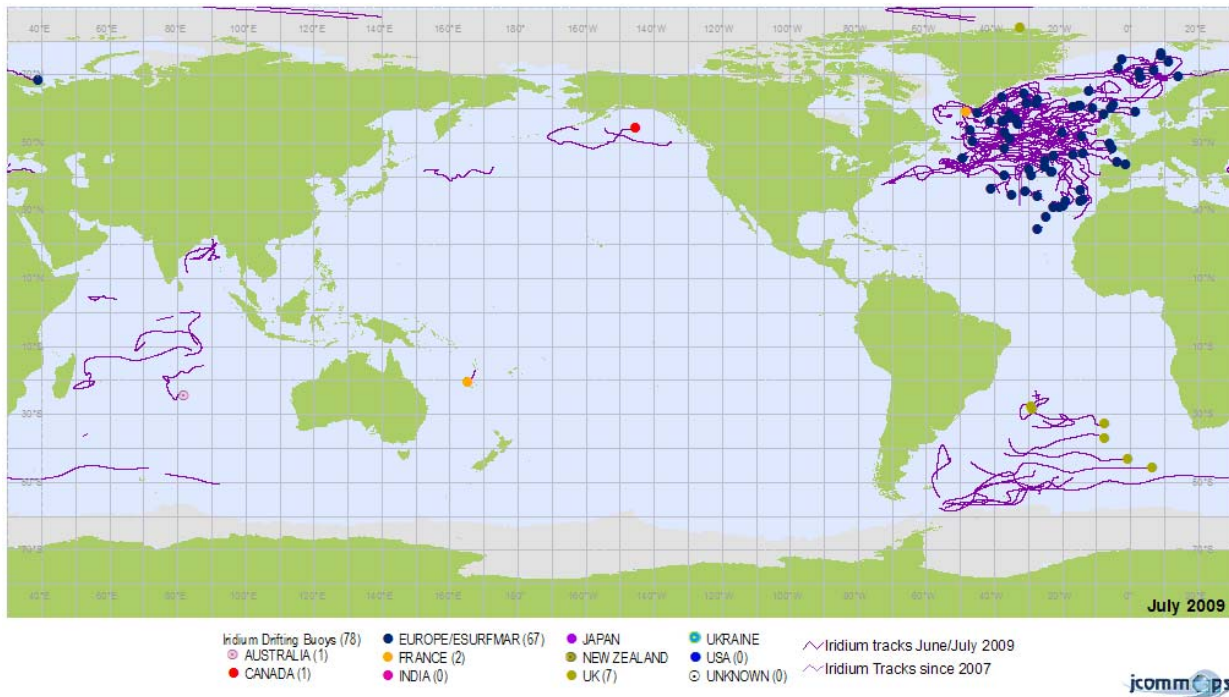


Figure 2. Iridium Tracks for all buoys participating the project and positions at the end of July 2009

Website

Minor updates were made to the project website see Appendix A for details.

Deployment notification

Most participants are emailing one another to notify deployment information, to assist in managing metadata about buoys.

Lifetimes

The average lifetime so far for all inactive buoys in the project, not including those which failed on deployment, is 225 days. Sample sizes are still rather small for most manufacturers and of course, lifetimes by themselves do not indicate the data availability during the time or quality of the data, so the Panel should not consider this conclusive. Manufacturers are working hard to increase the potential life of iridium buoys.

Meteo France will be present more statistics at the meeting.

Lifetime statistics for Inactive Buoys up until 04/08/2009 (not including buoys which failed on deployment)

Number of Inactive Buoys: 67.
Comprising - 10 Marlin, 10 Clearwater, 5 Pac Gyre and 42 Metocean.
Average LIFETIME (days): 225
Maximum life time (days): 521

Message Formats

The data format recommended for the project was updated in the inte-sessional period (Version 4.0) to standardize the way that battery voltage information is recorded and some extra data formats created for new buoys types.

- Version 4.0 [for SVP-B](#), including [for SVP-B with Thermistor chain](#).
- Version 1.1 [for SVP-B with Salinity](#).

The SVPB manual (DBCP Technical Document 4) was updated to include example Iridium Message formats.

GTS Processing

The E-SURFMAR buoys and some other programs continue to make use of the GTS data processing offered by Meteo France. However, now several programs are using the CLS data processing system, which seems to be working well.

JouBeh Technologies Inc. announced that it is offering Global Telecommunications System (GTS) data processing and distribution through their exclusive partner, Scotia Weather Services, Inc. (SWSI). A press release is available on the project website with further details.

As it is important that any GTS processing at an uplink node implements all real time QC checks on buoy data before sending it to the GTS, a draft Technical Document has been produced to explain the tests that should be implemented for any organizations that want to distribute data onto the GTS. It is a detailed explanation of the Real-time quality control that is required, based on information in DBCP Technical Document 2.

Planning and Goals for the project

The project participants met in October 2008. Plans were set down for deployments, most of which have been implemented. In order to improve the global coverage, the TC approached a few other programs to ask if they wished to join the project, but they were not in the position to do so this year.

At DBCP-24 the panel suggested that the project participants document the success factors for the project. Action item 7.1.9.5.

Some areas of importance to the project participants are:

- Timeliness – this element has already been proven
- Lifetimes – whether the lifetime of the buoys can be increased to meet or exceed the historical average (~18 months) of other DBCP buoys (battery and transmitter durations)
- Proper global tests – tests are needed in areas of the ocean that have not yet been sampled (more in the Pacific, and southern Indian oceans)
- Costs -
 - Demonstrating whether operators will see cost savings, or not, is important. (Relates to communications cost, lifetime and unit cost and a nominal deployment cost which becomes more influential if lifetimes are not increased)

- Is there potential to organize an international charging scheme, to gain a volume discount?
- Data availability – messages dropped or corrupted. Data not getting through
- Position Accuracy
- Sharing of Best Practices in Iridium buoy development

The project participants will develop these points into a document for discussion.

Based on the achievements so far, when they are assessed against the initial goals of the project, in future the focus will specifically be on :

- Even distribution across the globe and in varying ocean conditions by engaging with additional participants
- the requirement for GPS positioning versus Iridium positioning and
- longevity and analysis of costs, particularly in relation to use of GPS and battery life.

The Terms of Reference for the project will be updated and a new set of success factors to assess against will be compiled, including plans for analysis to be undertaken in 2009-2010.

Approaches to managing Iridium information globally

Currently, the locations of all Argos buoys are managed through a single system that includes online services for Buoy Operators to view raw data and request modifications to the processing. The Argos Database is also directly accessible by the JCOMMOPS information system. Information is automatically pulled from the Argos system each day about observations, locations and new platforms, programs or agencies. This allows JCOMMOPS to have appropriate metadata to create its reports but also to check any unusual locations that appear on the GTS.

With the development of many different Iridium Processing centers and GTS uplink nodes, it is vital that JCOMMOPS is kept informed about deployments of iridium buoys for the project period and into the future. The email notifications, sent by buoy operators provide some of this information at the time of deployment, but that is just the start. The Google Mail archive was one approach to managing the archive of Iridium Pilot Project data, but this has proved difficult to catalog and unwieldy for adhoc queries or checks on data (it is not possible to do a bulk download of the emails received).

Unless a more robust and global system of daily location information and metadata sharing can be developed, it will be difficult for JCOMMOPS (or other Monitoring systems) to recognize Iridium buoys adequately within the global network or to identify anomalies in locations etc.

The DBCP should consider whether it needs to set down some guidelines for those data centers processing iridium data about sharing of metadata with the international community, so that the DBCP and other groups will continue to have access to useful information about platforms. This may be as simple as defining a file format for a daily/weekly report from each Centre on which buoys are being processed, placed on an FTP site that JCOMMOPS can access.
e.g. WMO #, IMEI, latest obs date, latest lat, latest lon, Buoy Model, Manufacturer, Program name.

This concern is a JCOMMOPS-wide issue, which will become worse as more organizations move to processing Iridium data for all types of platforms and putting the data on the GTS themselves, so could be of interest to the whole of JCOMM.

APPENDIX A

DBCP IRIDIUM PILOT PROJECT WEBSITE

DBCP - Iridium Pilot Project - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.jcommops.org/dbcp/iridium-pp/

DBCP - Iridium Pilot Project

Data Buoy Cooperation Panel
Iridium Pilot Project

WMO IOC jcommops

http://www.jcommops.org/dbcp/iridium-pp

Home
Aims
Plans
Findings
Documents
Contacts

Testing Iridium Satellite Telecommunications for Drifting Buoys

The Pilot Project will seek to evaluate the feasibility of Iridium technology for real-time telecommunication of drifter data under various conditions. It will form a pilot study for technology evaluation and assessment of satellite communication options with Iridium. [More »](#)

Deployment Progress :

All countries: [MS Excel Spreadsheet »](#) [csv file »](#)

National Contributions: [AUSTRALIA »](#) [CANADA »](#) [EUROPE »](#) [FRANCE »](#) [INDIA »](#)
[USA - AOML »](#) [USA - UDELAWARE »](#) [UK - SAMS »](#) [UK - MetOffice »](#)

Iridium Drifter Network status - Tue Aug 04 2009 19:19:45 GMT+0200 (Romance Standard Time)

[Go to interactive map »](#)

[View monthly maps »](#) (Click on the Iridium Buoys Tab)

For more information, please [contact us »](#)

Done

Figure A1. Iridium pilot project website

Changes made include :

- The map on the front page is now a single downloadable image.
- Added link to the simplified DBCP Map Viewer at <http://www.jcommops.org/dbcp/dbcpmaps> (under the tab "Iridium Buoys")
- New data formats added
- New manufacturer documentation added.
- Content added to the Findings page for new processing at JouBeh and plans updated with recent information.

The screenshot displays a web browser window with the following elements:

- Browser Title:** DBCP - Iridium Pilot Project findings - Mozilla Firefox
- Address Bar:** http://www.jcommops.org/dbcp/iridium-pp/findings.html
- Page Header:**
 - Image of a white buoy on blue water.
 - Text: **Data Buoy Cooperation Panel Iridium Pilot Project**
 - Logos for WMO, IOC, and jcommops.
 - URL: <http://www.jcommops.org/dbcp/iridium-pp>
- Navigation Menu (Left):**
 - Home
 - Aims
 - Plans
 - Findings
 - Documents
 - Contacts
- Main Content Area:**
 - See Deployment Progress So Far »**
 - Findings - Progress**
 - New Iridium Processing via Joubeh, including distribution on the GTS.
 - A press release is available with information about the services offered [here](#)
 - See more detail [here](#)
 - New Transmission formats - Updated February 2009.
 - Version 4.0 [for SVP-B](#).
 - including [for SVP-B with Thermistor chain](#).
The specification for the SVP-BTC from Marin Yug is available [here](#)
 - Version 1.1 [for SVP-B with Salinity](#).
 - A fully operational **Iridium Processing Centre** has been developed at CLS - It uses much of the processing functions of the Argos System and as a result, drifters transmitting through Iridium can now benefit from the entire Argos processing capabilities including the GTS processing and quality control. This system accommodates Iridium SBD data either through direct IP connection with the Iridium gateway or via email. A dedicated email address should be used to make contact with CLS about this function. iridium-buoy@cls.fr
 - Old Transmission Format V3.2 superseded February 2009 [Iridium transmission format \(version 3.2\) »](#) used by Météo France SVP-B prototype drifters (updated August 2007 and superseded by V4.0)
Note: The original (version 2) Iridium transmission format (now **superseded** by version 3.2) as previously used by Météo France SVP-B prototype drifters can be found in Annex D of the Whitepaper.
 - Meteo France has set up a (non-operational) GTS dissemination system to support Iridium Buoy usage. All pilot project Iridium Buoys should be set up to email two addresses (Please [contact us](#) » for
- Logos (Bottom Left):**
 - DBCP WMO-IOC logo
 - jcommops logo: JOCOMM in-situ Observing Platform Support centre

Figure A2 New entries on the Findings/Progress page

APPENDIX B

STATUS FILES (TEXT AND EXCEL)

A textual version of all information about Active and Inactive buoys is available in:
http://www.icommops.org/dbcp/iridium-pp/deployments/buoys_iridium.csv

Deployment information is entered in :
http://www.icommops.org/dbcp/iridium-pp/deployments/buoys_iridium.xls
