|  |  |
| --- | --- |
| **World Meteorological Organization &**  **Intergovernmental Oceanographic Commission (of UNESCO)**  **Data Buoy Cooperation Panel Thirty Seventh Session**,  Virtual meeting, 8th -11th November 2021 | Image result for ioc logo unesco  **DBCP-37/Doc. 0.0.0** |
| Submitted by: Mayra Pazos, Shaun Dolk, Lance Braasch  01.10.2021  **DRAFT 1** |

**AGENDA ITEM 0.0: MAIN TITLE OF THE AGENDA ITEM**

**AGENDA ITEM 0.0: Task Team on Data Management Report**

# SUMMARY

### Please provide a summary of your talk highlighting key points. (approximate length half (1/2) a page to include in final report)

### SUMMARY (Draft text for inclusion in the final report):

### (CLEARLY SPECIFY ISSUES WITH CHALLENGES TO ADDRESS)

### B. ACTIONS/DECISIONS/RECOMMENDATIONS:

(a) Adopt draft Action/Decision/Recommendation*;*

* What, By who, Completion deadline
* Rational

# 

**Action 1**: MEDs will repair their archive of wave and wave spectra data from drifting buoys and will amend their software to decode and archive the approved WMO BUFR format for waves and wave spectra data.

**Action 2**: Manufacturers are to provide specification sheets to the designated DAC/GDAC prior to deployment, where permitted by the operator.

# C. BACKGROUND INFORMATION (not to be included in the session report):

### References (if any):

1. ...........

2. ...........

**REPORT BY THE DBCP TASK TEAM ON DATA MANAGEMENT**

1. **Receive and Review reports**

Two drifting buoys global data assembly centers have been established under MCDS. Both GDACs acquire data circulated on the GTS and they routinely compare GTS bulletin headings and data volume received. Last comparison took place in May 2021. Some issues were identified and addressed such as confusion of formats for drifting and moored buoys. Full details will be reported by GDAC/Coriolis and GDAC/MEDS at DBCP-37 respectively.

1. **Table Driven coding requirements for data buoy observations**

**BUFR**

MEDS did not receive any drifting buoy from FM-18 BUOY messages and they reported that some tropical moored buoys and coastal wave buoys were still transmitted in FM-18 BUOY instead of FM 64-X TESAC.

Météo-France stopped transmission of FM-18 BUOY messages in November 2016. As of writing (September 2021) there is no more messages from other producers in this format for drifting buoys.

The use of BUFR template 315009 is now generalized.

M-F also started receiving BUFR 315009 messages with added sequence 315010 (wave spectrum) from header IOWX02 KWBC.

At Meteo-France, moored buoy’s messages are still received in a multitude of formats: SHIP FM-13, BUOY FM-18, BUFR template 308009 (old Ship template), BUFR 315008 ... with some possible duplications between formats.

1. **Real Time Distribution of Data**

All data from GDP drifters and partners are disseminated via GTS by the GDP at SIO as soon as drifters are deployed. As of September 27, 2021, there were a total of 1478 GDP drifters, including drifters from GDP partners, transmitting good quality data on the GTS.

GDP at SIO hosts an [ERDDAP](https://drifterdata.ucsd.edu/erddap/index.html) service for real-time distribution of sub-sets of GDP data, such as for the [2021 Atlantic Hurricane](https://drifterdata.ucsd.edu/erddap/tabledap/GDP_AtlanticHurricane2021.html) season.

AOML/DAC monitors data on the GTS for drifters managed by AOML and advises the GDP at SIO to take sensor data and/or positions off GTS once their data becomes unreliable. The GDP at SIO does the same for drifters they manage. Drifters managed by other centers as well as Principal Investigators and Meteorological Centers (PMOC) should monitor and communicate quality control lists as necessary such that their data are removed from the GTS by the responsible processing center when the sensors are flagged by PMOCs per DBCP technical document No. 37.

As of September 2021, Météo-France hourly processes around 240 drifting buoys sending data through Iridium SBD transmission. In addition 3 operational moored buoys and 2 waveriders maintained by M-F, and 22 waveriders belonging to CEREMA network are also processed by M-F hourly.

Data received from these buoys is used to produce and disseminate on GTS either 315009 or 315008 BUFR messages only, TAC messages transmission being stopped as mentioned above.

Covid-19 situation did not impact or cause any problems to continue the smooth operations of the real time processing and distribution of drifter data.

Météo-France added a new tool to its QC tools portal to monitor quality of statistical indicators :

<http://esurfmar.meteo.fr/qctools/statistics/statistics.php>

It now shows series of monthly statistical indicators over 2 years either with graphical or table display. It can also display a network of buoys by country for a given month over the last 2 years.

1. **Delayed mode distribution and archiving of data**

Historical, 6-hourly interpolated drifter data are available through the AOML web page: <https://www.aoml.noaa.gov/phod/gdp/interpolated/data/all.php> . NetCDF versions of all the 6-hour quality-controlled data are available at the [OSMC Interpolated Data ERDDAP](http://osmc.noaa.gov/erddap/tabledap/gdp_interpolated_drifter.html) server (<http://osmc.noaa.gov/erddap/tabledap/gdp_interpolated_drifter.html>) served by NOAA’s OSMC site. Latest update is through June 30, 2021 as of September 30th, 2021.

[Global hourly location and velocities](https://www.aoml.noaa.gov/phod/gdp/hourly_data.php) (<https://www.aoml.noaa.gov/phod/gdp/hourly_data.php> ) from GDP surface drifters tracked by Argos or GPS, as described in [Elipot et al. (2016), "A global surface drifter dataset at hourly resolution", *J. Geophys. Res.Oceans*,**121** doi:10.1002/2016JC011716](http://www.aoml.noaa.gov/phod/gdp/papers/Elipot_et_al-2016.pdf), are also available to download. These data are a subset of the [historical 6h data](https://www.aoml.noaa.gov/phod/gdp/interpolated/data/all.php) when hourly resolution became possible.

There are a total of 25,955 drifters in the AOML historical database, and a total of 1,478 active drifters as of September 30th, 2021. The decrease of the total number of active drifters from the same time last year (1647) is mostly due to the effects of COVID-19, impacting deployment opportunities as several cruises were delayed or cancelled.

Covid-19 situation did not impact or cause any problems to continue the processing and distribution of the delayed mode drifter data.

1. **Metadata**

AOML/DAC continues to gather metadata from all GDP drifters directly from manufacturers where available. **Action item**: Manufacturers are to provide specification sheets to the designated DAC/GDAC, where permitted by the operator.

Information from the specification sheets that is relevant and that can be made public are posted on the [following AOML website](https://www.aoml.noaa.gov/phod/gdp/). (<https://www.aoml.noaa.gov/phod/gdp/>). Deployment information from GDP drifters is received at AOML via web form or e-mail from deploying agencies. For all other drifters (ex. Meteo-France, UK Met Office, etc) metadata are gathered from different sources, compiled and made available via web:

<http://www.aoml.noaa.gov/phod/dac/dirall.html>, <http://www.aoml.noaa.gov/phod/dac/deployed.html>, <http://www.aoml.noaa.gov/phod/dac/Drifter_Specifications.html> (and .csv), <http://www.aoml.noaa.gov/phod/dac/Barometer_Metadata.html> (and .csv) <http://www.aoml.noaa.gov/phod/dac/Drogue_Specifications.html> (and .csv)

OceanOPS receives metadata direct from GDP at SIO which are made available through OceanOps portals. Work has also begun to address problems such as missing or duplicated elements of these metadata that have been submitted but are pending upload.

1. **Format Issues**

There were @10 Argos drifters that stopped transmitting at the same time on Sep 9, 2021, some from the Arctic Buoy Program. CLS was contacted to look into the issue, since it is very improbable this to be realistic. CLS discovered a bug inside the Kenwood PMT that started on September 9th: The bug is in the PREPAS software module. This software is used by the PMT to compute the time of the next satellite passes. They discovered that a constant value 999999999 is used as a big enough number, but in fact it was not big enough. Due to the value, PMT is not able to compute passes since September 9, 2021. We have modified this constant value to a larger number (214782447) and asked KENWOOD to recompile the firmware. For better understanding, 999999999  is a time value, which is expressed as seconds from 1990 Jan. 1. 999999999 sec after 1990/01/01 is 2021/09/09 01:46:39. PMT is not able to compute passes after this date. With the new value 214782447 it can work until 2058. This bug is affecting only PMTs using satellite pass prediction, in “pseudo-ack” mode for example and I think it’s the case of the few remaining Argos GDP drifters and your AXIB buoys . Without pass prediction, the PMT is unable to transmit. The other PMTs working in random mode (Argos-2) are not impacted. CLS has worked with their Japanese colleagues and the new firmware will be soon released by Kenwood. They will propose to all their clients with still PMTs in hands a replacement solution with updated ones.

Robert Ma from MEDS, reported that due to an error on their part, they did not archive the wave spectra data. This is being corrected by a request to the GDP at SIO for a copy of their archive. In the future, MEDS will refer to the WMO approved data formats for wave data, including the wave spectra, and will confer with experts at the GDP at SIO to understand how to modify their data file structures and upgrade their data processing tools.

The document describing recommended data format for Iridium transmissions, maintained by Météo-France can be accessed here:http://esurfmar.meteo.fr/doc/o/db/others/DB\_Iridium\_formats.pdf

Since the last report, this document hasn't been updated, its current version is 1.8.

Around 70 operational drifters processed by Météo-France are now using #003 transmission format. As a reminder, this is the latest “standard” format proposed for SVP-B, it offers an increased range and resolution for physical parameters, and a normalized set of technical parameters (Iridium, GNSS, and hull).

Manufacturers are invited to use the existing active templates prior to the creation of their own. In case none of the existing templates is suitable for a given set of buoys, a new one may be designed in coordination with the DBCP TT-DM team.

1. **Review all relevant Publications**

No document was circulated during the intersessional period for review.

During the pre-DBCP-37 TTDM meeting, the Terms of Reference were revised and changes were made to have them aligned with the new DBCP strategy and its 6 pillars. The document was circulated to the panel. A new updated version should be adopted at DBCP-37.

1. **Future work for the 2021-2022 intersessional period.**

* AOML/DAC, GDP at SIO are working with OCG Vice-chair of Data and OceanOPS to improve platform metadata transfer to OceanOPS. This is to be part of work done with OCG and OceanOPS to also improve cross-network metadata harmonization for all OCG networks.
* MEDS will archive and monitor wave spectral data under the template 315010 as one of GDAC functions by Marine Environmental Data Section (MEDS).
* TTDM will work with OceanOPS and OCG to verify data flow diagrams as part of the GOOS OCG effort to map the movement of data and metadata through the DBCP network

1. Acknowledgements

The Co-Chairs of the Task Team on Data Management would like to thank members for their work and cooperation during the intersessional period and for providing inputs to this report.