TT-MB report to DBCP-29

1. BUFR formats for moored buoy data

2. Moored buoy metadata

3. Technical developments

BUFR

- WMO timescale for the cessation of TAC being transmitted on the GTS is November 2014 !!
  - but this timescale will not be met, although WMO expects progress on transition to be made over the coming year
- BUFR presents an opportunity to develop formats (templates) that are more appropriate to the platforms than the legacy TAC forms
- BUFR templates for moored (3-15-008) and drifting (3-15-009) buoys were validated during the last inter-sessional period and declared operational in May 2014

BUFR

- Suggest to modify TCs draft recommendation 5.16 (iii) in meeting report from *The Panel recommended members who are not yet transmitting data to the GTS in BUFR format to start doing so as soon as possible* to *The Panel recommended members who are not yet transmitting moored and drifting buoy data to the GTS in BUFR format to start doing so as soon as possible following the agreed 3-15-008 and 3-15-009 templates*

BUFR

- New BUFR template for fixed offshore platform data (3-08-017) proposed to WMO IPET-DRMM in May and ready for validation
- For Argo additional sequences proposed for dissolved oxygen profiles (3-06-037 already operational) and for ancillary near-surface temperature (3-06-017) and temperature & salinity (3-06-018) profile data
- IPET-DRMM also endorsed a new class 41 to MT0 (meteorological data) for marine bio-geochemical data given that MT10 (oceanographic data) is not yet ready for operational use

Autonomous vehicles

- Cost of ship time for buoy servicing is an issue for many operators and autonomous surface vehicles (ASV) are seen as a potential alternative
  - How robust are ASV and how reliable are their data? validation/comparisons are needed

- For ASV it is recognised that DBCP (TT-MB and TT-DM) need to take the lead, working with JCOMM TT-TDC, on developing suitable BUFR templates for GTS data exchange
  - DBCP-29 Rec 2 *Distribute the autonomous surface vehicle data on the GTS using appropriate WMO code (by owners of the gliders, identify proper GTS bulletin headers, and BUFR template*
  - Hope to progress this during the coming inter-sessional period

- Some (sub-surface) glider data are exchanged on GTS in TAC form, but developing a BUFR template is probably not for DBCP to lead on

Moored buoy metadata

- Over the last few years the details of the metadata needing to be collected have been agreed and published on the DBCP web-site
  - could have over 200 elements

- At DBCP-29 agreed that the metadata can be submitted to JCOMMOPS in NetCDF (for consistency with OceanSITES and tsunami buoys), tagged pairs or XML
  - all are self-describing which is advantageous as the content is highly variable due to buoy capability

Tagged pairs and XML

Tagged pairs approach has been used by the SAMOS (shipboard automated meteorological and oceanographic system) community

$MB_metadata,create:20130920,update:20130920,msd:20130611, med:valid,ID:51,WMOn:62050,stn:E1,ts:MB,stat:operational,….

XML is similarly self describing through the use of tags (e.g. for WMO# <WMOn>62050</WMOn)

Has the advantage that each element is described such that the order of the data string is unimportant and the length depends on the data content

DBCP-29 recommendations

- At DBCP-29 UKMO and EC, who have compiled some of their metadata, undertook to document the format and submit some metadata to JCOMMOPS by the end of the year to allow DBCP-TC to start to build a system to make these data available via JCOMMOPS (Rec 18), and other moored buoy operators to then begin submitting their metadata (Rec 17)

Moored buoy metadata

- Both UKMO and EC have submitted test metadata to TC
- However, progress in developing a system for ingesting and making the metadata available via the JCOMMOPS web-site has been severely limited by the absence of an IT expert in JCOMMOPS
  - can't really ask others to compile and submit their metadata until we have a viable system at JCOMMOPS
- At CLIMAR-4 the availability and accessibility of historical buoy metadata to support wave climate analysis was described as "abysmal"
- TT-MB recommend the Panel affirms this work is now a priority action for TC and JCOMMOPS

Fixed offshore platforms

(for example oil and gas platforms, light vessels)

- The proposed BUFR template carries some metadata (e.g. platform type, sensor and deck heights) but more detail is needed for climate users
- Will need to develop a metadata submission format and scheme similar to that being implemented for moored buoys
- Proposed WIGOS identification scheme will help ensure platform types are more easily identified in the future

Moored buoy technology developments

- Report contains updates from/on
  - Environment Canada
  - US Pacific Marine Environmental Laboratory on the Tropical Moored Buoy array and Ocean Climate stations
  - US Army Corps of Engineers on their wave buoy network
  - UK Met Office
  - Indian National Institute of Ocean Technology on various technical developments

Moored buoy technology developments

- Workshop presentations on
  - Chinese moored buoys operated by SDIOI – action to encourage dissemination of the data on GTS
  - Axys technical developments (wind lidar buoy, Triaxys Next Wave II, remote control of buoys)
- TT presentation by Korea on a new modular concept for floating platforms
- Further information on capabilities likely to be provided in the national reports later in the meeting