Real-Time Data Handling System NP321

Introduction

The mission of the Real Time Data Handling System (RTDHS) is to provide real-time physical oceanographic data to Navy numerical forecast models and the NAVOCEANO oceanographic data archive. The RTDHS provides an operational (27/7/365) method to ingest, process, quality control, and distribute in-situ data.

Issues

- Implementation of WIGOS ID's
  - Need way of identifying observation platform type (XBT, profiling float, ships, drifting & moored buoys)
    - Each platform type is weighted differently in the forecast model data assimilation system based on platform error uncertainty.
      - Each platform type error uncertainty is different. Not knowing platform type will degrade data assimilation system and directly impact forecast error.
    - Accuracy of ocean model initialization fields NAVO delivers to NCEP and subsequent NCEP ocean forecast error will be directly impacted by not knowing platform type.
    - Create BUFR templates for all platform types as a means of identification.
      - Has a Glider template been created and accepted by the WMO?
      - What other templates need to be created?

    Who will be the disseminating authority for WIGOS ID's?

Issues Continued

- Can new platforms be forced to use the existing WMO ID convention in the WIGOS Identifier?
  - Existing stations are required to put the WMO number in the last field of the WIGOS Identifier
  - http://www.wmo.int/pages/prog/amp/mmop/wmo-number-rules.html
  - Currently a 5 or 7 digit number. This consists of several parts.
    - NAVO's recommendation is to allocate the "Serial No." field (the nnnnn portion) to a larger size. Keeping all current rules for the rest of the ID.
  - Suggest WMO using these suggestions for global requirements to post insitu observation data to the Global Telecommunication System.

Issues Continued

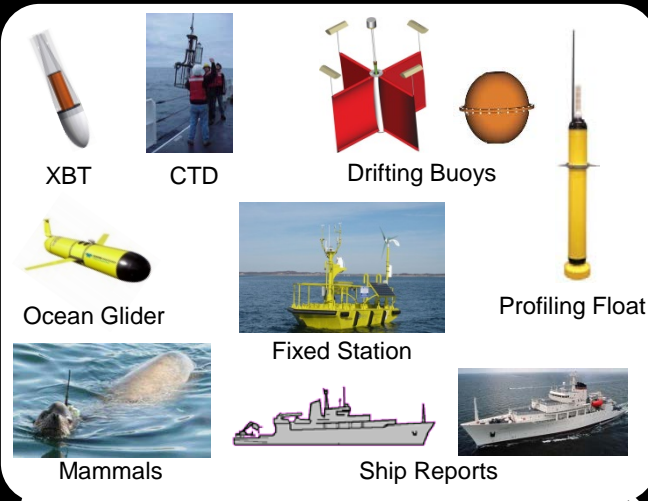| Platform type	Format	Reporting code form	Deployment area	Serial no.	Reallocation	Comment
Drifting buoys (table driven codes only)	$A_1 b_w nnnnn$	BUFR, CREX	A_1=WMO region, b_w=sub-area	nnnnn: xx500 to xx899 with xx: 00 to 99	No, unique numbers	Surface drifting buoys, http://www.jcommops.org/dbcp/ No twin number (i.e. $A_1 b_w xxxxx$ with xxxxx=nnnnn-500 allocated to a fixed ocean observing platform separately/ independently).
Autonomous vehicles (i.e. gliders, saildrones..) (table driven codes only)	$A_1 8xxnnn$	BUFR, CREX	A_1=WMO region	if A_1=4 or xx=00 then nnn: 900 to 999 else nnn: 500 to 999	No, unique numbers	Ocean reference sites, http://www.oceansites.org/ b_w forced to 8 No twin number (i.e. $A_1 8yyyyy$ with yyyyy=zzzzz-500 allocated to an OceanSITE separately/ independently)
Profiling floats	$A_1 9nnnnn$	TESAC, BUFR	A_1=WMO region	nnnnn: 00000 to 99999	No, unique numbers	Argo, http://argo.jcommops.org/ When using character code TESAC, the WMO number is preceded with the letter Q. A_1 forced to 9; b_w forced to 9.
Marine animals	99nnnnn	TESAC, BATHY, BUFR, CREX	Any	nnnnn: 00000 to 99999	No, unique numbers	When using character code TESAC or BATHY, the WMO number is preceded with the letter Q.

Issues Continued

- Observations reported with incorrect quadrant
  - Ship reports jumping around the world
    - Causes velocity errors when checking speed and location. Possibly removing a good observation when compared to an observation with errors.
  - Drifting buoy reports jumping around the world
    - Some show up on land and are QC'd out.
- Bulk dump of marine animal data at certain times of the year.
  - Data comes in up to two months late.

Real-Time Data Handling for Ocean Models

Instrument Types

XBT CTD Drifting Buoys

Ocean Glider

Fixed Station Profiling Float

Mammals Ship Reports

Worldwide Coverage

Iridium ARGOS

OSU

Rutgers

FNMOC Offutt AFB WPMDS NWS

NAVO NAVO GOC Navy Fleet
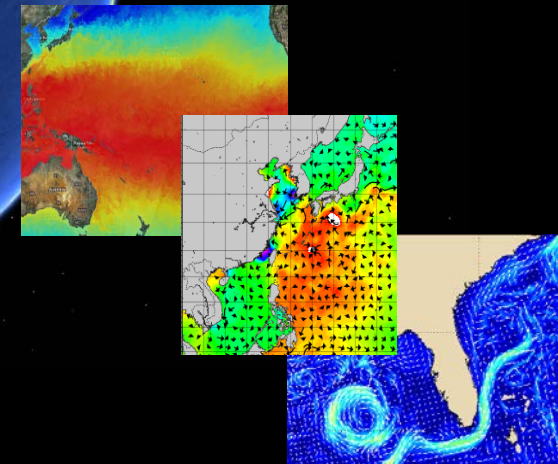
GTS Argo

Data Formats

World Meteorological Organization:

BUFR – Binary Table Driven

WMO ASCII Character Code

Other Formats:

NetCDF

Emerging Technologies

NAVO Proprietary Formats

Hexadecimal Encoding

Ocean Models

24/7 Data Input with up to 75,000 Unique Observations a Day