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(JCOMM)

SHIP OBSERVATIONS TEAM (SOT)

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ITEM: 8.3

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ISSUES FOR THE SOOP

(Submitted by Gustavo Goni (USA), SOOPIP Chairperson)

Summary and purpose of the document

This document provides information on potential future requirements of the SOOP Implementation Panel, and on the following issues in particular:

- XBT data flow and GTS transmissions
- Sippican Climate Quality XBT Probes
- XBT Fall Rate Equation (FRE) experiments
- Plans for the future XBT network

ACTION PROPOSED

The Team 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.

- A - DRAFT TEXT FOR INCLUSION IN THE FINAL REPORT**8.4.1 XBT data flow and GTS transmissions**

8.4.1.1 The Panel reviewed the real-time data transmission systems being used for the collection of SOOP data, including XBT data in particular. Most of the XBT data collected within the SOOP is transmitted from the observing platform in real-time. The data undergoes real-time QC tests and is then submitted into the Global Telecommunication System (GTS). During 2012 the NOAA Atlantic Oceanographic and Meteorological Laboratory (AOML) started the submission of XBT data into the GTS in BUFR¹ format. XBT data is also being submitted simultaneously in BATHY² code. BUFR transmissions are done in experimental mode and simultaneous transmissions in both formats will continue until a complete transition to BUFR is completed.

8.4.1.2 The Panel noted that with the transition of most of the XBT operation from Frequently Repeated (FRX) to High Density (HDX), the monitoring of the XBT network process is simplified. Using information available from different sources, including data canterers, the GTS, and websites from different institutions participating in the SOOP, AOML prepares operational reports for the monitoring of the XBT Network. These reports are updated twice a year and contain information in the number of active transects, number and mode of deployment, as well as the different institutions involved in the logistics, deployments, data management and transmission.

8.4.1.3 The Panel reviewed the real-time data transmission systems being used for the collection of SOOP data, including XBT data in particular ...

8.4.1.4 The Panel addressed limitations, cost-effectiveness, format issues, the reporting of instrument/platform metadata, and made recommendations as appropriate ...

8.4.1.5 The Panel discussed data tracking and quality control issues ...

8.4.2 Sippican Climate Quality XBT Probes

8.4.2.1 The Panel discussed Climate Quality XBT Probes under development by Sippican. NOAA has worked in collaboration with Sippican in the development of these new probes. During 2012 and 2013 two tests were performed during Prediction and Research Moored Array in the Atlantic (PIRATA) Northeast Extension cruises of prototype of new XBT probes with upgraded temperature sensors and pressure switches.

8.4.3 XBT Fall Rate Equation (FRE) experiments

8.4.3.1 The Panel discussed biases of XBT data, how they can be estimated through Fall Rate Equation (FRE) experiments and studies. Several studies with the aim to assess and develop methodologies to apply corrections to the current dataset were discussed. These studies are based in the comparison of temperature profiles obtained from different instruments including Conductivity Temperature and Depth (CTD) probes, Argo floats and XBT probes of different manufacturing date. Other studies were aimed to a better understanding of the dynamic behavior of the XBT probes in the water and include experiments in water tanks to study the movement of XBT probes in the first 20m of its descent.

8.4.4 Plans for the future XBT network

8.4.4.1 The Panel discussed plans for the future XBT network. The current XBT operations

¹ FM 94–XIV BUFR: Binary universal form for the representation of meteorological data

² FM 63–XI Ext. BATHY: Report of bathythermal observation

address both operational and scientific goals of the international community and are aimed to building a sustained ocean observing system for climate.

8.4.4.2 Due to budget restrictions and scientific and climate research data requirements, a transition of XBT operations in Frequently Repeated (FRX) mode to High Density (HDX) mode during the last two years is visible. This transition allows the participating institutions to focus the resources and efforts on the XBT operation in HDX mode, where XBT deployments are done every 20-25 km and transects are repeated 2 to 10 times per year, depending on scientific requirements and logistics.

8.4.4.3 The strength of the XBT data set currently lies on its length and on its ability to estimate transports across entire ocean sections and key choke-points, such as Drake Passage, Indonesian Throughflow, the Antarctic Circumpolar Current (ACC) south of Africa, etc.

8.4.4.4 A strong international collaboration is critical for the maintenance and the future of the XBT network. During 2011-2012, 70% of all the XBT deployed and transmitted to the GTS were carried out with the participation of more than one institution or country.

8.4.4.5 The meeting made the following recommendations:

- (i) To maintain and increase the collaboration between the different programs that share the same deployment platforms (these include the activities directed to the deployment of XBT, surface drifter and Argo floats among others); and
- (ii) To maintain and increase the current international collaboration in the implementation and operation of the XBT Network.

8.4.4.6 The meeting agreed on the following:

- (i) To support the full implementation of the XBT network;
- (ii) To support the full implementation of data transmission in BUFR format;
- (iii) To support experiments and studies related to the XBT Fall Rate Equation (FRE) and the development of a climate quality XBT probe;
- (iv) To support the activities of the XBT Science Team; and
- (v) To support the activities of related projects and programs, such as pCO₂, Thermosalinograph (TSG), Data Buoy Cooperation Panel (DBCP), and Argo.

Appendix: None