

WORLD METEOROLOGICAL ORGANIZATION

**INTERGOVERNMENTAL OCEANOGRAPHIC
COMMISSION (OF UNESCO)**

JOINT WMO / IOC TECHNICAL COMMISSION FOR
OCEANOGRAPHY AND MARINE METEOROLOGY
(JCOMM)

SOT-V/Doc. IV-2
(31.03.2009)

SHIP OBSERVATIONS TEAM

ITEM IV-2

FIFTH SESSION

GENEVA, SWITZERLAND, 18-22 MAY 2009

Original: ENGLISH

SOOP PROGRAMME IMPLEMENTATION

(Submitted by Gustavo Goni, SOOPIP Chairperson)

Summary and purpose of the document

This document provides information in the SOOP Programme Implementation issues, including:

- (i) the status of the current sampling programme,
- (ii) a review of real-time and delayed-mode data transmission systems being used for the collection of SOOP data, including XBT data in particular,
- (iii) a review of XBT transect responsibilities,
- (iv) the status of the common fund for ship consumables which is providing Member States with a mechanism to pool financial resources for international programmes and thereby take advantage of increased purchasing power,
- (v) operational XBT systems and development including the results and recommendations from the XBT fall rate equation workshop (Miami, Florida, USA, 10-12 March 2008), and the use, and further development of XBT auto-launchers.

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.

- Appendices:**
- A. Status of the current sampling programme
 - B. Review of real-time and delayed mode data transmissions
 - C. Review of XBT line responsibilities
 - D. JCOMM XBT Probe Pool (and ship consumable Trust Fund)

- A - DRAFT TEXT FOR INCLUSION IN THE FINAL REPORT**IV-2.1 Status of the current sampling programme**

IV-2.1.1 Dr Gustavo Goni reported that the XBT operations continued as they were planned, with the main objective being the sustain monitoring of transects as recommended by the OceanObs99 Meeting in St. Raphael, France (see Appendix A). The monitoring of the implemented transects is done through monthly reports provided by IOC and by NOAA/AOML. It is observed that most transects are being done according to the recommendations. However, several transects that were not recommended are being carried out, several transects are not being done, and a few are done partly.

IV-2.2 Review of real-time and delayed mode data transmissions

IV-2.2.1 The Panel noted that transmissions in real-time had been constantly increasing and most transmissions were currently being done in real-time to the GTS or/and Coriolis. A small percentage of XBT deployments arrive at databases in delayed-time (See Appendix B)

IV-2.3 Review of XBT line responsibilities

IV-2.3.1 The XBT operations continue because of the effort of the international community, where countries collaborate with the provision of XBTs, equipment, help from Port Meteorological Officers, scientific and technical riders, and storage places.

IV-2.3.2 The Panel reviewed all transects to identify those lines that can be reasonably maintained, to identify those transects currently under sampled and to determine if this is because more resources are required to increase sampling, and to review the transect responsibilities and suggest changes due to logistics reasons. Transect responsibility implies investigating ship opportunities for the line, and coordinating the logistics, training, and negotiations with shipping companies and ships. The Panel agreed with transect responsibilities listed in Appendix C.

IV-2.4 JCOMM XBT Probe Pool (and ship consumable) Trust Fund

IV-2.4.1 The Panel recalled JCOMM-II decision to establish a common fund for ship consumables (see Appendix D); to provide a mechanism to Member States to increase resources committed to supplying expendables for ship observations in support of international implementation plans. The purpose was to initially, focus on XBTs, but other expendables could be added in time. An official letter from the Chairperson of the SOT to the WMO should authorize proposed expenditures if sufficient commitments are made to the Trust Fund.

IV-2.4.2 Dr Goni reported that inquires made in the US to provide funds for this fund were not successful mainly because of the lack of mechanisms available to accomplish this type of operation. NOAA continues to provide funds to purchase XBT probes at a reduced price and ship them to international partners (France, Australia, Brazil, and South Africa). These probes account for approximately 15% of probes deployed globally, and 100% of the probes deployed by France, Brazil, and South Africa. These steps continued as no contributions were made to this Trust Fund during the last intersessional period. SOOPIP still have to formulate a workplan for the XBTs to be purchased by the Trust Fund, should donations be received.

IV-2.5 Operational XBT Systems and Developments

IV-2.5.1 Results from a recent experiment revealed that the XBT deployment using different launchers and data acquisition systems provide the same quality of data. New auto launchers were developed at AOML for Sippican Fast Deep and T5 XBTs. Software was modified to accommodate for this addition. NOAA also completed the test phase of Iridium transmissions.

The meeting made the following recommendations:

- (i) Evaluate the new recommendations by OceanObs09 Meeting (Venice, September 2009) in terms of logistics for XBT deployments.
- (ii) Continue supporting the evaluation of the XBT fall rate equation, in particular for Deep Blue and Fast Deep XBTs.
- (iii) Support a unified criteria for XBT real-time data transmission, and to have more data transmitted in real-time to the GTS and Coriolis.
- (iv) Support the implementation of BUFR and metadata for XBT transmissions as recommended during this meeting.
- (v) To continue with increased collaboration at every level including the mention of the collaborative efforts put in the data and technical reports, scientific manuscripts, etc produced by all institutions.
- (vi) Explore alternative transmission methods for XBT and TSG data, such as Iridium, Argos-3, for transects that are currently using Inmarsat.
- (vii) Support, previous recommendations on not to report temperature values from depths of above 3.5m into the GTS.
- (viii) Continue with the support of TSG, CPR, pCO₂ and other observations from ships of the SOOP.
- (ix) Support the continuation of BUFR and metadata for testing in TSG transmissions as recommended during this meeting.

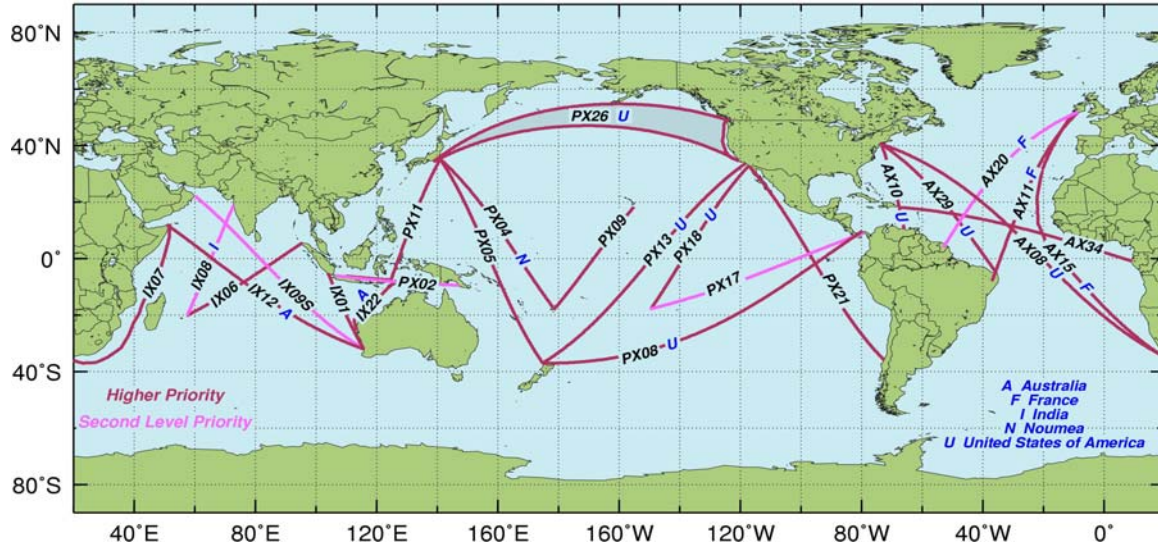
The meeting decided on the following action items:

- (i) The SOOPIP is invited to explore possible contributions from JCOMM Members/Member States to the JCOMM Trust Fund for ship consumables. The SOOPIP is invited to define priorities and a workplan for the use of such resources (**action, SOOPIP Chairperson, SOT-VI**)
 - (ii) The SOOPIP is invited to work in collaboration with the scientific community to make specific recommendations on the XBT transect(s) that should be prioritized first (**action, SOOPIP Chairperson, SOT-VI**).
 - (iii) SOOPIP members are invited to increase interaction with PMOs to recruit ships in transects that have been difficult to carry (ie. PX50 and AX18) (**action, SOOPIP members, SOT-VI**).
 - (iv) SOOPIP members are invited to continue the support of XBT/CTD comparison cruises and studies to investigate issues with the Fall Rate Equation (**action, SOOPIP members, SOT-VI**).
 - (v) SOOPIP members are invited to interact with Sippican and SeaBird for the development of new technology (**action, SOOPIP members, SOT-VI**).
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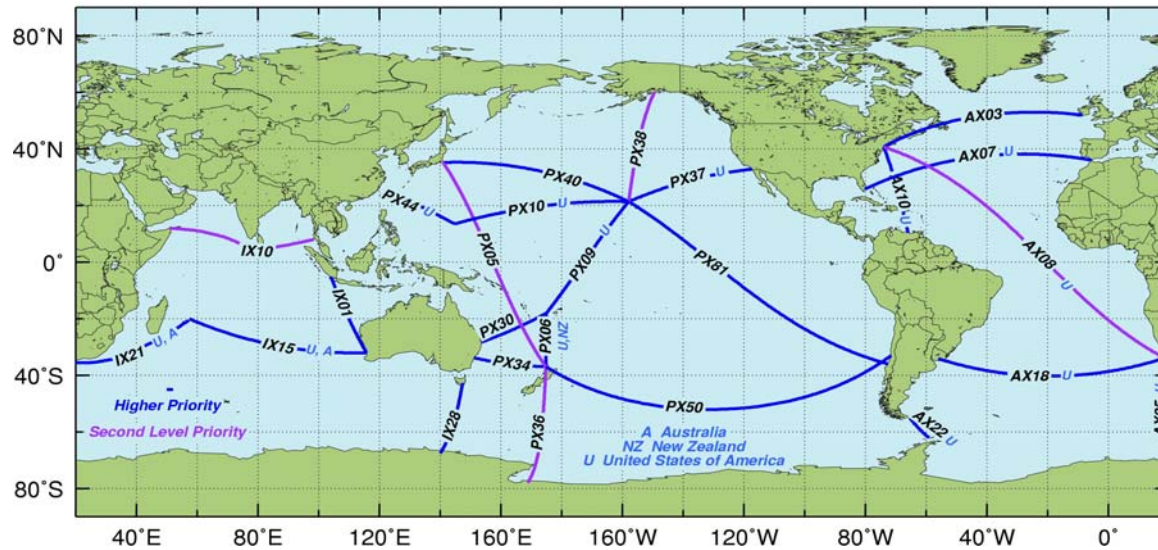
APPENDIX A

STATUS OF THE CURRENT SAMPLING PROGRAMME

Frequently Repeated (FR) XBT Network, OceanObs99 Recommendations



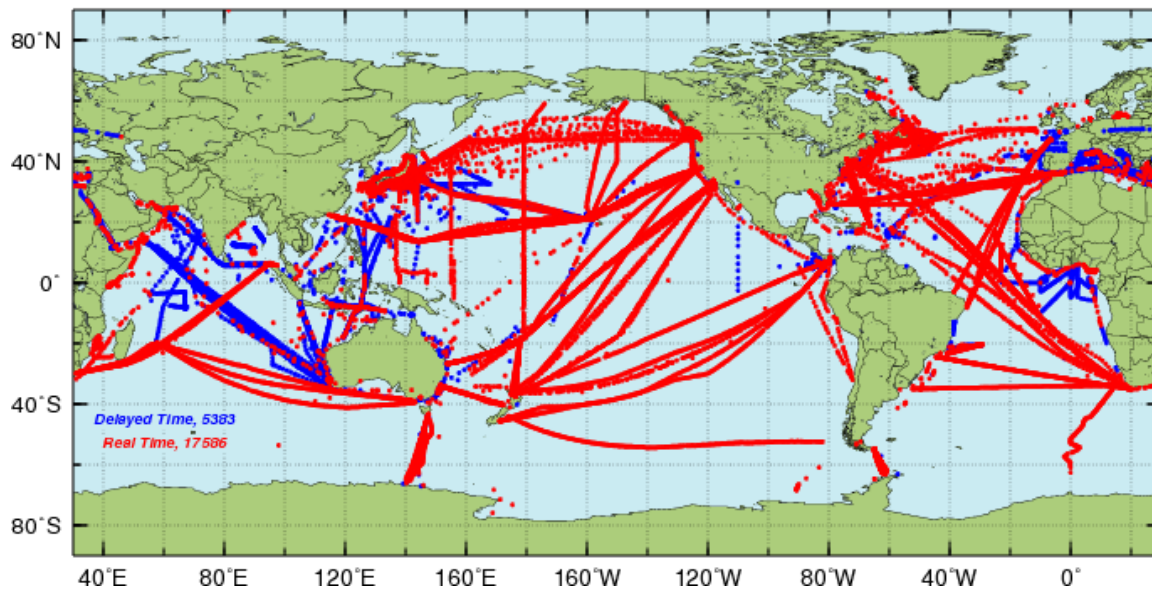
High Density (HD) XBT Network, OceanObs99 Recommendations



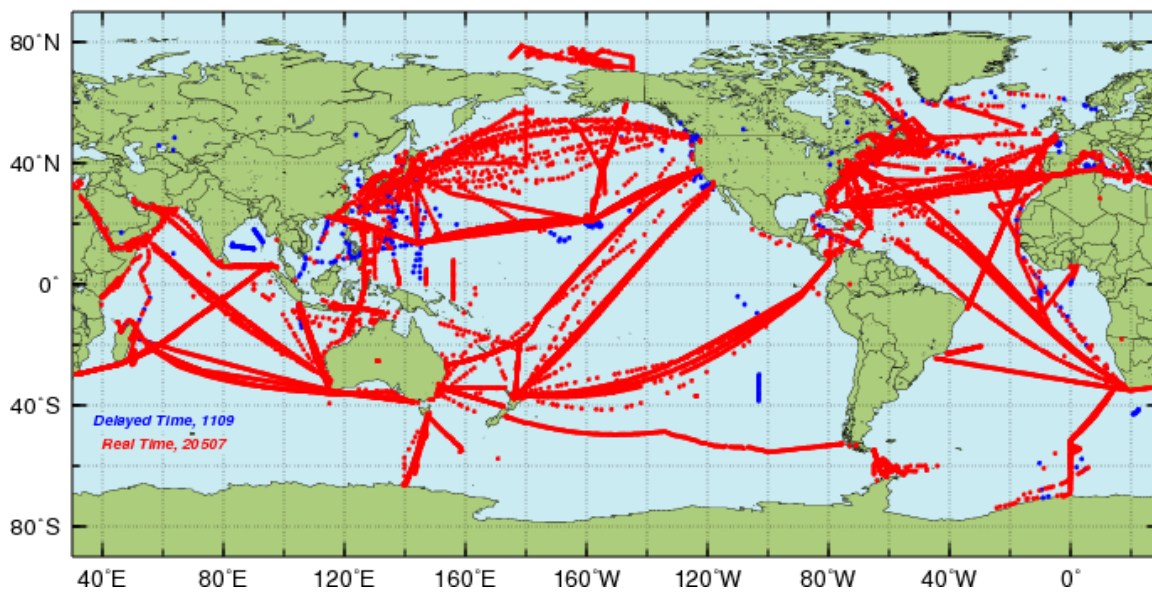
APPENDIX B

REVIEW OF REAL-TIME AND DELAYED MODE DATA TRANSMISSIONS

XBT Global Data 2007, 22969

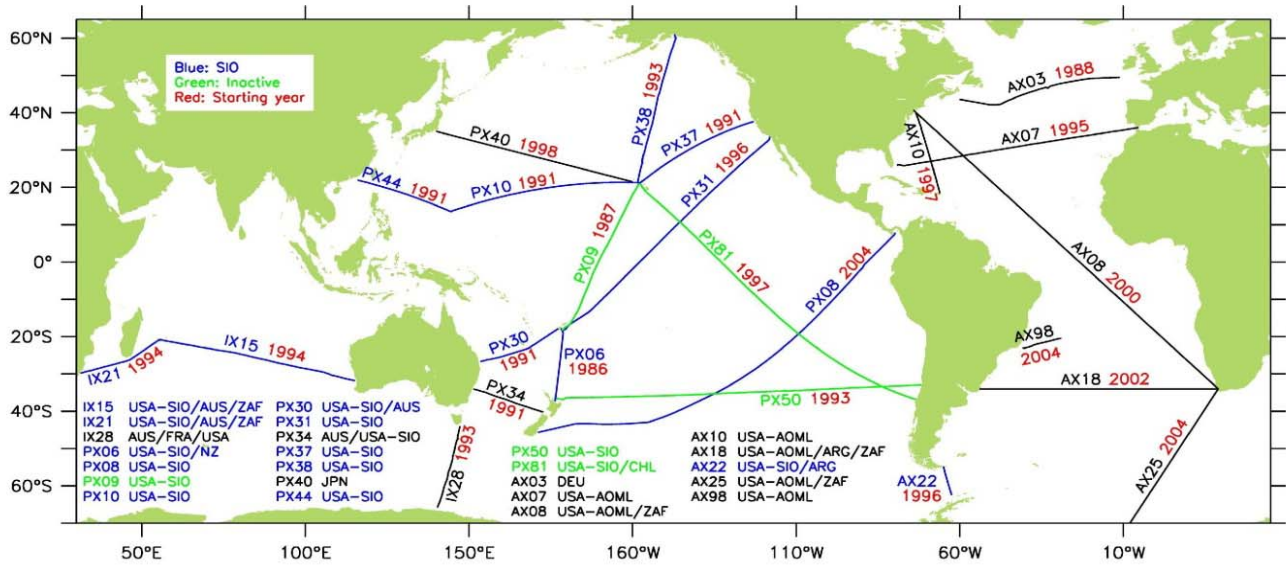


XBT Global Data 2008, 21616



APPENDIX C

REVIEW OF HDX XBT TRANSECT RESPONSIBILITIES



Line No.	Transect	UOT type	Responsible Agency or country	Also participating	Comment & national requirements
AX03	Europe - New York	HDX ¹	BSH	IRD - Nouméa	
AX07	Florida Straits - Gibraltar	FHD ²	US-GOOS		
AX08	New York - Cape Town	FHD	US-GOOS		
AX10	New York - Puerto Rico	FHD	US-GOOS		
AX11	Europe - Brazil	FRX ³	BSH	IRD - Brest	
AX15	Europe - Cape of Good Hope	FRX	IRD-Brest		
AX18	Buenos Aires - Cape of Good Hope	HDX	US-GOOS	UCT and SHN	
AX20	Europe - French Guyana	FRX	IRD-Brest		
AX22	Drake Passage	HDX	SIO	US - GOOS	
AX25	Cape of Good Hope - Antarctica	HDX	UCT	US - GOOS	
AX29	Antigua - Cabo de Sao Roque, Brazil	FRX	US-GOOS		
AX32	NYC - Bermudas	FHD	US-GOOS		
AX34	Gulf of Guinea - Caribbean	FRX	IRD + US		
AX97	Rio de Janeiro – Trinidad Is.	HDX	FURG	US - GOOS	
IX01	Fremantle - Sunda Straits	FHD	BOM	IRD - Nouméa	
IX06	Mauritius / La Réunion - Malacca Strait	FRX	Japan + Kenya		
IX07	Cape of Good Hope - Persian Gulf	FRX	IRD-Brest		
IX08	Mauritius - Bombay	FRX	NIO		
IX09S	Fremantle - Sri Lanka	FRX	UKMO		

1: HDX - High Density Line (4 high horizontal resolution transects/year)

2: FHD - Line operated in both HDX and FRX mode (i.e. 4 transects in HDX mode, 14 transects in FRX mode)

3: FRX - Frequently Repeated Line (18 low horizontal resolution transects/year)

Line No.	Transect	UOT type	Responsible Agency or country	Also participating	Comment & national requirements
IX10	Red Sea - Malacca Strait/Singapore	HDX	UKMO, JMA	JAMSTEC, IRD - Nouméa	
IX12	Fremantle - Red Sea	FRX	BOM		
IX15	Mauritius - Fremantle	HDX	CSIRO/SIO		
IX21	Cape of Good Hope - Mauritius	HDX	Kenya		
IX22	Shark Bay - Timor Strait/Banda Sea	FRX	BOM		
IX28	Hobart, Tasmania - Dumont d'Urville	HDX	CSIRO		
PX02	Flores Sea - Torres Strait	FRX	BOM		
PX04	Japan - Kiribati - Fiji / Samoa	FRX	IRD - Nouméa		
PX05	Japan - New Zealand	FHD	JMA	JAMSTEC, IRD - Nouméa	
PX06	Suva, Fiji - Auckland, New Zealand	HDX	SIO	US - GOOS	
PX08	Auckland, New Zealand - Panama	FRX	US-GOOS		
PX09	Hawaii - Fiji / Auckland	FHD	SIO	US - GOOS	
PX10	Hawaii - Guam/Saipan	HDX	SIO	US - GOOS	
PX10	Hawaii - Guam/Saipan	FRX	US-GOOS		
PX11	Flores Sea - Japan	FRX	BOM		
PX13	New Zealand - California	FRX	US-GOOS		
PX17	Tahiti / Maruroa - Panama	FRX	IRD - Nouméa		
PX18	Tahiti - California	FRX	US-GOOS		
PX21	California - Chile	FRX			
PX26	Seattle/California - Japan	FRX	US-GOOS		
PX30	Brisbane/Sydney - Noumea - Fiji	HDX	CSIRO	IRD - Nouméa	
PX31	Nouméa / Suva, Fiji - California	FHD	IRD - Noumea		
PX34	Sydney - Wellington	HDX	CSIRO		

Line No.	Transect	UOT type	Responsible Agency or country	Also participating	Comment & national requirements
PX36	Christchurch - McMurdo	HDX	US-GOOS		
PX37	Hawaii - California	HDX	SIO	US - GOOS	
PX37	Hawaii - California	FRX	US - GOOS		
PX38	Hawaii - Alaska	HDX	SIO		
PX40	Hawaii - Japan	HDX	SIO	US - GOOS, TOHOKU - U	
PX44	Guam - Hong Kong / Taiwan	HDX	SIO	US - GOOS	
PX44	Guam - Hong Kong / Taiwan	FRX	US - GOOS		
PX50	Valparaiso - Auckland	HDX	MSNZ, SIO		
PX81	Honolulu - Coronel (Chile)	HDX	US-GOOS	SIO	

APPENDIX D

JCOMM XBT PROBE POOL (AND SHIP CONSUMABLE TRUST FUND)

**RECOMMENDATION 3 (JCOMM-II)
CONSUMABLES FOR SHIP-BASED OBSERVATIONS**

THE JOINT WMO/IOC TECHNICAL COMMISSION FOR OCEANOGRAPHY AND MARINE METEOROLOGY,

Noting:

- (1) Recommendation 2 (JCOMM-I) - Resources for Ship-Based Observations,
- (2) Final report of the third session of the Ship Observations Team, JCOMM Meeting Report No. 35,
- (3) The report of the Observations Programme Area Coordinator to JCOMM-II,

Recognizing:

- (2) That many components of the operational, in situ ocean observing system coordinated by JCOMM are currently well short of requirements, including in particular the XBT network coordinated by the Ship Observations Team,
- (3) That currently only a small number of Members/Member States contribute to the maintenance of the observing system,
- (4) That the cost of the purchase and supply of consumables (such as XBTs) represents a major obstacle to the enhanced involvement of maritime countries in the system;

Considering:

- (5) That the implementation of the observing system could be enhanced through the establishment of a simple mechanism to encourage more countries to contribute to the system and complete the global XBT and other networks,
- (6) That considerable cost savings could be achieved through the bulk purchase and supply of consumables for ship-based observations, including in particular XBTs,
- (7) That the provision of consumables from a common pool would greatly assist maritime countries wishing to contribute to the implementation and maintenance of the observing system, in support of national, regional and global interests and programmes;

Recommends:

- (8) That a scheme for the bulk purchase and supply of consumables for ship-based observations be developed, and a special trust fund be established for that purpose;
- (9) That Members/Member States which are in a position to do so, contribute to this trust fund, in support of the full implementation and maintenance of the ocean observing system coordinated by JCOMM, and the enhanced involvement of maritime countries in this work;
- (10) That at the same time, Members/Member States continue to procure and supply consumables for ship-based observations through their existing national procedures;

Requests:

- (11) The Observations Programme Area Coordinator, in consultation with the chairman of the Ship Observations Team, the co-presidents of JCOMM, the JCOMM Secretariat and relevant Members/Member States, develop a plan for the bulk purchase and supply of consumables for ship-based observations, for consideration and approval by the Management Committee;
- (12) The Secretary-General of the WMO and the Executive Secretary of the IOC to support the implementation of this plan through, the establishment of a special trust fund for this purpose.