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

SHIP OBSERVATIONS TEAM

FIFTH SESSION

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ITEM I-5.1

Original: ENGLISH

JCOMMOPS AND THE FUTURE OBSERVING PROGRAMME SUPPORT CENTRE (OPSC)

(Submitted by the Secretariat)

Summary and purpose of the document

This document provides for up-to-date information regarding the process for developing an Observing Programme Support Centre (OPSC) to develop the capabilities and safeguard the future of the current JCOMMOPS.

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. Background information on the establishment of an OPSC
B. JCOMMOPS Terms of Reference
C. Summary discussions, informal JCOMMOPS roundtable, Silver Spring, 9 May 2006
D. Joint Circular Letter calling for Letters of Intent to host the OPSC
E. Proposed Terms of Reference for the OPSC

- A - DRAFT TEXT FOR INCLUSION IN THE FINAL REPORT

I-5.1 JCOMM in situ Observing Platform Support Centre (JCOMMOPS) and future Observing Programme Support Centre (OPSC)

I-5.1.1 JCOMMOPS activities during the last intersessional period

I-5.1.1.1 The Technical Co-ordinator of the SOT presented a report on the JCOMMOPS activities during the last intersessional period. Ongoing tasks included, uploading updates to Publication 47 into the JCOMMOPS database, maintaining mailing lists, updating Monthly Maps for SOOPIP, VOS, ASAP and JCOMM, maintaining updates to the Mask to Real data file at JCOMMOPS, based on operator inputs quarterly. As reported under agenda item I-2.5, Mr Mathieu Belbéoch took over the responsibility of SOT Technical Coordinator from Ms Hester Viola in the beginning of 2009. JCOMMOPS worked in such a way to permit a smooth transition. JCOMMOPS has also been working on the following:

(i.) Maps and websites: high resolution maps, web services, new general SOT map created, QC relay tool updated;
(ii.) Metadata: participation in META-T, assistance with regard to the Ship masking issue and provision of a secured REAL/MASK database;
(iii.) Observing network monitoring: production of the SOOP Annual Line Sampling Reports for 2006, 2007, and initiation of the 2008 report; input provided to the WMO Rolling Review of Requirements.

I-5.1.1.2 The Team thanked both Ms Hester Viola and Mr Mathieu Belbéoch for their efforts to develop JCOMMOPS further and provide better support to the SOT.

I-5.1.2 Future Observing Programme Support Centre (OPSC)

I-5.1.2.1 The Team recalled that at SOT-IV, it had approved the JCOMM Observations Coordination Group round-table review of the future JCOMMOPS. The Secretariat reported on the latest developments in this regard. Following further discussions with the JCOMM Management Committee, fifth session (Geneva, Switzerland, 5-7 October 2007), and the Observations Coordination Group at its second Session (Geneva, Switzerland, 23-25 April 2007), a joint WMO-IOC circular letter was issued in September 2007 to call for the submission of Letters of Intent (LOIs) to host a JCOMM Observing Programme Support Centre (OPSC). A copy of this circular letter was presented to the Team.

I-5.1.2.2 The team noted that fifteen Letters of Intent had been received by the Secretariat and objectively evaluated by a committee lead by the JCOMM Co-Presidents. Evaluation was made in two steps. In the first step, a short list of five candidates was proposed for undergoing further evaluation. In the second step, the evaluation committee was expanded by the JCOMM Management Committee to include representatives from the Argo Steering Team, the DBCP, the SOT, OceanSITES, the IOCCP, GLOSS, WIGOS, the OOPC, and the WMO and IOC Secretariats. The evaluation Committee, then engaged in a negotiation with the selected institution. The final decision regarding the future OPSC host remains, to be made jointly by the WMO Secretary General and the IOC Executive Secretary.

I-5.1.2.3 The third session of the JCOMM Observations Coordination Group, Paris, France, 9-11 March 2009 was invited to review the draft Terms of Reference (TOR) for the OPSC. Proposed draft TOR are provided in Appendix E. The Team noted that these activities and actions will be presented to the third Session of JCOMM (JCOMM-III), Marrakech, 5-12 November 2009. JCOMM-III will be invited to agree on the Terms of Reference for the OPSC or extended JCOMMOPS.

I-5.1.2.4 The Team endorsed the overall JCOMMOPS evaluation and OPSC development

process as conducted until now and planned for JCOMM-III. More detailed information and background information about JCOMMOPS evaluation and the OPSC process are provided in Appendix A.

I-5.1.2.5 The Team noted with appreciation that the sixtieth WMO Executive Council (EC-LX) and the forty-first IOC Executive Council had both requested Members to commit resources through voluntary contributions, to support the implementation and operations of the OPSC.

I-5.1.2.6 The Team discussed, optimal ways for the future development of the SOT through its Technical Co-ordinator in the context of this development. In particular, the Team discussed the use of JCOMMOPS (and the future OPSC) as a portal for ship metadata.

- B - BACKGROUND INFORMATION

1. JCOMMOPS developments

1.1 Ongoing tasks for Ms Hester Viola included, uploading updates to Publication 47 into the JCOMMOPS database, maintaining mailing lists, updating Monthly Maps for SOOPIP, VOS, ASAP and JCOMM, maintaining updates to the Mask to Real data file at JCOMMOPS, based on the quarterly operator inputs.

1.2 Some of the more important tasks undertaken in the Intersessional period are as follows:

(a) Prepared documents and communicated changes in the SOT coordination (30% to Argo TC, M Belbeoch) and support for OceanSITES (30% from DBCP TC, H Viola) within JCOMMOPS, and the employment of a half-time IT staff member by CLS with the funding identified for OceanSITES.

(b) Began transferring knowledge about SOT to M Belbeoch

(c) Commenced on specification for new JCOMMOPS website, which will include new SOT and SOOPIP sites with better usability and consistency.

Maps and Websites

(a) All maps are now available in PNG or PDF (high resolution with layers that can be toggled on or off).

(b) All internet-mapping applications at JCOMMOPS now have Web map Services (WMS) and Web Feature Services (WFS) enabled. A new interactive map for SOT was created http://w4.jcommops.org/WebSite/SOTM (updated monthly for most layers).

(c) Updated the interface of the QC Relay tool in response to requests from several users

Metadata

(a) Involvement and review of Meta-T documents including preparing new BUFR templates and updates to existing ones as part of the representation at the WMO Expert Team on Data Representation and Codes on behalf of JCOMM.

(b) Call Sign Masking:

- Completed several tasks for the SOT chair. Finalised the content of reports about Ship Callsigns for national reporting to JCOMMOPS. i.e. Country-of-recruitment;Report-Date;nmsID;MASK;REAL;IMO-Number;Start-Date;End-Date

- Created the mailing list and requested a new address <mask2real@jcommops.org> for reporting. < sot-tt-masking@jcommops.org >

(c) Set up a secure FTP site for the Ship callsigns Masked by Europe and Australia

(d) Call Sign Masking: updated the (password protected) text file held at JCOMMOPS with quarterly submissions. Reminded operators to report when required. More details will be given at the meeting on access restrictions.

Network Monitoring

(a) The SOOP Annual Line Sampling Reports for 2006, 2007 were completed and the report for 2008 begun in conjunction with Mathieu Belbeoch. The report has been streamlined somewhat in the last year and will take less time to generate for 2008.

(b) Provided inputs to the WMO Rolling Review of Requirements for all JCOMM Observing Systems. This included an assessment for all Ocean areas: Horizontal Resolution, Vertical Resolution, Accuracy, Typical Observing Cycle (calculated by computing the average observing cycle for all platforms of the same type and reporting from the same area), GTS/Data Delays and complementary information for the status of the observing system.

2. OPSC development

2.1. Following JCOMM-II recommendation, a process was initiated to review usefulness and effectiveness of the JCOMM *in situ* Observing Platform Support Centre (JCOMMOPS). Since then, substantial discussions have taken place, not only with the Panels presently supporting JCOMMOPS such as the Data Buoy Cooperation Panel (DBCP), the Ship Observations Team (SOT), and the Argo profiling float programme, but also with the JCOMM Management Committee, the JCOMM Observations Coordination Group, and observing panels that could potentially benefit from the support and services of JCOMMOPS. These include the Partnership for Observation of the Global Oceans (POGO), the IOC International Ocean Carbon Coordination Project (IOCCP), the Global Sea-level Observing System (GLOSS), and the Ocean Sustained Interdisciplinary Timeseries Environment observation System (OceanSITES).

2.2 These discussions confirmed the value of JCOMMOPS, lead to a general agreement that JCOMMOPS was very useful in providing effective support towards the implementation of *in situ* ocean observing systems under its responsibility, but also that there was an urgent need for an expanded Observing Programme Support Centre (OPSC). This should include system performance monitoring, system design evaluation, and authority to suggest deployments to improve system and efficiency and effectiveness. This could provide synergies for functions that are now distributed, and make available a more integrated framework for the deployment and further development of ocean observing networks.

2.3. In September 2007, the Secretariat issued a joint WMO-IOC circular letter to the Member States of IOC and the Members of WMO, with an announcement and call for Letters of Intent (LOI) to host an OPSC. The letter explained the background and justification for an OPSC, specified the requirements that the host should meet, and solicited a letter of intent from prospective hosts. Fifteen Letters of Intent have been received by the Secretariat and evaluated by a committee led by the JCOMM Co-Presidents. Evaluation was made in two steps. In the first step, a short list of five candidates was proposed for undergoing further evaluation. In the second step, the evaluation committee was expanded by the JCOMM Management Committee to include representatives from the

Argo Steering Team, the DBCP, the SOT, OceanSITES, the IOCCP, GLOSS, WIGOS, the OOPC, and the WMO and IOC Secretariats. Candidates were objectively evaluated against the following criteria (i) scientific activities related to the use of ocean observations; (ii) significant involvement in implementation of ocean observing systems; (iii) operational 24H IT support and GTS access; (iv) cost effectiveness for Members voluntarily contributing financially to the OPSC; (v) commitment to long-term support for the OPSC; and (vi) risks.

2.4. The CLS/IFREMER proposal came first in total scores, first in scores for 5 out of 6 criteria, and first in overall ranking by 6 out of 8 team members. Other proposals get (not surprisingly) very honourable scores and rankings. The evaluation committee proposed to IOC and WMO to retain the French proposal and to enter into negotiations with CLS/IFREMER on the details of their offer in order to bring further benefits to OPSC and its staff and to clarify the role of the Brest centre in view of the strongly relevant science being pursued there. The committee proposed to; warmly thank the other candidates for their highly relevant proposals, largely in accordance with the requirements of the OPSC, and to, explicitly state the reasons for accepting the CLS/IFREMER proposal over those from NOAA and INCOIS.

2.5. The evaluation Committee engaged in a negotiation with the selected institution. At the time of writing this report, final decision regarding future OPSC remains to be made jointly by the WMO Secretary General and the IOC Executive Secretary. The WMO and IOC Secretariats will write to the selected institution to, formally inform it about the final decision and the conditions under which a Memorandum of Understanding will be signed. The unsuccessful institutions will be informed of the decision.

2.6. The third session of the JCOMM Observations Coordination Group, Paris, France, 9-11 March 2009 was invited to review the draft Terms of Reference (ToR) for the OPSC. The proposed draft ToR are provided in Appendix E. These activities and actions will be presented to the third Session of JCOMM (JCOMM-III), Marrakech, 5-12 November 2009. JCOMM-III will be invited to agree on the Terms of Reference for the OPSC or extended JCOMMOPS.

2.7. More detailed information and background information about JCOMMOPS evaluation and the OPSC process are provided in Appendices A to E.

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Appendices: 6

APPENDIX A

BACKGROUND INFORMATION ON THE ESTABLISHMENT OF AN OCEAN OBSERVING PROGRAMME SUPPORT CENTRE (OPSC)

1. Introduction

1.1 Technical support towards the implementation of ocean observing programmes was initiated in 1987 through the recruitment of the first Data Buoy Cooperation Panel (DBCP) Technical Coordinator. The latter was based in Toulouse, France from 1987 to 1989, then in Largo, Maryland, USA from 1989 to 1993, then again in Toulouse since 1993. The fourteenth Session of the Data Buoy Cooperation Panel, Marathon, October 1998, and the second Session of the Ship of Opportunity Programme Implementation Panel (SOOPIP), Nouméa, New Caledonia, October 1998, agreed that the DBCP Technical Coordinator could also provide part time support to the SOOPIP. The establishment of the Argo Information Centre (AIC) staffed with a full time technical coordinator was discussed at the OceanOBS'99 conference in Saint Raphael, 1999, and agreed upon at the second meeting of the Argo Science Team in 2000.

1.2 Thanks to experience gained, the JCOMM *in situ* Observing Platform Support Centre (JCOMMOPS) was established by the first Session of JCOMM in 2001 based upon coordination facilities provided by the Data Buoy Cooperation Panel (DBCP), the Ship of Opportunity Programme (SOOP), and Argo Pilot Project. The Argo Information Centre became part of JCOMMOPS. Synergy was therefore put in place between these three global marine observational programmes to assist at the international level those in charge of implementing the National components of these programmes. In 2005, JCOMM-II extended the JCOMMOPS Terms of Reference to include coordination for the Ship Observations Team (SOT) as a whole, and to provide information on satellite data requirements (Appendix B). The JCOMMOPS provides with support to programme planning, implementation, and operations including information on (i) observational data requirements, (ii) technology, instrumentation, and costs, (iii) operational status of observing networks (e.g. identification of data sparse area), and (iv) deployment opportunities (by ship and air).

1.3 It maintains information on relevant data requirements for observations in support of GOOS, GCOS, and the WWW as provided by the appropriate international scientific panels and JCOMM Expert Teams and Groups, and routinely provides information on the functional status of the observing systems (buoys, XBTs, profiling floats). It also encourages platform operators to share the data and distribute them in real-time (e.g. technical assistance regarding satellite data acquisition, automatic data processing and Global Telecommunication System (GTS) distribution of the data). JCOMMOPS also provides a mechanism for relaying quality information from data centres and users worldwide back to platform national operators. The JCOMMOPS acts as a focal point for implementation and operation of relevant observing platforms.

2. Present status of JCOMMOPS

2.1 JCOMMOPS is located in Toulouse, France, is staffed with two full-time Technical Coordinators, Ms Hester Viola (recruited in 2006 and provides support to the DBCP and the SOT), and Mr Mathieu Belbeoch (runs the Argo Information Centre which is part of JCOMMOPS since 2001) and is funded through voluntary contributions from Member States, the marine observing programme and panels such as the DBCP and Argo. Its Terms of References include support for the implementation of the DBCP, Argo, and the SOT, and the JCOMM Cross-Cutting Team on Satellite Data Requirements. A modern and efficient Information System, including a database (containing observational programme status, platforms operational status, and contact points), a dynamic web site, and a Geographical Information System (GIS) has been developed to facilitate the services provided by JCOMMOPS.

3. Review of JCOMMOPS

3.1 It its second session, JCOMM proposed a review of JCOMMOPS activities and the submission of a report at JCOMM-III.

3.2 An informal JCOMMOPS Strategy Roundtable meeting was held in Silver Spring, MD, USA, on 9 May 2006 (Appendix C). The purpose of the meeting was to bring together representatives of the programmes that are presently using JCOMMOPS and other global programmes that could potentially benefit from using the JCOMMOPS, for strategic long-range brainstorming. Representatives from the OCG, DBCP, SOT, GLOSS, Argo, OceanSITES, IOCCP and POGO participated in the event. The Group generally agreed that there is an urgent need for an expanded observing programme support centre (OPSC). This should include system performance monitoring, system design evaluation, and authority to suggest deployments to improve system and efficiency and effectiveness. This could provide synergies for functions that are now distributed, and provide a more integrated framework for the deployment and further development of ocean observing networks. The Group had discussed future staffing (seven persons required), and hosting requirements (with preferably an operational agency) for the JCOMMOPS. The Roundtable recommended that the OCG should develop a requirements specification for the centre.

4. Expanding JCOMMOPS into an ocean Observing Programme Support Centre (OPSC)

4.1 At its fifth Session, Geneva, Switzerland, 5-7 October 2007, the JCOMM Management Committee endorsed the recommendations from the JCOMMOPS roundtable. Based on these requirements, the management committee put the JCOMM Observations Coordination Group (OCG) in charge of developing the plan to the point where a letter of invitation and specification could be sent to possible future OPSC hosts.

4.2 The second Session of the JCOMM Observations Coordination Group (OCG), Geneva, Switzerland, 23-25 April 2007 also reviewed the outcome from the informal JCOMMOPS roundtable discussion, and a draft specification of requirements for the evolution of JCOMMOPS over the next few years into an expanded Observing Programme Support Centre (OPSC) for the integrated support of all the global observing implementation programmes. The OCG developed a draft specification and solicitation for proposals from institutions interested in hosting this Centre. It was also agreed that the approach to potential hosts should be in the form of a Joint Circular Letter to the member states of IOC and the permanent representatives of members of WMO. The letter would explain the background and justification for an OPSC specify the requirements that the host should meet, and solicit a letter of intent from prospective hosts.

4.3 On 24 September 2007, the Secretariat issued a joint WMO-IOC circular letter to the Member States of IOC and the Members of WMO, with an announcement and call for Letters of Intent (LOI) to host an OPSC. The letter explained the background and justification for an OPSC, specified the requirements that the host should meet, and solicited a letter of intent from prospective hosts. The deadline for response was 15 November 2007. The letter is reproduced as Appendix D.

4.4 This process was reported at the sixth Session of the JCOMM Management Committee, Paris, France, 3-6 December 2007, and agreed upon. The Management committee agreed that the review of JCOMMOPS requested by JCOMM-II had been effectively completed through the OPSC process and actions detailed above, the value and need for JCOMMOPS confirmed (in fact, the need for an expanded JCOMMOPS).

5. Evaluation of potential OPSC hosts

5.1 Fifteen letters of intent from Members/Member states have been received. A meeting of the Evaluation Committee to review and evaluate the Letters of Intent received by the WMO and IOC Secretariat for hosting an Observing Programme Support Centre (OPSC) was held in Paris, France, on 11 April 2008. The Committee was lead by the JCOMM Co-president, Dr Jean-Louis Fellous, and

was comprised of the other JCOMM Co-president, Dr Peter Dexter, and representatives from the DBCP, Mr Jean Rolland, and the Argos Steering Team, Dr Breck Owens. The Committee recalled the role foreseen for a future OPSC, stressing technical and practical support for the implementation of the *in situ* ocean observing systems and the need for full operational support to be provided by the future host in terms of IT support and GTS / WIS access. This support is essential to provide assistance for observing platform deployment opportunities and the coordination of logistical support for those deployments as required. It is also essential for the routine monitoring function of the OPSC together with ensuring the link between data users and data providers in terms of quality monitoring. The host would therefore have to: (i) be strongly involved in operational (or quasi-operational) activities with regard to the deployment of ocean observing platforms in the open-ocean (e.g., Argo floats, drifters, VOS ships, SOO); (ii) be strongly connected to the international WMO and IOC communities; and (iii) the capability to provide full 24-hour operational IT support and GTS access.

5.2 The Committee agreed that the host should also be strongly involved in scientific activities related to ocean observations in order for the scientific aspects and user requirements to be taken into account properly. The Committee also agreed that financial impact should be a criterion for selecting the Centre. It noted that the different LOIs did not provide the same level of support for in kind commitments (e.g., office space; IT staff provided free of charge to the OPSC), and financial resources to host the future Centre. Some overhead charges were also noted for some proposals. The Committee agreed that the potential risks associated with the transition of JCOMMOPS into a new OPSC would have to be considered in evaluating the proposals.

5.3 Based on these discussions, after the criteria was agreed upon, and after careful review of all proposals, the Committee selected five out of the fifteen Letters of Intent for a short list to undergo further evaluation. The Committee agreed that it would be useful for the evaluation to ask the remaining potential hosts to fill in technical and administrative questionnaires in order to clarify some of the issues. Through this process, by the 15 November 2008 deadline, three questionnaires were completed and returned to the Secretariat. One candidate declined its offer, and two of the proposals decided to submit a joint application. Hence, only three proposals remain at this point (IFREMER-CLS of France, NOAA of USA, and INCOIS of India).

5.4 The Seventh Session of the JCOMM Management Committee, Melbourne, Australia, 8-12 December 2008, expanded the membership of the evaluation committee for the assessment of the institutions of the short listed candidates. The expanded committee included the representatives of observing programmes that potentially would contribute to and benefit from the future OPSC. The Terms of Reference of the review committee with membership are reproduced in Annex I of Appendix E.

5.5 The Management Committee noted that, the increasing requirements from the user community, the future OPSC would need to consider enhancing links to the satellite information services, and suggested drafting/updating the ToR of a future OPSC. (by JCOMM-III).

5.6 The expanded evaluation committee worked primarily via email in the period December 2008 to February 2009, and evaluated the proposals against the following criteria (i) scientific activities related to the use of ocean observations; (ii) significant involvement in implementation of ocean observing systems; (iii) operational 24H IT support and GTS access; (iv) cost effectiveness for Members voluntarily contributing financially to the OPSC; (v) commitment to long-term support for the OPSC; and (vi) risks. The CLS/IFREMER proposal came first in total scores, first in scores for 5 out of 6 criteria, and first in overall ranking by 6 out of 8 team members. Other proposals get (not surprisingly) very honourable scores and rankings.

5.7 The evaluation committee proposed to IOC and WMO to retain the French proposal and to enter into negotiations with CLS/IFREMER on the details of their offer in order to bring further benefits to OPSC and its staff and to clarify the role of the Brest centre in view of the strongly relevant science being pursued by them. The committee proposed to; warmly thank the other candidates for their highly

relevant proposals, largely in accordance with the requirements for the OPSC, and to, explicitly state the reasons for accepting the CLS/IFREMER proposal over those from NOAA and INCOIS.

5.8. The third session of the JCOMM Observations Coordination Group, Paris, France, 9-11 March 2009 was invited to review the draft Terms of Reference (ToR) for the OPSC. The draft ToR are provided in Appendix E.

6. Future steps

6.1. At this point, negotiations with the selected institution have started in consultation with the evaluation committee. Once negotiations are successful, final decision regarding future OPSC host will be made jointly by the WMO Secretary General and the IOC Executive Secretary. The WMO and IOC Secretariats will then write to the selected institution to, formally inform it about the final decision and the conditions under which a Memorandum of Understanding will be signed. The unsuccessful institutions will also be informed of the decision.

6.2. These activities and actions will be presented to the third Session of JCOMM (JCOMM-III), Marrakech, 5-12 November 2009. JCOMM-III will be invited to agree on the Terms of Reference for the OPSC or extended JCOMMOPS.

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APPENDIX B

RECOMMENDATION 4 (JCOMM-II)
NEW TERMS OF REFERENCE FOR JCOMMOPS

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

NOTING:

(1) The JCOMM Terms of Reference and especially those related to the development of observing networks,

(2) Recommendation 6 (JCOMM-I) – Establishment of a JCOMM *in situ* Observing Platform Support Centre (JCOMMOPS),

(3) The final report of the first session of the Ship Observations Team, JCOMM Meeting Report No. 11,

(4) The final report of the first session of the Observations Coordination Group, JCOMM Meeting Report No. 13,

(5) The final report of the second session of the Ship Observations Team, JCOMM Meeting Report No. 24,

(6) The final report of the twentieth session of the Data Buoy Cooperation Panel, JCOMM Meeting Report No. 33,

(7) The final report of the fourth session of the JCOMM Management Committee, JCOMM Meeting Report No. 34,

(8) The final report of the third session of the Ship Observations Team, JCOMM Meeting Report No. 35,

CONSIDERING:

(1) The requirement for JCOMM to be active in a process, in which oceanographic and marine meteorological observing system elements make the transition to a fully integrated system,

(2) The need to integrate at the international level a number of activities regarding operation and implementation of *in situ* marine observing systems,

(3) The success of JCOMMOPS development and work, based on DBCP, SOOP and Argo technical coordination facilities, thanks to resources provided by Members/Member States through the DBCP, SOOPIP and Argo,

(4) The potential value of extending JCOMMOPS activities to include some services to support SOT Coordination, as proposed by the second session of the Ship Observations Team,

(5) The need to make satellite information available, and, in particular, results from the work of the Cross-cutting Team on Satellite Data Requirements,

RECOMMENDS:

(1) That the JCOMMOPS Terms of Reference should be modified to enable the provision of extended

support to SOT Coordination and the dissemination on the Web site of information provided by the Crosscutting Team on Satellite Data Requirements;

(2) That the new JCOMMOPS Terms of Reference should be as given in the annex to this recommendation;

(3) That JCOMMOPS should continue to be based in Toulouse, under the day-to-day supervision of the WMO and IOC Secretariats;

REQUESTS Members/Member States, where possible, to commit the resources required to support JCOMMOPS.

NOTE: This recommendation replaces Recommendation 6 (JCOMM-I), which is no longer in force.

ANNEX TO RECOMMENDATION 4 (JCOMM-II)

TERMS OF REFERENCE FOR THE JCOMM *IN SITU* OBSERVING PLATFORM SUPPORT CENTRE (JCOMMOPS)

Under the overall guidance of the JCOMM Observations Coordination Group and following the direction of the Data Buoy Cooperation Panel, the Ship Observations Team, the Argo Steering Team, and the Cross-cutting Team on Satellite Data Requirements, the JCOMMOPS shall:

(i) Act as a focal point for implementation and coordination of observing platforms monitored by the above programmes and provide assistance to platform operators for free and unrestricted exchange of data by, inter alia, providing information on telecommunications systems, clarifying and resolving issues between platform operators and telecommunications system operators, and encouraging the implementation of standard formats;

(ii) Maintain information on relevant data requirements for observations in support of GOOS, GCOS, and the WWW as provided by the appropriate international scientific panels and JCOMM Expert Teams and Groups, and routinely provide information on the functional status of the observing systems

(iii) Provide a gateway for information on instrumentation deployment and servicing opportunities, and on operator contact information and

(iv) Provide information on the observational programme, including on instrumentation, on instrument evaluation, and on data quality.

APPENDIX C

SUMMARY OF DISCUSSIONS, INFORMAL JCOMMOPS ROUNDTABLE
9 May 2006, Silver Spring, USA

Participants: Mike Johnson (roundtable chair and JCOMM Observations coordinator), David Meldrum (DBCP chair), Graeme Ball (SOT chair), Howard Freeland and Dean Roemmich (Argo co-chairs), Mark Merrifield (GLOSS chair), Maria Hood (IOCCP coordinator), Uwe Send (OceanSITES co-chair), Ed Harrison (OOPC chair), Shubha Sathyendranath (POGO executive director), Eric Lindstrom (via telephone - JCOMM satellite expert), JCOMM secretariat.

Background: Representatives of the various observing programmes (those already involved in JCOMMOPS plus those that may benefit from future involvement) summarized their programme's requirements and future needs for an operational support centre. The former JCOMMOPS Coordinator also summarized the present status of JCOMMOPS including relevant background information. The meeting explored advantages and disadvantages of having a consolidated JCOMMOPS, and informal proposals from potential hosts (following a survey by JCOMM co-president Peter Dexter) were reviewed. A brainstorming session followed to examine whether or not an operational centre is important for an ocean observing system, and if so, what are the requirements for an integrated observational system and how an operational support centre can best meet those needs on an international basis in the future.

Discussion (general agreement unless noted):

1. There is value in an operational centre, although some disagreement on the definition of "operational". A support centre for the implementation of the observing programme will be essential to enable the sustained deployment of an ocean observing system over the next 5-10 years, and JCOMMOPS holds a seed for this evolution.

2. JCOMMOPS should be further developed to extend its responsibilities for other observing programmes beyond DBCP, SOT and Argo, including e.g., OceanSITES, IOCCP, GLOSS, and the POGO research cruise database.

3. The level of services provided by JCOMMOPS should be proportional to the level of commitments made by each programme/panel, with JCOMMOPs perhaps acting as a "black box" with two or more Technical Coordinators (TCs) providing services to multiple programmes/panels. For example, a TC could work half time for Argo and half-time for one or more other panels (e.g., SOT, OceanSITES), provided adequate funding was provided by each.

4. Each programme representative presented its requirements for an implementation support centre, and estimated future needs for a fully sustained observing system support at JCOMMOPS. It is essential that these requirements be refined and documented as part of the next steps in this process. Summary points include:

- Argo: TC (less than full-time) should be co-located with Argo PO Director (full-time). TC meets deployment notification requirements as specified in IOC-Resolution XX.6.

- OceanSITES: Cooperation and integration with JCOMMOPS could be cost-effective (e.g., TC could assist with tracking status of individual sites; pressuring operators to provide data and information; getting data from ARGO and onto GTS; acting as clearing house for technical information about sensors, handling, calibration, QC procedures; collecting information about planned cruises with mooring work). IOCCP: IOCCP neither has nor aims to have a separate

operational system; rather the goal is to get observations integrated into existing platforms and there may be a future role for JCOMMOPS in this. The current arrangement at IOC for IOCCP coordination has both advantages (e.g., Member States' concerns over data exchange, direct links to UN conventions and observing system development, direct links to National, Regional and World Data Center systems, and UN system visibility for big issues) and disadvantages (e.g., lack of necessary technical capabilities, financial inflexibility to implement activities, and precarious funding schemes for staff support.

- POGO cruise DB: A cost evaluation by JCOMMOPS has been provided subsequent to roundtable. However, there are other proposals beings evaluated and no decision has been made by POGO. NB: POGO estimated that half-time TC would be necessary (see table below), but that because this function would be primarily collecting information from POGO member institutes, that the TC could be recruited at a lower level than that required for DBCP or Argo.

- GLOSS: currently no need for a TC-type function within JCOMMOPS. There are some benefits in international technical coordination but precise needs have not been evaluated and much of the work is already being done at the University of Hawaii and by the Technical Secretary (IOC Thorkild Aarup).

- DBCP and SOT: JCOMMOPS support should be maintained at current level (see table).

5. For future (5-10 years) needs (summarized in table below), three working levels were introduced:

- 1 for high level programme managerial functions (e.g., Argo PO Director)
- 2 for mid-level type of coordination (e.g., current DBCP/SOT or Argo TC)
- 3 for information system operations (e.g., current CLS contribution to JCOMMOPS)

For the purpose of this exercise, JCOMMOPS would include at least levels 2 and 3; level 1 support needs to be further clarified and the participants did not yet elaborate whether e.g., Project Office functions should be included within JCOMMOPS or not. However, JCOMMOPS should include a managerial function (probably one person) if its functions expand to other programmes/panels. The following table summarizes estimates (again, this will need to be refined and documented) in required full-time employees.

level	DBCP	Argo	SOT	GLOSS	IOCCP	Ocean SITES	Cruise DB	total
1 (PO director/chair)		1			1	0.25		2.25 *
2 (user support)	0.7	0.7	0.5	0.1	0.5	0.5	0.5	3.5
3 (routine ops/IT)	0.2	0.3	0.2	0.1	0.2	0.2	0.2	1.3
total	0.9	2.0	0.7	0.1	1.7	0.95	0.7	7.05

6. A process should be started to thoroughly evaluate and enumerate the requirements for (i) a JCOMMOPS that can respond to the evolving needs for a sustained ocean observing programme, as well as (ii) the best host organization to meet these requirements. It would be preferable to co-locate within an operational centre but not within a service provider, although there was not unanimity on the last point. Both requirements documents should be as specific as possible, e.g., a requirement for the host to provide for level 3 support as well as provide either an Oracle database or funding for the transition to another database.

7. Concerns were expressed that moving JCOMMOPS have associated costs, both financial and in diverting the TC's attention from their normal day-to-day coordination work. It is essential to allow for a sufficient transition period, probably two years from the decision point, to ensure adequate continuity. Another concern regards the four-year UNESCO contract limit (terminating 06/2010) under which the current TC for DBCP and SOT is employed.

Funding:

There is general recognition that for the short-term, DBCP has a slight surplus as a result of a five-month gap in TC employment as well as a lower pay-scale for the new TC. It is possible that this cost-savings could be used to support a TC for another programme or be applied towards an eventual re-location and associated transition costs. However, only the DBCP can make decisions regarding the use of this surplus.

No new funding was identified for the medium- or long-term. The suggestion is for consolidated TC and IT support, with resource sharing across the programmes.

A dedicated trust fund for JCOMMOPS is highly desirable, and a proposal for same should be included in the next steps.

Next steps and time-line: The issue will be discussed at the October 2006 JCOMM Management and DBCP meetings, after which two requirements documents will be prepared for discussion and action at the April 2007 Observations Coordination Group meeting:

- Requirements for a JCOMMOPS that can respond to the evolving needs for a sustained ocean observing programme; needs to include detailed explanation of advantages of a consolidated JCOMMOPS.
- Requirements for JCOMMOPS host; needs to include both direct and in-kind support.

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APPENDIX D

Joint circular letter calling for Letters of Intent to host the Observing Programme Support Centre (OPSC)

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
COMMISSION OCÉANOGRAPHIQUE INTERGOUVERNEMENTALE
COMISIÓN OCEANOGRÁFICA INTERGUBERNAMENTAL
МЕЖПРАВИТЕЛЬСТВЕННАЯ ОКЕАНОГРАФИЧЕСКАЯ КОМИССИЯ

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Joint **WMO-IOC Circular Letter JCOMM No. 07-27** PARIS, 24 September 2007
(Available in English, French, Spanish and Russian) *

Annex: **1** (available in English only)

Subject: Announcement and Call for Letter of Intent to host a JCOMM Observing Programme Support Centre

Action required: All interested institutions are invited to submit a Letter of Intent to the JCOMM Secretariat **by 15 November 2007**

To: Member States of IOC (Action Addressees)
Permanent Representatives of Members of WMO (PR-6316)

Dear Sir/Madam,

Letters of Intent are solicited from institutions interested in hosting a Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) Observing Programme Support Centre (OPSC). Letters should include information as detailed in the attached "Announcement and Call for Letters of Intent", and should be submitted to the JCOMM Secretariat at either the IOC or WMO on or before 15 November 2007.

The JCOMM serves as the intergovernmental coordinating mechanism for implementation of the Global Ocean Observing System (GOOS). The JCOMM Observations Programme Area facilitates the implementation of the composite global ocean observing system as defined in the Global Climate Observing System (GCOS) *Implementation Plan for the Global Observing System for Climate in support of the UNFCCC* (GCOS-92). The ocean chapter of GCOS-92 has been endorsed as the ocean backbone of the Global Earth Observation System of System (GEOSS). This system is the foundation for ocean climate research and operational oceanography. Although designed to meet climate requirements, the system defined by GCOS-92 also supports global weather prediction, global and coastal ocean prediction, marine related multi-hazard warning systems, marine environmental monitoring, naval applications, and many other non-climate users.

* English version is being dispatched. Other versions will follow as soon as available

The JCOMM *in situ* Observing Platform Support Centre (JCOMMOPS) is currently hosted very ably by CLS (Collecte Localisation Satellites) in Toulouse, and serves three programmes cooperating to help implement elements of the global ocean observing system - the Data Buoy Cooperation Panel (DBCP), the Ship Observations Team (SOT), and the Argo Steering Team (AST). It is recognized that in order to fully implement a sustained global ocean observing system, an expanded technical support centre will be needed to serve the growing requirements of the DBCP, SOT, and AST, and in addition begin to serve the developing requirements of other international programmes, which are also working to coordinate elements of the global ocean observing system. This expansion would greatly enhance the implementation of GOOS by servicing all global observing components/elements with a system-wide approach. System-wide coordination, cooperation, and efficiencies would be improved by all systems working together to manage global implementation issues. This should include system performance monitoring, system evaluation, coordination of deployment opportunities, consolidated reporting, technical advice, and technical coordination to improve system efficiency and effectiveness.

We look forward to working with the JCOMM community on the further development of the necessary support mechanisms and coordination required for a full implementation of GOOS, and on the establishment of an Observing Programme Support Centre.

Yours faithfully,

(Patricio Bernal)
Executive Secretary IOC

(Hong Yan)
for the Secretary-General of WMO

cc: JCOMM Management Committee
JCOMM Members
JCOMM OCG Members
Permanent Delegations of IOC Member States to UNESCO

World Meteorological Organization **Intergovernmental Oceanographic Commission**

Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology

Announcement and Call for LETTERS OF INTENT

to host an international

Observing Programme Support Centre (OPSC)

Letters of Intent are solicited from institutions interested in hosting an international Observing Programme Support Centre (OPSC). The OPSC will include the existing JCOMM *in situ* Observing Platform Support Centre (JCOMMOPS) and in addition will serve the growing requirements of the several international programmes that are working to coordinate implementation of the sustained Global Ocean Observing System.

Framework for an OPSC

The Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) serves as the intergovernmental coordinating mechanism for implementation of the initial Global Ocean Observing System (GOOS) defined in the ocean chapter of the Global Climate Observing System (GCOS) *Implementation Plan for the Global Observing System for Climate in support of the UNFCCC* (GCOS-92). The ocean domain of GCOS-92 has been endorsed as the ocean backbone of the Global Earth Observation System of Systems (GEOSS) and provides the foundation for ocean climate research and operational oceanography. Although designed to meet climate requirements, the initial system defined by GCOS-92 also supports global weather prediction, global and coastal ocean prediction, marine related multi-hazard warning systems, marine environmental monitoring, naval applications, and many other non-climate users.

Description of an Expanded OPSC

The JCOMM *in situ* Observing Platform Support Centre (JCOMMOPS) is currently hosted very ably by CLS (Collecte Localisation Satellites) in Toulouse, and serves three programmes cooperating to help implement elements of the initial global ocean observing system -- the Data Buoy Cooperation Panel (DBCP), the Ship Observations Team (SOT), and the Argo Steering Team (AST). It is recognized that in order to fully implement a sustained global ocean observing system, an expanded technical support centre will be needed to serve the growing requirements of the DBCP, SOT, and AST, and in addition begin to serve the developing requirements of other international programmes, which are also working to coordinate elements of the global ocean observing system. This expansion will greatly enhance the implementation of GOOS by servicing all global observing components/elements with a system-wide approach. System-wide coordination, cooperation, and efficiencies will be improved by all programmes working together to manage global implementation issues. This cooperative support will include system performance monitoring, system evaluation, coordination of deployment opportunities,

consolidated reporting, technical advice, and coordination to improve system efficiency and effectiveness.

An expanded OPSC will provide synergies for functions that are now distributed (for example: (i) provide a central portal for documents on instrument evaluation and observational best practices; (ii) assistance with satellite data telecommunication; (iii) support data providers and data users across the whole ocean observing system; and (iv) maximize deployment opportunities and sharing of observing platform); and also provide a more integrated framework for deployment and further development of ocean observing networks. The long-term maintenance and sustainability of the global ocean observing system depends on the efficient use of existing resources, and an expanded OPSC will do much to rationalize and optimize the national contributions of the several Members/Member States that are working to cooperatively implement the global ocean observing system.

The envisioned OPSC will promote integration across elements of the *in situ* observing system, as well as provide sustained support to the individual components. A dynamic centre with high profile (both on the web and in person) is a key element in highlighting to the contributing Members/Members States, present and prospective, the benefits and value of sustained ocean observations. It will also assist in the cross-JCOMM coordination of the observation requirements from the Data Management and Services Program Areas, as well as coordination across the international science programmes working to help implement a global ocean observing system.

In particular the following programmes have expressed interest in possibly joining together with the DBCP, SOT, and Argo in establishing a cooperative international system-wide technical support capability: the Global Sea Level Observing System (GLOSS), the OceanSITES network of deepwater reference stations, the International Ocean Carbon Coordination Project (IOCCP), and the Partnership for Observation of the Global Oceans (POGO). In addition there is a need to improve coordination between satellite and *in situ* data systems, and there may be a role for maintaining information about the satellite constellation as well. There are currently two full-time technical coordinators at JCOMMOPS, and it is envisioned that an expanded OPSC would begin with at least 4 personnel, with a potential expansion to 8 full-time staff. Information about the work of the existing JCOMMOPS and the above-noted programmes can be found at their respective web sites:

www.jcommops.org/dbcp
www.jcommops.org/sot
argo.jcommops.org
www.gloss-sealevel.org
www.oceansites.org
www.ioccp.org/
www.ocean-partners.org

Specification of Potential Host Institution Capabilities and Infrastructure

Following is a description of the capabilities and infrastructure desired at institutions interested in proposing to host the OPSC. Institutions may propose to satisfy some or all of these requirements.

Programme

- Ongoing involvement in global oceanographic and marine meteorology activities; e.g., observing platform management, data collection and management, delivery of operational met-ocean services, and/or scientific research.

Location

- Location near an international airline hub, with direct and easily accessible ground transportation.
- Easy access from OPSC to national observing system managers, met-ocean services, and other users of ocean observations within the host country.
- Easy access for nationals of all contributing Members/Member States when making visits to OPSC (i.e., no significant delays due to visa applications or local security regulations).
- Nearby suitable hotels to service visitors and for hosting international conferences.

Infrastructure

- An operationally supported computer centre, including power, high internet band width, backup system, and remote access to servers.
- Initial space for four OPSC personnel; potential growth to include space for eight full-time employees; work space accessible to OPSC staff 24/7.
- Access to appropriate conference room facilities (including IT and administrative support) to hold technical workshops and meetings, ideally for 40 people.
- Access to data storage and server equipment, and be a holder of Oracle, ArcGIS licenses that would allow the Centre's use.
- Access to high-speed internet, local area network service and management, and firewall protection.
- Ability to provide updates/patches to the JCOMMOPS system as part of the host's routine system management, and provide IT support for system administration and management. The IT support and system administration and management should be responsive to the particular requirements of the Centre.
- Ability to assist with the possible relocation of the existing JCOMMOPS Information System
- Access to real-time data streams including WMO Information System (WIS)-GTS.

Financial and Administrative

- Ability to accept financial reimbursement from the WMO, IOC, and donor countries at a variety of times of year (due to the differing financial years of donor institutions) for OPSC operating costs.
- Mechanism to execute procurements on behalf of OPSC.
- Ability to assist with relocation of existing JCOMMOPS personnel (e.g., work permits, relocation advice).
- Ability to employ and support (e.g., travel) international staff working at the OPSC.

Review of Letters of Intent

The Letters of Intent will be reviewed by a Committee established by the JCOMM co-presidents, which will include participation from the IOC and WMO Secretariats, and the programme implementation panels planning to contribute resources to the support of the OPSC. The review will take into account the degree to which the desired OPSC specifications (above) are met, as well as the institution's ability/willingness to provide in-kind contributions to help support the operations of the Centre. Based on the successful outcome of this review, the JCOMM co-presidents will encourage a full proposal from the institution(s) considered most responsive.

Eligibility and Submission of Letters of Intent

All interested National meteorological and hydrological services, National oceanographic centres, and other met-ocean institutions in Members/Member States are eligible to submit Letters of Intent. Preference will be given to institutions that are already involved with JCOMM-related operations and

are active participants in the JCOMM affiliated programme implementation panels noted above. The following information should be included in each Letter of Intent:

- Evidence of capability – please specify, for each of the specifications listed above, what kind of infrastructure and facilities will be made available to the Centre. Some of the specifications are no-cost attributes, and some are infrastructure requirements that will have cost. It is expected that most proposing institutions will be able/willing to offer some in-kind contributions to the operations and maintenance of the OPSC. This could also include support services such as Information Technology and administrative assistance. Letters of Intent should indicate where reimbursement will be requested from JCOMM versus where in-kind support (no cost to JCOMM) will be offered by the host.
- Rationale and vision for OPSC – please include an explanation of how an OPSC would contribute to the operations of the host institution and how the host institution's operations would contribute to the work of the OPSC.
- Other advantages, capabilities, and rationale for locating the OPSC at the proposed institution – please include other information about the host institution that may be relevant to this solicitation.

Deadline and Submission

Institutions interested in hosting an international Observing Programme Support Centre (OPSC) should submit a Letter of Intent to the JCOMM Secretariat at either the IOC or WMO on or before 15 November 2007.

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APPENDIX E

PROPOSED NEW TERMS OF REFERENCE FOR THE expanded JCOMM IN SITU OBSERVATIONS PROGRAMME SUPPORT CENTRE (JCOMMOPS)

DRAFT RECOMMENDATION xxx (JCOMM-III) TERMS OF REFERENCE FOR THE expanded JCOMM IN SITU OBSERVATIONS PROGRAMME SUPPORT CENTRE (JCOMMOPS)

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

NOTING:

(1) The JCOMM Terms of Reference and especially those related to the development of observing networks

(2) Recommendation 4 (JCOMM-II) – New Terms of Reference for the JCOMM *in situ* Observing Platform Support Centre (JCOMMOPS)

(3) The final report of the fifth Session of the JCOMM Management Committee, Geneva, Switzerland, 5-7 October 2006, JCOMM Meeting Report No. 45

(4) The final report of the twenty-second Session of the Data Buoy Cooperation Panel (DBCP), La Jolla, USA, October 2006, JCOMM Meeting Report No. 42

(5) The final report of the fourth Session of the JCOMM Ship Observations Team (SOT), Geneva, Switzerland, 16-21 April 2007, JCOMM Meeting Report No. 52

(6) The final report of the second session of the Observations Coordination Group, JCOMM Meeting Report No. 53

(7) The final report of the twenty third session of the Data Buoy Cooperation Panel (DBCP), Jeju, Republic of Korea, 15-19 October 2007, JCOMM Meeting Report No. 54

(8) The final report of the sixth Session of the JCOMM Management Committee, Paris, France, 3-6 December 2007, JCOMM Meeting Report No. 55

(9) The final report of the twenty-fourth Session of the Data Buoy Cooperation Panel, Cape Town, Republic of South Africa, 13-16 October 2008, JCOMM Meeting Report No. 61

(10) The final report of the seventh Session of the JCOMM Management Committee, Melbourne, Australia, 8-12 December 2008, JCOMM Meeting Report No. 62

(11) The joint WMO-IOC Circular Letter JCOMM No. 07-27 dated 24 September 2007 with the announcement and call for Letters of Intent to host an Observing Programme support Centre (OPSC), the resulting evaluation process of the Letters of Intent, and the recommendation from the OPSC evaluation Committee

(12) The decision by the WMO Secretary General, and the IOC Executive Secretary regarding the institution selected to host the OPSC.

CONSIDERING:

(1) The requirement for JCOMM to be active in a process in which oceanographic and marine meteorological observing system elements make the transition to a fully integrated system;

(2) The need to integrate at the international level a number of activities regarding operation and implementation of *in situ* marine observing systems;

(3) The success of the JCOMM *in situ* Observing Platform Support Centre (JCOMMOPS) development and work, based on DBCP, SOT, and Argo technical coordination facilities, thanks to resources provided by Members/Member States through the DBCP, SOT, and Argo;

(4) The potential value of extending JCOMMOPS activities to include services to support coordination for the Ocean Sustained Interdisciplinary Timeseries Environment observation System (OceanSITES), the International Ocean Carbon Coordination Project (IOCCP), and the Global Sea-level Observing System (GLOSS);

(5) The recommendation by the Management Committee to consider enhancing links to the satellite information services.

RECOMMENDS:

(1) That the JCOMMOPS should expand its activities and new Terms of Reference proposed to enable (i) the provision of support to the DBCP, Argo, the SOT, the IOCCP, GLOSS, and the OceanSITES Coordination, and (ii) the dissemination on the Web site of information on Satellite Data Requirements, and satellite information services;

(2) That the Terms of Reference of the expanded JCOMMOPS should be as given in the annex to this recommendation;

(3) That JCOMMOPS should be based in Toulouse, under the day-to-day supervision of the WMO and IOC Secretariats;

REQUESTS Members/Member States, where possible, to commit the resources required to support JCOMMOPS.

NOTE: This recommendation replaces Recommendation 4 (JCOMM-II), which is no longer in force.

ANNEX TO RECOMMENDATION XXX (JCOMM-III)

TERMS OF REFERENCE FOR THE expanded JCOMM IN SITU OBSERVATIONS PROGRAMME SUPPORT CENTRE (JCOMMOPS)

Under the overall guidance of the JCOMM Observations Coordination Group and following the direction of the Data Buoy Cooperation Panel, the Ship Observations Team, the Argo Steering Team, the OceanSITES Science Team, the Global Sea Level Observing System Group of Experts (GLOSS), the International Ocean Carbon Coordination Project (IOOCP), and the Cross-cutting Team on Satellite Data Requirements, the JCOMMOPS shall promote an integrated framework for deployment and further development of ocean observing networks. Specifically, JCOMMOPS shall:

(i) Act as a focal point for implementation and coordination of observing platforms guided by the above programmes, encourage real-time distribution of data, and provide assistance to platform operators for free and unrestricted exchange of data by, inter alia, providing information on telecommunications systems, clarifying and resolving issues between platform operators and telecommunications system operators, and encouraging the implementation of standard formats;

(ii) Maintain information on relevant data requirements for observations in support of GOOS, GCOS, and the WWW as provided by the appropriate international scientific panels, the Cross-cutting Team on Satellite Data Requirements, and other JCOMM Expert Teams and Groups, and routinely provide information on the functional status of the observing systems;

(iii) Provide a gateway for information on instrumentation deployment and servicing opportunities, and on operator contact information, to maximize deployment opportunities and sharing of observing platforms; and

(iv) Provide information on the observational program, including on instrumentation, on instrument evaluation and observational best practices, and on data quality.
