**9th Session of the JCOMM Observations Coordination Group**

**14 - 17th May 2018, Brest, France**

**Report Title: Ship Observations Team**

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**1. SUMMARY**

This report continues to focus on the outcomes and recommendations relevant to OCG from the 9th Session of the Ship Observation Team held in London, UK (26-30 March 2017) and actions posed to SOT at OCG-8 and JCOMM-5. It also addresses the specific information requested by the OCG in preparation for OCG-9.

**2. REPORT CONTENT**

2.1 SOT Leadership

Under the new Executive Board (EB) structure, the SOT EB has been meeting frequently, with three teleconference calls since December, 2017. A fourth call is scheduled for just prior to the OCG-9 meeting. These frequent meetings are leading to more coordination and communication among the group. The current structure and chairs of the SOT EB are:

* SOT
	+ Darin Figurskey, Chair (United States); Shawn Smith, acting Vice Chair (United States).
* VOS Panel
	+ Henry Kleta, Chair (Germany); Sitik Chang, Vice Chair (China).
* SOOP Panel
	+ Rebecca Cowley, Chair (Australia); Gustavo Goni, Vice Chair (United States).
* WMO Secretariat
* IOC Secretariat
* SOT Technical Coordinator

In addition, there are several task teams (TT):

* TT-Recruitment, Promotion, and Training
	+ Joel Cabrie, Chair (Australia); Mardene DeVilliers, Vice Chair (South Africa)
* TT-Unique ID Observation Scheme
	+ David Berry, Chair (United Kingdom)
* TT-SOOP Metadata
	+ Joaquin Trinanes, Chair (United States)
* TT-High Resolution Marine Meteorology
	+ Shawn Smith, Chair (United States)
* TT-Instrument Standards and Satellite Communications Systems
	+ Jean-Baptiste Cohuet, Chair (France)
* TT-VOS Metadata
	+ Emma Steventon, Chair (United Kingdom)
* TT-Key Performance Indicators
	+ Paul Poli, Chair (France)
* TT-Call Sign Masking and Encoding
	+ Eric Freeman, Chair (United States)
* TT-ASAP
	+ Rudolf Krockauer, Chair (Germany); Henry Kleta, Vice Chair (Germany)

Task team leadership will be represented on EB calls with an expected frequency of at least twice annually.

2.2 SOT Governance

From SOT-9, SOT agreed to establish a formal SOT Executive Board (SOT-EB) and a broader

SOT Executive Committee (SOT-EC). The purpose of the SOT-EC is to ensure the SOT panel leads and TT Chairs are in communication and up-to-date with SOT activities. The SOT-EC will also facilitate succession planning, budgets, meetings, and documentation relevant to SOT. The full SOT-EC includes members of the SOT-EB plus the chairpersons of all SOT task teams.

The SOT-EC will:

1. Seek guidance from the SOT Panel at its regular sessions regarding specific issues to be addressed by the Executive Board or Committee during the intersessional period;
2. Review the SOT high-level documents (including operating principles), as required, to ensure currency and compliance with ongoing activities and users' requirements;
3. Confer regularly by electronic communications and exploit opportunities afforded by attendance at other meetings for face-to-face collaboration;
4. Help to organize and conduct regular Session every two years, following an agenda drawn up by the SOT Chairperson;
5. Consult with Panel members and the Chairpersons of the SOT Task Teams during the intersessional period as required;
6. Report its activities to the SOT at its regular Session, and throughout the intersessional period as appropriate; and,
7. Conductelections for the chairperson and vice chairpersons of SOT, VOSP, and SOOPIP at its regular sessions.

The SOT-EB will:

1. Act promptly to deal with any administrative, financial and planning issues and opportunities that might arise, within the guidelines established and reviewed regularly by the SOT Team;
2. Authorize the SOT Chairperson to commit any expenditure necessary for the resolution of these issues and the promotion of the Panel’s aims and objectives, up to the maximum amounts that might be agreed in advance by the Team at its regular session; and,
3. Set working priorities for the Technical Coordinator according to the SOT recommendations at its regular sessions, and provide further guidance during the SOT intersessional period.

The proposed change has approved by JCOMM. Next steps are for the SOT-EB to further develop its terms of reference and governance documents with guidance from the secretariat. The EB has discussed looking to the DBCP governance structure and voting rules as a starting point for developing SOT-EB governance.

2.3 Coordination with Maersk regarding continued involvement in VOS

In late March, the SOT learned that Maersk advised its vessels to discontinue transmission of weather observations using TurboWin. Maersk is conducting an IT modernization project. The goal is to maintain control of all software used aboard a vessel.

The SOT Chair had a conversation with the Nautical Superintendent for Maersk Line, and electronic mail correspondence was sent to Maersk at the Superintendent’s suggestion. In the correspondence, it was noted that Maersk has been an important partner in the Voluntary Observing Ship program and worldwide weather observation efforts for a long time, with excellent quality of observations from the over 100 Maersk participating vessels. Maersk's ship-based meteorological reports provide critical real-time feedback on ocean weather conditions to weather forecasters who use the data to improve the quality of the forecasts and warnings issued through the Global Maritime Distress and Safety System (GMDSS) for mariners at sea. Maersk's ship-based meteorological reports, therefore, form an important element in ensuring the safety of ships, their crews, and their cargoes.

It was further noted that Maersk's efforts over the years have supported the International Convention for the Safety of Life at Sea (SOLAS), which states provisions for recording and reporting observations from ships. Circular 1293 of the Maritime Safety Committee of the International Maritime Organization emphasizes the importance of participation in the World Meteorological Organization's Voluntary Observing Ships scheme. The SOT described how it is very interested in working with Maersk representatives to understand how it can help continue weather observations from Maersk that are vital for the safety of life at sea, learning more about Maersk's concerns over the use of TurboWin, and how TurboWin could fit in with Maersk's IT modernization effort. The SOT contact for TurboWin was Martin Stam of the Royal Netherlands Meteorological Institute.

2.4 SOT Budget

Based on the latest information available, anticipated budget for dedicated SOT activities in 2018 from the DBCP trust fund is about US$ 14,500. There is another US$8000 for technical coordinator travel, and about CHF12,200 carried forward from the ASAP trust fund, as managed by the Australian Bureau of Meteorology. Current funding priorities are:

1. PMO buddy program or exchange
	1. At the past two SOT meetings, consideration has been given to having a PMO buddy program or exchange. There would not be enough money to fully fund a program like this. However, available funds could be divided up into co-investments for interested PMOs.
	2. Important due to recent changes to the SOT ID scheme.
	3. This program could also support PMO exchanges with countries looking to initiate a VOS, SOOP, or ASAP program.
2. Attendance at OceanObs19 in Hawai’i in September, 2019.
	1. An opportunity to build a greater partnership between SOT and GOOS.
	2. OceanObs19 is designed to further develop effective strategies for a sustained, multidisciplinary and integrated ocean observing system, and to better connect user communities and observers.
3. Development of a web site for third party vessels to self-recruit and provide necessary metadata, etc.
4. Funding information technology services through CLS.
	1. It is understood the agreement needs to be renewed.
		1. An increase of $7000-$10,000 annually is expected.
5. Coordination with Maersk on participation in VOS and ongoing concerns by Maersk regarding IT security.

Recently, the SOT has undertaken an effort to dedicate resources to administer and troubleshoot the Pub47 E-SURFMAR database that now resides at JCOMMOPS. See section 3.5. In addition, E-SURFMAR has increased its contribution (from Euro 50K to 53K in 2018) to DBCP TF in support of JCOMMOPS. DBCP and SOT. Part of this contribution will facilitate for the transfer and transition of the Pub47 database from the E-SURFMAR database to JCOMMOPS, and evolution of the JCOMMOPS database. Operations of Pub47 is done as a collaboration between WMO, SOT and Members/Member States contributing to the fund.

2.5 SOT-ID Scheme and Changes to Ship Masking Scheme, Terminology

Recall from SOT-9 that the SOT recommended to move forward with the implementation of a scheme for assigning new seven digit WIGOS SOT identifiers (SOT-ID), and to discontinue development and/or use of ship identifier masking and encode/decode schemes. The report of OCG-8 concurred with SOT-9 recommendations in this regard. SOT has prepared Draft Resolution 7.5.1/1 (EC-70), which decides to no longer keep in force Resolution 27 (EC-59). EC-70 requests members to discontinue using existing ship identifier masking and encode/decode schemes, and to use the new proposed SOT-ID scheme instead, and also requests JCOMM to prepare a transition plan with instructions on timing and procedure to move to the new ID scheme. EC-70 does recognize that some nations (i.e. Japan) have yet to negotiate the transition from ship identifier masking to the new SOT-ID scheme with their national authorities.

Decision 7.3/1 at JCOMM-5 included terminology for “platforms”, “stations”, etc. In the effort of metadata migration as noted in 2.6 below, the SOT has concluded that some terminology can be confusing. What some refer to as a “station”, others refer to as a “platform”, and for some the “hosting entity” is also called a “platform”. There is a clear need for one agreed on common terminology that includes other groups such as WIGOS or CIMO.

2.6 VOS Class Reduction

Recall from SOT-9 that the SOT recommended to reduce the number of VOS classes from ten to three, with the three classes of VOS as follows:

1. NMHS Operated
	1. Ships that are recruited by a national meteorological service which also supplies the necessary observing instruments, sensors and equipment.
2. NMHS Cooperative
	1. Ships that are recruited by a national meteorological service but use their own instruments, sensors and equipment.
3. Independent
	1. Third party support ships that are not recruited by a national meteorological service but contribute to the VOS Scheme.

The SOT is working to fully define the new classes, propose required changes to VOS metadata formats and reporting procedures for PMOs, and make proposals on how the new third-party ships should be administered and supported in the future. At a minimum, this would require changes to WMO-No. 544, WMO-No. 488, and WMO-No. 306.

2.7 JCOMM Database for VOS Metadata

Work has been ongoing to migrate metadata from E-SURFMAR to JCOMMOPS. Key metadata such as sensors are gradually updated and harmonized in the transition from E-SURFMAR to JCOMMOPS. Details still need to be defined as the former E-SURFMAR database solely kept pub47 metadata, and the future database shall keep WIGOS compliant metadata. A former contractor helped to migrate the E-SURFACE VOS metadata database to the JCOMMOPS infrastructure.

The transition was not fully completed before the contractor left JCOMMOPS March 1. Since the contractor’s departure, JCOMMOPS has not had the staff support for pub47 metadata. Documentation was developed by the former contractor to allow individuals to update their metadata on [http://sot.jcommops.org](http://sot.jcommops.org/). Unfortunately this does not consider existing dataflows of Pub47 data such as data pulled from GCCs and other DACs. There is a current contract with former SOT member Sarah North to work with SOT metadata on a part-time basis, but she can not address IT or database issues.

Instrument Standards and Satellite Communications Task Team Chair Jean-Baptiste Cohuet did a test of creating a VOS automated weather station in the JCOMMOPS database March 30. Unfortunately, the test was not successful. Creation of the ship in the database could not be validated, and some information was missing compared to what would be needed based on Pub47. There were suggestions for improving filters or categories for easier use.

JCOMMOPS reported, on April 3, that there are hidden bugs on the VOS website. JCOMMOPS requires feedback on the web interface and key reference tables. These items are being added to the JCOMMOPS workplan. JCOMMOPS will retain the current, operational VOS database (E-SURFMAR) until the new metadata scheme is fully defined (by SOT Metadata Task Team) and JCOMMOPS is meeting all requirements of the new database.

With the full migration from the E-SURFMAR database to JCOMMOPS taking place, there is a definite need for user training with support from the JCOMMOPS Technical Coordinator to avoid gaps and errors in the metadata. Metadata content help is also needed, which is what Sarah North’s contract work focuses on. The long-term goal is to ensure that the JCOMMOPS database has the most current, complete data available. The primary challenges to be addressed with the JCOMM database are (1) harmonizing the terminology across the networks and (2) ensuring that JCOMMOPS has sufficient financial support for IT personnel required to maintain the DB and its content.

At its April 10 conference call, the Task Team for VOS Metadata met with the goal to finalize VOS metadata requirements. Short-term actions are for the team to review proposed SOT metadata fields to determine whether each field is required for VOS and/or WIGOS. There may be potential for fields to be derived and not needed to be filled in by operators.

2.8 Key Performance Indicators

The first conference call of the SOT Key Performance Indicators Task Team was held February 19. The team has developed a draft of SOT key performance indicators. The draft can be found at:

<https://docs.google.com/document/d/10_yO5ZtkZz-mXMpyoQODIVo0GUMGoOfsJjLTfSW-868/edit#heading=h.ifwysjhpl0h>

The draft key performance indicators includes those for SOOP (CO2, biochemistry, XBT), GO-SHIP, VOS, and ASAP. The task team continues work to define the useful key performance indicators to show the status of the SOT networks.

2.9 Recruitment, Promotion, and Training

A conference call of the SOT Recruitment, Promotion, and Training Task Team (TT-RPT) was held March 20. A topic of discussion was recognition of vessels. It was agreed that SOT will retain the SOT certificates, and eliminate the VOSClim certificates as there will be no VOSClim class in the future. Signatories for SOT can be the SOT Chair, Vice Chair, or VOS Panel Chair. The second signatory will be the national representative, such as the Port Meteorological Officer or other representative as determined by the NMHS.

The Government of Brazil, through a lieutenant of the Brazilian Navy and a former member of the Brazilian Meteorological Service, reached out to the SOT January 30 to learn about implementing the VOS Program in Brazil. Primary interest was in implementing a system on ships to receive weather information automatically. There was also interest in learning more about calibration barometers. Members of SOT reached out to the Brazilian contact sharing information about automated weather systems and barometers, including a specific contact in Brazil for a barometer calibration laboratory.

In addition, in late March, a representative for the Mediterranean Shipping Company’s philanthropic arm (MSCFoundation) became interested in involving its ships in ocean observations. The interest came through the OCG, then passed to the SOT. Once a contact for MSC was determined, that contact was passed along to JCOMMOPS, the SOT VOS Panel Chair, and the TT-RPT for follow-up.

2.10 SOT Coordination from JCOMM

There have been several instances of short-fused requests for information from the SOT, or decisions made from which SOT input would be important. For example, the CIMO-16/Doc.4(2) “Measurement and Reporting of Wind” was discussed and agreed on during CIMO-16. While ship measurements are handled in that document, no input was requested from the SOT. In addition, requests for comment for the CIMO guide were on a relatively short deadline around the end of the calendar year and many holidays.

In addition, the seventh session of the Executive Council Panel of Experts on Polar and High Mountain Observations, Research and Services (EC-PHORS), held in Ushuaia, March 21 - 24, 2017 agreed on action item 46: “Recommend the collaboration with IMO to effect changes in Polar Code to make cryosphere and weather observations mandatory.” No input was requested from the SOT.

2.11 Cross-Network Coordination

An early draft of IOC Dec. EC-LI/4.8, in circular letter number 2714, “Evolving capabilities of the Argo profiling float network”, notes the following: “5. Agrees to the continued use of IOC's ‘Guidelines for the Implementation of Resolution XX-6 of the IOC Assembly Regarding the Deployment of Profiling Floats in the High Seas within the Framework of the Argo Programme’ (IOC Resolution ECXLI.4) for notification to coastal Member States of all Argo profiling floats likely to enter their EEZ, including those measuring these new variables; 6. Recognizing the value of Argo for responding to global challenges on climate variability and change and its role in underpinning ocean and marine services, encourages all IOC Member States to further support and participate in the implementation of the Argo programme, and to facilitate the deployment of Argo floats within their areas of national jurisdiction.” The SOT is aware of the issue for the Argo network, but there are still EEZ questions for ships, including for the SOOP. There is no clear statement what is regarded as marine scientific research (MSR), which has to be applied for according to UNCLOS. Formalizing an agreement to legalize VOS measurements within EEZs is of high importance and would improve data acquisition to support SOLAS, etc. in those regions.

Cross-network issues for SOOP are shipping opportunities for undersampled lines, and also to maintain existing lines as ships come and go. The SOOP generally manages it fairly well within the community and with the Argo community as both programs have a lot of overlap.

Following the JCOMM-5 report, current terms of reference should be in parallel in OPA. There are no official documents or terms of reference that the SOT needs to go through the OCG to raise issues to JCOMM.

Sections 3.2, 3.8, and 3.9 as noted below provide other, expected opportunities for cross-network coordination.

2.11 ASAP

The European (EUMETNET) E-ASAP fleet started to replace the generic E-ASAP station identifiers by seven digit SOT-ID's in September, 2017. The migration to SOT identifiers shall be completed by summer 2018. All stations in the E-ASAP fleet transmit BUFR messages only. There are no longer any TEMP messages.

The E-ASAP fleet (18 ships) covers the north Atlantic Ocean and is the only ASAP fleet worldwide which is mainly based on merchant ships. Additionally, there are two Japanese ships and one German research ship providing radiosoundings on a regular basis.

**3. DECISIONS, ACTIONS and RECOMMENDATIONS**

3.1 Governance

With the SOT-EB concept approved by JCOMM, the SOT needs to draft an operating principles document, and other documents as required by the secretariat. This document is to include terms and election of SOT-EB members, along with voting procedures. Current considerations are to follow closely similar provisions in the Data Buoy Cooperative Panel (DBCP) terms of reference.

3.2 Budget

The SOT will develop a spending plan by the summer, 2018, aligned with the aforementioned priorities, or to include any guidance by the OCG.

Based on discussion in section 2.3, the SOT Executive Board would benefit from a greater working knowledge, such as through a shared spreadsheet, detailing the funds available to the SOT and how these funds are targeted for allocation. SOT has been notified through the Secretariat that there are new terms of reference of the DBCP trust fund, approved by OCG and DBCP Chairs. SOT requests that OCG, SOT and DBCP discuss and agree on each group’s respective budgets using the trust fund.

3.3 VOS Class Reduction

SOT is currently working to develop the required changes to the metadata structure. When that is fully implemented, descriptive paperwork and procedures will follow. The SOT VOS Panel in cooperation with TT-VOS Metadata and TT-RPT will lead these issues.

The SOT requests that JCOMMOPS ensures old metadata is transferred. Class one and two vessels will be transferred first. Independent (third party) vessel transfers will follow later. The SOT requests that a web-based system be resourced and created to allow vessels to enter metadata.

3.4 JCOMM Database for VOS Metadata

The SOT recommends that the OCG support JCOMMOPS with the resources to provide for a sustainable VOS metadata database, and that the VOS metadata database continue to be updated until there is a stable and validated tool to create new ships, along with generating the Pub47. Document feeds from metadata need to be accurate.

The SOT also recommends the revision of the JCOMM decision 7.3/3 to note that the SOT did not recommend discontinuing the Pub47. The present and old versions need to be retained. Those versions should also be frozen and archived, pending their replacement by the JCOMMOPS database.

It is anticipated that upon the return of the full-time technical coordinator, the coordinator will help lead improvement of the metadata information situation. The SOT would like to stress the value of dedicated technical coordinators to leading daily tasks (those on a fast time scale) and for leadership purposes (items over longer time scales). A coordinator with sufficient information technology skills is required to maintain the database and the web interface. As the demands on the TCs grow (e.g., working to recruit vessels to support observations and deployments), there is becoming a need for a separation between IT staff needs and the TC role within JCOMMOPS. It is likely that a separate full time IT person and full time SOT/GO-SHIP TC will be needed to provide the services required by the ship-based observing communities.

With the WIGOS initiative, WMO is promoting integration of the marine observing platform metadata (including Pub47 for VOS ships) into WIGOS metadata and making them available through OSCAR system. While SOT and its members have agreed to replace Pub47 with a more robust and operational database (beginning with the E-SURFMAR database to then be transitions to JCOMMOPS), a question exists as to how to continually fund the operational Pub47 DB at JCOMMOPS. OCG must consider the issues of agreeing to changes to the operational structure of SOT and other networks (e.g., WIGOS requirements) without considering the operational costs of such changes (basically who pays for it all). SOT also requests that historical Pub47 records be retained and archived, as was decided at JCOMM-5. Pub47 records must also be easily accessible.

In the meantime, the SOT is coordinating with the Secretariat to source funding on a short-term, part-time contract for the continued operation of the ESURFMAR VOS Metadata tool. To address the issue to make this database operational for users, additional IT resources are required, and SOT initiated a contract to:

* Fix the technical issues with E-Surfmar Pub47 database that resides in JCOMMOPS in existing format;
* Update the database with new VOS metadata in close cooperation with JCOMMOPS IT;
* Train the SOT TC in SQL queries and other elements to take over and maintain the database upon his return in July; and,
* By the end of the contract, prepare a summary report including instructions on how to upload the Pub47 database and on lessons learned and recommendations to maintain the database.

3.5 JCOMM Support for Key Performance Indicators

The SOT TT-KPI, in order to move to the next stage in KPI development before SOT-10, is to ensure that JCOMMOPS can compute all the indicators the task team is proposing. Sufficient JCOMMOPS resources, including the time of a dedicated technical coordinator, is essential for this to occur.

3.6 SOT Coordination with JCOMM

The SOT recommends that networks should be represented at JCOMM meetings, as it would be much more effective if representatives from networks are present to be able to answer emerging questions. It is recommended, also, that requests for information be delivered to SOT (and other panels) at least three weeks prior to the due date for information required by the requestor. Furthermore, there needs to be be clear documentation of the approvals process throughout JCOMM, with a request for the OCG for a timeline to document its role within OPA and how approvals of items from SOT, DBCP, and other networks flow through OCG and to JCOMM. SOT recommends to amend the TORs of OCG and SOT accordingly (i.e., suggested by the German JCOMM delegation, see Annex II.).

3.7 Data Acquisition in EEZs

The SOT recommends that the OCG play a role in future efforts through any GOOS task team to monitor EEZ observing concerns (i.e. based on UNCLOS) of other global networks, working with the IOC on how the issues might be brought to, and resolved through, the member states. It is assumed the reaction to the first Argo initiative will inform this process. Additionally, the SOOP, regarding EEZ deployments for XBT, needs clarity on the issue through available documentation as the SOOP principals get numerous questions on this and it is uncertain where to go to find the applicable information.

3.8 Metadata Nomenclature

The SOT recommends that the nomenclature be revisited for such items as “host”, “platform”, and “station”, with coordination across the OCG and to be finalized at or before SOT-10.

**Annex I - Status of OCG-8 Actions for SOT.**

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| --- | --- | --- | --- | --- | --- | --- |
| **13** | **Action** | SOT to circulate draft of ship forum report to other networks to see if want to join the proposed ship forum team. | Emma Heslop | Forward report & gain feedback | May/June 2017 | 4.1.3 |

STATUS: DONE

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| **30** | **Action** | Emma to circulate draft list of cross network issues, cross-referenced with OCG-8 actions and get feedback on outstanding issues, priorities and next steps. This will be discussed at next OCG Roundtable in order to initiate further OCG actions to address these issues.  | Emma Heslop, networks | Discuss at next OCG roundtable or provide feedback | June 2017 | 4.3 |

STATUS: SOT Vice-Chair participated in follow-up round table in 2017. No follow-up actions other than to comment on what it means to be an OCG network. There are some concerns from SOT regarding terminology (OCG vs OPA) network, so some discussion of the organization of JCOMM is needed.

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| **35** | **Action** | Networks to identify contacts to work with Juliet Hermes to identify key S&BP documents.  | Network chairs | Names of contacts provided to Juliet | June 2017 | 6.1 |

STATUS: Vice Chair provided list of contact to Juliet via email.

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| --- | --- | --- | --- | --- | --- | --- |
| **39** | **Action** | Organize a specific JCOMMOPS budget call in the next 6 weeks (once networks have the chance to digest JCOMMOCG information post OCG-8). Purpose of call to a) review budget and clarify any outstanding issues, b) review/plan FY2017 budget, c) identify actions moving forward (Emma to check access to all documentation – organise with JCOMMOPS) | Networks, OCG exec & secretariat, JCOMMOPS | Call resolve outstanding issues, 2017 budget, next steps | By mid July 2017 | 7.2 |

STATUS: Chair, Vice Chair participated in several JCOMMOPS budget calls in the last year. Still some issues to be addressed, but these can be raised in JCOMMOPS budget session at OCG-9.

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| **42** | **Action** | Network chairs to provide a single 2-dimensional indicator (status and trend) for the report card, with an accompanying description of what this indicator represents. Indicators should be defensible and repeatable. This background material will be used online to add detail and depth to the single indicator. Opportunity to show the more subtle variation in network status. | Network chairs | Indicators provided | End of June | 7.3 |

STATUS: Pending. SOT TT-KPI is evaluating indicators, but still have no final KPIs. Initial KPI template is linked to this report.

**Annex II - Suggested changes to SOT and OCG TORs made by the german JCOMM delegation.**

TORs of OPA / OCG and SOT do not show the structure in use.

I.e. all recommendations etc from SOT to JCOMM have to go through OCG. That is not covered by any TOR, nor anywhere else documented.

Suggestion:

change SOT TOR (g)

(g) Liaise and coordinate as necessary with JCOMM Programme Areas and expert teams, relevant Technical Commissions , executive bodies, working groups, and Global Climate Observing System (GCOS), Global Ocean Observing System (GOOS), as well as with other interested parties, such as the International Maritime Organisation (IMO) and other relevant international organizations;

to

(g) Liaise and coordinate via JCOMM OCG as necessary with JCOMM Programme Areas and expert teams, relevant Technical Commissions , executive bodies, working groups, and Global Climate Observing System (GCOS), Global Ocean Observing System (GOOS), as well as with other interested parties, such as the International Maritime Organisation (IMO) and other relevant international organizations, report via JCOMM OCG to JCOMM on relevant issues;

change OCG TOR (b)

(b) Provide advice to JCOMM and to Observations Teams on possible solutions for newly identified requirements, consulting, as appropriate, with relevant scientific groups, the Commission for Basic Systems (CBS), and the Commission for Instruments and Methods of Observation (CIMO);

to

(b) Act as steering group to the Observations Teams, provide advice to JCOMM and to Observations Teams on possible solutions for newly identified requirements, consulting, as appropriate, with relevant scientific groups, the Commission for Basic Systems (CBS), and the Commission for Instruments and Methods of Observation (CIMO);