

**WORLD METEOROLOGICAL ORGANIZATION**

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**COMMISSION FOR BASIC SYSTEMS**  
OPEN PROGRAMMME AREA GROUP ON  
INTEGRATED OBSERVING SYSTEMS

ITEM: 2

**INTER PROGRAMME EXPERT TEAM ON  
OBSERVING SYSTEM DESIGN AND EVOLUTION  
(IPET-OSDE)  
*First Session***

Original: ENGLISH

GENEVA, SWITZERLAND, 31 MARCH – 3 APRIL 2014

## **REPORT OF THE CHAIRPERSON**

*(Submitted by John Eyre (United Kingdom))*

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### **SUMMARY AND PURPOSE OF DOCUMENT**

The document provides a summary of the role of the new Inter Programme Expert Team on Observing System Design and Evolution (IPET-OSDE) and describes its relationship to some previous and current WMO activities. It summarizes some recent activities relevant to the work of the team. It also provides guidance from the Chairperson on key issues to be addressed at the team's first meeting.

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### **ACTION PROPOSED**

The Meeting is invited to note the information contained in this document when discussing how it organises its work and formulates its recommendations.

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**References:** Eyre et al 2013, Community White Paper on WMO CBS activities relevant to observations in the Arctic presented at the First Arctic Observing Summit (AOS-1), Vancouver, Canada, 30 April – 2 May 2013  
[http://www.wmo.int/pages/prog/www/OSY/Meetings/IPET-OSDE1/documents/AOS1-Eyre\\_et\\_al\\_WMO\\_activities.pdf](http://www.wmo.int/pages/prog/www/OSY/Meetings/IPET-OSDE1/documents/AOS1-Eyre_et_al_WMO_activities.pdf)

**Appendix:** A. WMO CBS IPET-OSDE: Terms of Reference  
B. WMO CBS IPET-OSDE: Work Plan

## DISCUSSION

1. The Inter Programme Expert Team on Observing System Design and Evolution (IPET-OSDE) was established by the Commission for Basic Systems (CBS) at its 15<sup>th</sup> Session (Jakarta, Indonesia, 10-15 September 2012). The IPET-OSDE is established as a Team under the Open Programme Area Group for Integrated Observing Systems (OPAG-IOS) of the CBS of WMO. Most of the tasks assigned to IPET-OSDE follow on from those previously conducted under the former OPAG-IOS Expert Team on the Evolution of Global Observing Systems (ET-EGOS). The Terms of Reference of the IPET-OSDE, as adopted by the CBS, are given in Appendices A. The IPET-OSDE Work Programme as proposed by the CBS Management Group and approved by the CBS President is provided in Appendix B.

2. The IPET-OSDE is a new team and, as such, we are all “new” to the team. As Chair of the new IPET, I would like to welcome all members of the team, with a particular welcome to those who are new to the work of OPAG-IOS. I look forward to working with you all on the important tasks that WMO has assigned to us. We will be given further guidance on our tasks by the Chair of OPAG IOS, under item 3 of our agenda.

3. Although ET-EGOS reported through CBS structures, it benefited greatly from the input of representatives of other WMO Commissions. With the creation of the new IPET, the task of working between Commissions and between Programmes is formally recognised and extended.

4. All the Terms of Reference of IPET-OSDE and all the elements of its Work Programme are related to the goals and activities of the WMO Integrated Global Observing System (WIGOS). IPET-OSDE-1 will therefore be briefed on WIGOS progress and issues that are relevant to our activities, under item 4 of our agenda.

5. Since the inception of IPET-OSDE, work has progressed to consolidate the membership of the new IPET and to continue work on the Actions list from the last meeting of ET-EGOS (ET-EGOS-7, May 2012). A full report on this meeting is available at: <http://www.wmo.int/pages/prog/www/CBS-Reports/IOS-index.html> . An important activity for IPET-OSDE-1 will therefore be to review the status of Actions from ET-EGOS-7 and to decide which of these to continue or amend as its own Actions. This task is item 4 of our agenda.

6. The 1<sup>st</sup> Workshop on Observing System Design (OSDW-1) was organised under the auspices of IPET-OSDE, and it was held in Geneva, 12-14 November 2014. A full report on the meeting is available at: <http://www.wmo.int/pages/prog/www/CBS-Reports/IOS-index.html> .

The main outcome of the meeting was material to form the basis for a set of WIGOS “Principles” for Observing System Network Design (OSND) and also high-level guidance elaborating these Principles. Since OSDW-1, further progress has been made to develop this material into a set of draft Principles and associated Guidance. This document was made available to the Inter-Commission Coordination Group for WIGOS (ICG-WIGOS) for its meeting, 10-14 February 2014. ICG-WIGOS encouraged IPET-OSDE to continue the work to develop these “Principles”, which will be addressed under item 10 of our agenda.

7. I would like to draw attention to the following activities and achievements relevant to our work since mid-2012:

7.1 A major achievement of the WMO Secretariat, with guidance from ET-EGOS, was the creation of the Observing System Capabilities Analysis and Review tool (OSCAR): <http://www.wmo-sat.info/oscar/> . This tool integrates work over many years on user requirements for observations and on the capabilities of present and planned observing systems to meet these requirements. This tool and the databases behind it are key components within the WMO Rolling Review of Requirements (RRR) for observations and, as such, they form important components of WIGOS. They constitute a unique repository of observational requirements and of capabilities of (currently) space-based observing systems, and they are one of the tangible and visible “successes” of WIGOS to date. They have gained wide-ranging visibility through the excellent work of Secretariat. It is now planned to move the management of the database from the Secretariat to MeteoSwiss. We will review the status of this work, including the status of the project for transferring the management of the system, under item 7 of our agenda.

7.2 The 5<sup>th</sup> WMO Workshop on “The Impact of various observing systems on NWP” was held in Sedona, Arizona (USA), 22-25 May 2012, with ET-EGOS members strongly involved in its organisation. A full report on the meeting is available at: <http://www.wmo.int/pages/prog/www/CBS-Reports/IOS-index.html>, and preparations for the next workshop in this series will be considered under item 8 of our agenda.

7.3 Immediately prior to this workshop, on 21 May 2012, a one-day DBCP-WMO Workshop on "Evaluating the impact of sea level atmospheric pressure data over the ocean from drifting buoys", was held at the same venue. This small workshop (8 people attending - 2 ocean buoy experts, 5 NWP experts and WMO secretariat representative) was arranged because of financial pressure on the drifting buoy network that provides the weather forecasting community with much surface pressure information in the open oceans. Those responsible for this network were keen to understand and to gather information on the value of observations from their network to meteorologists, and specifically on the impact of these observations on NWP performance. In recent months, the concerns over the future support of this network have amplified, and we will consider this problem during our meeting.

7.4 Following much work by ET-EGOS and other teams, the new Implementation Plan for the Evolution of Global Observing Systems (EGOS-IP) was completed in mid-2012. It was then recommended by CBS through Recommendation 6 (CBS-15) and endorsed by Executive Council at its 65<sup>th</sup> Session in May 2013. through Resolution 10 (EC-65) Moreover, EGOS-IP was translated into other WMO official languages: it is now available in English, French, Spanish and Russian - see <http://www.wmo.int/pages/prog/www/OSY/gos-vision.html#egos-ip> . Efforts are also in hand to translate it into Chinese.

7.5 The WMO CBS was invited to make a contribution to the Arctic Observing Summit, Vancouver, Canada, 30 April - 2 May 2013. A “Community White Paper” was prepared on “WMO CBS activities relevant to observations in the Arctic” (see IPET-OSDE-1 background document No. 1). This paper was presented at the Summit by the WMO Secretariat.

7.6 There has been significant work over the last year on the review of GOS regulatory materials and the development of regulatory materials for WIGOS. As Chair of IPET-OSDE, I have made some input to these developments.

7.7 A GRUAN<sup>1</sup>-GSICS<sup>2</sup>-GNSSRO<sup>3</sup> Workshop on “Upper-air observing system integration and application” will be held, 6-8 May 2014, at the WMO Headquarters in Geneva, Switzerland. I have been participating in the activities of the planning committee for this workshop, on behalf of OPAG IOS. This workshop will explore how to realize benefits from observations of the “upper air” with qualities which make them well suited for use as “reference” observations, and thus to a special role within WIGOS.

8. At IPET-OSDE-1, I propose that we give particular attention to the following issues:

8.1 The continuation and extension of the OSCAR facility – see 7.1 above.

8.2 The review, improvement and elaboration of the draft Principles for Observing System Network Design and associated guidance material – see 6 above.

8.3 The role of observing systems studies to inform our work, including the extension of this work to applications other than NWP, and to considerations of the cost-effectiveness of observing systems. These issues will be covered under item 8 of our agenda.

8.4 Progress on Actions in EGOS-IP. As noted at 7.4, the final version of this Plan was recommended by the most recent meeting of CBS, and so IPET-OSDE-1 represents the first opportunity to monitor progress against the Plan, and this is an important task for our team. However, in my view, monitoring is not sufficient; it should be the role of IPET-OSDE, with the support of OPAG-IOS and WIGOS as a whole, not only to monitor progress but also actively to promote it. These issues will be considered under item 9 of our agenda.

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1 GCOS Reference Upper Air Network

2 Global Space-based Inter-calibration System - <http://gsics.wmo.int/>

3 Global Navigation Satellite System (GNSS) Radio Occultation (RO)

**APPENDIX A**

**TERMS OF REFERENCE OF THE WMO CBS OPAG-IOS  
INTER-PROGRAMME EXPERT TEAM ON  
OBSERVING SYSTEM DESIGN AND EVOLUTION  
(IPET-OSDE)**

- (a) Review and report on the observational data requirements of application areas<sup>4</sup> within the scope of WIGOS;
- (b) Review and report on the capability of both surface-based and space-based systems that are components or candidate components of the evolving observing systems within the scope of WIGOS;
- (c) Carry out the rolling requirements review of application areas leading to Statements of Guidance concerning the extent to which present and planned observing systems meet user requirements for observations;
- (d) Review the implications of the Statements of Guidance concerning the strengths and deficiencies in the existing observing systems and evaluate the capabilities of new observing systems and possibilities for improvements and efficiencies;
- (e) Carry out impact studies of real and hypothetical changes to observing systems with the assistance of NWP centres;
- (f) Monitor and report progress against the new version of the Implementation Plan for Evolution of Global Observing Systems, based on the “Vision for the GOS in 2025”; identify new actions as necessary, taking into account developments within WIGOS, including those of the observations and monitoring pillar of the GFCS;
- (g) Promote activities which enhance progress against the Implementation Plan for Evolution of Global Observing Systems;
- (h) Propose updates to the “Vision for the GOS in 2025”, in response to evolving user requirements and observing system capabilities;
- (i) Propose guidance regarding observing system network design principles;
- (j) Prepare documents to assist Members, Technical Commissions, and Regional Associations, summarizing the results from the above activities;
- (k) Provide advice and support to the Chairperson of OPAG-IOS on development and implementation of WIGOS.

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<sup>4</sup> WMO Application Areas include Global Numerical Weather Prediction (NWP), High Resolution NWP, Nowcasting and Very Short-Range Forecasting (NVS RF), Seasonal to Inter-Annual Climate Prediction (SI AF), Aeronautical Meteorology, Atmospheric Chemistry, Ocean Applications, Agricultural Meteorology, Hydrology and Water Resources, Climate monitoring (GCOS), Climate applications (other aspects, CCI), Space Weather, and GTOS (non GCOS requirements of GTOS)

## APPENDIX B

## WMO CBS IPET-OSDE: Work Plan

<i>Id</i>	<i>Pr ior ity</i>	<i>Objective</i>	<i>Outcome</i>	<i>Deliverabl e</i>	<i>Activity</i>	<i>Leader</i>	<i>Due</i>	<i>OtherETs</i>	<i>Effort</i>	<i>StatusRepor t</i>
1	1	To contribute to the implementation of WIGOS, including WIGOS Manual, and provide relevant advice and support to the chairperson of ICT-IOS	Address relevant items of WIGOS Implementation Activities agreed by Congress XVI, and then ICG-WIGOS	Relevant WIP activities addressed	Meeting	Chair IPET-OSDE	Ongoing	ICG-WIGOS, IPET-WIFI		GOS Manual and Guide to be reviewed, and made consistent with WIGOS Manual and Guide while avoiding duplication  Input provided to the TT-WRM
2	1	Survey and collate user requirements for observations for WMO and WMO-sponsored programmes	Review and update WMO database of observational user requirements, through Points of Contact for application areas.	OSCAR/Requirements up to date	Review by FPs	Chair IPET-OSDE	Ongoing / Annual review			Ongoing; PoCs regularly contacted for updates
3	1	Survey and collate observing systems capabilities for surface-based and space-based systems that are components or candidate components of	Review and update WMO database of observing system capabilities, in collaboration with other OPAG IOS ETs and other Technical Commissions as	OSCAR/Space & OSCAR/Surface up to date	Review by Members (coordination via NFPs)	Chair IPET-OSDE	Ongoing / Annual review	ICT-IOS, ET-ABO, ET-SBO, ICG-WIGOS/TT-WMD		Ongoing for space-based, and recorded in OSCAR/Space. Ongoing for surface-

<b>Id</b>	<b>Pr ior ity</b>	<b>Objective</b>	<b>Outcome</b>	<b>Deliverabl e</b>	<b>Activity</b>	<b>Leader</b>	<b>Due</b>	<b>OtherETs</b>	<b>Effort</b>	<b>StatusRepor t</b>
		WIGOS	appropriate.							based through feedback from the NFPs although not recorded in OSCAR/Surface, which does not exist for now
4	1	Maintain Review of Requirements (RRR) for observations in several application areas, using subject area experts, including appropriate liaison with Technical Commissions and programmes and co-sponsored programmes (e.g. CAS, JCOMM, CAeM, CAgM, CHy, CCI, GCOS, GFCS, and GCW)	Rolling of RRR) for observations in several application areas, using subject area experts, including appropriate liaison with Technical Commissions and programmes and co-sponsored programmes (e.g. CAS, JCOMM, CAeM, CAgM, CHy, CCI, GCOS, GFCS, and GCW)	Continue RRR process for the listed application areas and expand to new areas as required: review and update as necessary Statements of Guidance on the extent to which present/planned observing system capabilities meet user requirements, through Points of Contact on application areas.	Statements of Guidance for all Application Areas	Application Area Contact Points; Meeting	Chair IPET-OSDE	Ongoing / Annual review		Ongoing; some SoG reviewed. Overall review planned at IPET-OSDE1

<b>Id</b>	<b>Priority</b>	<b>Objective</b>	<b>Outcome</b>	<b>Deliverable</b>	<b>Activity</b>	<b>Leader</b>	<b>Due</b>	<b>OtherETs</b>	<b>Effort</b>	<b>StatusReport</b>
5	1	Prepare and maintain reviews of observation impact studies undertaken by NWP centres and provide information for consideration by IPET-OSDE and OPAG-IOS	Rapporteurs on Impact Studies and NWP experts, review results of impact studies relevant to the evolution of observing systems. Organize and hold next NWP Impact Studies Workshop in 2016.	Findings of impact studies	Impact studies	Rapporteurs on Scientific Evaluation of Impact Studies undertaken by NWP Centres	2016: workshop			Report of the 5 <sup>th</sup> NWP "Impact" workshop (Sedona, 2012) Published. Ongoing; recent findings, and proposals for new impact studies to be discussed at IPET-OSDE1
6	1	Promote CBS activities in support of GCOS goals	Review the implications of the progress on the GCOS Implementation Plan for the activities of CBS. Bring relevant issues to the attention of the IPET-OSDE	RRR consistent with GCOS	Meeting	Rapporteur on GCOS matters	<del>2013</del> 2016			Ongoing interactions between IPET-OSDE Chair and GCOS.
7	1	Promote CBS activities in support of GFCS goals	Review the implications of the GFCS IP for the activities of CBS. Bring relevant issues to the attention of the IPET-OSDE	RRR consistent with GFCS	Meeting	Chair IPET-OSDE	2016			Relevant activities to be reviewed at IPET-OSDE1



<b>Id</b>	<b>Priority</b>	<b>Objective</b>	<b>Outcome</b>	<b>Deliverable</b>	<b>Activity</b>	<b>Leader</b>	<b>Due</b>	<b>OtherETs</b>	<b>Effort</b>	<b>StatusReport</b>
8	1	Promote activities in support of GCW goals	CBS Review the implications for the activities of CBS of the GCW developments, including the GCW Implementation Strategy, and the Cryosphere theme report for the IGOS partnership. Bring relevant issues to the attention of the IPET-OSDE	RRR consistent with GCW	Meeting	Chair IPET-OSDE	2016			Relevant activities to be reviewed at IPET-OSDE1. CBS CWP submitted to the AOS1.
9	1	Monitor progress and actions by Members and partner Organizations per the approved Implementation Plan for the Evolution of the global observing systems (EGOS-IP), fully responding to the “Vision for the GOS in 2025”, and promote activities in support of progress	Seek feedback from National Focal Points, Expert Teams, relevant Technical Commissions, and other groups on the implementation of EGOS-IP, and keep the EGOS-IP progress report up to date. Initiate and monitor activities which promote progress.	EGOS-IP progress report	Survey with FPs, TCs; meeting	Chair IPET-OSDE	Ongoing / Annual review			Ongoing. Feedback against the new EGOS-IP requested to the NFPs for 2013. Review by IPET-OSDE1

<b><i>Id</i></b>	<b><i>Pr ior ity</i></b>	<b><i>Objective</i></b>	<b><i>Outcome</i></b>	<b><i>Deliverabl e</i></b>	<b><i>Activity</i></b>	<b><i>Leader</i></b>	<b><i>Due</i></b>	<b><i>OtherETs</i></b>	<b><i>Effort</i></b>	<b><i>StatusRepor t</i></b>
10	1	Propose guidance regarding observing system network design principles	Draft guidance document on network design (to be further discussed at IPET-OSDE-1 in 2014)	Guidance document on network design	Meeting	Chair IPET-OSDE	<del>End-2013</del> 2014			Workshop organized in Nov. 2013. Some draft OSND principles & guidance proposed, as well as roadmap. Further discussion planned at IPET-OSDE1