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**6. REGIONAL BASIC OBSERVING NETWORK (RBON) CONCEPT**

(Submitted by the Secretariat and Dr J. Dibbern, Co-chair, CBS/OPAG-IOS)

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| **Summary and purpose of document**  The document provides the draft RBON concept. |

**ACTION PROPOSED**

The session will be invited to consider and finalize the draft Concept.

**The Regional Basic Observing Network Concept Paper**

1. **Preamble**

In the past, the WMO Regional Associations defined the Regional Basic Synoptic Networks (RBSN), consisting also upper-air stations, adequate to meet the requirements of Members and the World Weather Watch. Similarly the Regional Basic Climatological Networks (RBCN) necessary to provide a good representation of climate on the regional scale were defined.

Over the last decade many additional surface and space-based observing systems came into operational use. The Sixteenth World Meteorological Congress (2011) decided that enhanced integration of the WMO observing systems should be advanced as a strategic objective of WMO. The WIGOS vision calls for an integrated, coordinated and comprehensive observing system to satisfy the evolving observing requirements of Members.

Cg-17 (2015) noted the successful implementation of the most critical activities for the WIGOS Framework to be implemented by 2015 and appreciated the progress achieved in the Regional WIGOS Implementation Plans. Cg-17 further decided that the development of WIGOS will continue during its Pre-operational Phase in the seventeenth financial period with focus on the regional and national implementation of WIGOS.

As part of the regional WIGOS implementation, the RBSN and RBCN have to be developed into an integrated network, i.e. a Regional Basic Observing Network (RBON), based on the Rolling Review of Requirements (RRR) process and Observing Network Design (OND) Principles developed as part of the WIGOS framework implementation[[1]](#footnote-1). By using the RRR process, user observational requirements are compared with the capabilities of present and planned observing systems. Hereby specific regional priorities should be taken into account. The OND Principles are complemented with guidance to assist Members with designing and evolving their observing networks.

The design and implementation process of the RBON will be assisted by the Observing Systems Capability Analysis and Review (OSCAR) tool developed by WMO which provides important information on existing observing networks, their capabilities and gaps.

Data and WIGOS metadata from any station/platform of the RBON are to be exchanged globally through the WMO Information System (WIS); this will allow continuous and reliable access to an expanded set of environmental data and products, and associated metadata, resulting in increased knowledge and enhanced services across all WMO Programmes.

The purpose of this document is to guide and assist the WMO Regions and Members through the design and implementation process of the RBON.

1. **Reference material for the Regional Basic Observing Network concept**

**This should include links to:**

* 1. Relevant Application Areas of the Rolling Review of Requirements and their respective Statements of Guidance.
* *Refer to the RRR process, probably also to the Vision of the GOS*
* *Concentrate on the 8 (9) application areas*
  1. New: OSCAR as a tool to support the RBON design process
  2. Observing Network Design Principles provided in the *Manual on WIGOS* (WMO-No. 1160), and any subsequently developed guidance material.
* *Give guidance how to apply OND principles at a regional level*
  1. Any relevant actions in the EGOS-IP.
* *Highlight those actions in the EGOS-IP which are most important for the RBON design*

1. **Qualitative description of the Regional Basic Observing Network**
   1. **Introduction**

The draft concept of Regional Basic Observing Network (RBON) to replace the existing Regional Basic Synoptic Networks (RBSN) and the Regional Basic Climate Networks (RBCN) is presented. The current Antarctic Observing Network (ANTON) is already an example of what could be the RBON for each of the WMO regional associations.

* 1. **Draft concept of Regional Basic Observing Network (RBON)**
     1. **Generic Definition of a RBON**

RBON is a network defined by a WMO regional association that responds to the collective needs of its Members, allowing them to fulfil their mandates and responsibilities in a provision of services within WMO Application Areas in support of all WMO Programmes.

* + 1. **Specific Definition of a RBON**

It is a network of surface-based meteorological and related observing stations/platforms, defined by a regional association, which is built on existing observing systems within WIGOS. The network capabilities must comply with user observational requirements at the global and regional levels, identified in the Rolling Review of Requirements (RRR) process specified in the *Manual on WIGOS* (WMO-No. 1160), section 2.2.4 and Appendix 2.3, for one or more of the following WMO Application Areas:

1. Global numerical weather prediction (GNWP);
2. High-resolution numerical weather prediction (HRNWP);
3. Nowcasting and very short-range forecasting (NVSRF);
4. Seasonal and interannual forecasting (SIAF);
5. Aeronautical meteorology;
6. Ocean applications;
7. Agricultural meteorology;
8. Climate monitoring (as undertaken through the Global Climate Observing System (GCOS));
9. Climate applications.
   * 1. **Criteria for the selection of RBON stations**

Any station/platform or sets of stations/platforms that contributes to meet the “threshold” (minimum) level of the following criteria, for user observational requirements captured in the Observing Systems Capability Analysis and Review (OSCAR) database: **spatial resolution**, **temporal resolution** (at global/regional levels) and **timeliness** of data availability.

A regional association may define the “breakthrough” (intermediate) level as a target for the criteria of user observational requirements when selecting the stations/platforms for the RBON. The regional association may also distinguish different levels of criteria for different sub-regions.

The process of selecting stations/platforms for a RBON should be adherent to the Observing Network Design (OND) Principles defined in the *Manual on WIGOS* (WMO-No. 1160), section 2.2.2 and Appendix 2.1). The selection of stations/platforms is not limited to those under the responsibility of the NMHSs.

* + 1. **Basic requirement for stations to be selected for a RBON**

A station/platform selected for the RBON shall exchange data globally, in real-time, or near real-time, using WMO standard formats for data and metadata representation and exchange.

Stations/platforms with seasonal or other special observing programme, e.g. targeted observations, such as reconnaissance aircraft stations, meeting the basic requirement, may be considered to be included.

* + 1. **Natural candidate stations for a RBON**

The stations/platforms currently comprising the Regional Basic Synoptic Networks and the Regional Basic Climatological Networks are the primary candidates for the RBONs and are expected to constitute the backbone of the RBON. Those shall be supplemented by other types of stations/platforms, such as weather radars, aircraft meteorological stations, wind profilers, ships and buoys.

* 1. **Types of stations/platforms expected to be included in a RBON**

According to the classifications used in OSCAR/Surface, the type of station/platform to be included in RBON could be as follows:

a) Land (fixed)

b) Land (mobile)

c) Sea (fixed)

d) Sea (mobile)

e) Air (fixed)

f) Air (mobile)

g) Underwater (fixed)

h) Underwater (mobile)

i) Land (on ice)

j) Sea (on ice)

k) Lake/River (fixed)

l) Lake/River (mobile)

**Proposed procedure for the development of the RBON concept**

This concept document will be presented at regional association sessions. It is expected that the regional associations would establish a dedicated Task Team (TT) on the design of the RBON under their WIGOS implementation relevant working group. The TT will develop the RBON design as specified in this document based on information available in the WIGOS Information Resource WIR (RRR process, OSCAR/Surface, etc.) and specific requirements of the Region. The RBON design will then be presented to the next regional association session for endorsement.

Roles and responsibilities of WMO Members and regional associations will be specified in the *Manual on WIGOS* (WMO-No. 1160), by newly developed standard and recommended practices and procedures incorporated in 2019 edition of the Manual, after their approval by Cg-18.

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1. Reference is made to the *Manual on WIGOS* (WMO-No. 1160) [↑](#footnote-ref-1)