

The WMO Integrated Global Observing System; Guidance from WMO Congress, Executive Council and ICG-WIGOS



WMO OMM

World Meteorological Organization

Organisation météorologique mondiale

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Outline

- The WIGOS Pre-operational Phase (2016-19)
 - I. WIGOS Regulatory Material
 - II. The WIGOS Information Resource
 - III. The WIGOS Data Quality Monitoring System (WDQMS)
 - IV. Regional WIGOS Centers
 - V. National WIGOS Implementation
- Vision for WIGOS in 2040
- Summary and conclusions



The WIGOS Pre-Operational Phase (2016-2019)

(approved by 17th World Meteorological Congress in 2015)

- Increased emphasis on regional and national activities
- Five main priority areas:
 - I. WIGOS Regulatory Material, supplemented with necessary guidance material
 - II. WIGOS Information Resource, including the Observing Systems Capabilities analysis and Review tool (OSCAR), especially OSCAR/Surface
 - III. WIGOS Data Quality Monitoring System (WDQMS)
 - IV. Regional Structure; Regional WIGOS Centers
 - V. National WIGOS Implementation, coordination and governance mechanisms



WIGOS regulatory material (I)

- Guide to WIGOS
 - OSCAR
 - WDQMS
 - WIGOS Station ID's
 - Regional WIGOS Centers
 - National Implementation
 - ...
- Manual on WIGOS
 - Revised WIGOS Metadata Standard
 - Regional Basic Observing System replacing and expanding on existing RBSN and RBCN
 - Integration of the Manual on the GOS



WIGOS regulatory material (II); Regional Basic Observing Network (RBON)

- RBON is defined as the subset of the Global Observing System for which Members are committing to international exchange of essential data under Res. 40
 - Essential data: {...} *necessary for the provision of services in support of the protection of life and property {...}, required to describe and forecast accurately weather and climate {...}*
- Extension and replacement of existing RBSN and RBCN, which do not currently include
 - Weather radars; GPS TSD instruments, wind profilers, lightning detection systems, ...



WIGOS regulatory material (III); *timeline for development prior to Cg-18*

Time	Manual on WIGOS	Guide to WIGOS
1 st - 2 nd Q 2017	Drafting standards and recommendations for: a) RBON b) surface-based remote sensing (mainly weather radars and wind profilers) c) data quality monitoring	WIGOS guidance on Data Partnerships Lifecycle Data Management and Data Stewardship, including integration of observations from multiple sources, progressively
May 2017 (EC-69)	Draft Manual (CBS-16 version) for adoption	
3 rd - 4 th Q 2017	Text from the Manual on GOS and new standards and recommendations on RBON, remote sensing, and data quality monitoring incorporated in the draft Manual on WIGOS (as a new edition for Cg-18)	Draft best practices and procedures for: a) RBON b) surface-based remote sensing (mainly weather radars and wind profilers) c) data quality monitoring Draft guidance on the transition of existing observing systems to meet WIGOS requirements and standards (?)
31.10.-2.11.17 ICG-WIGOS/ WEDB-2	Draft Manual	All available drafts of guidance material
1 st Q 2018 ICG-WIGOS-7	Draft Manual approved by ICG-WIGOS; Consequently submitted to P-TCs for the "technical" review by all TCs	All available drafts of guidance material; Consequently submitted to P-TCs for the "technical" review by all TCs
May 2018	Feedback from TCs incorporated	Feedback from TCs incorporated
June 2018 (EC-70)	Status (the draft as INF) submitted (for guidance/recommendations)	Status (the draft as INF) submitted (for guidance/recommendations)
June 2018	Draft Manual translated to all WMO languages	
July 2018	Draft Manual submitted to WMO Members for review (by 30 Nov 17)	
1 st Q 2019 ICG-WIGOS-8	Draft Manual approved by ICG-WIGOS	Draft approved by ICG-WIGOS
1 st Q 2019	New version submitted for approval by Cg-18	Guide to WIGOS submitted for approval by Cg-18



WIGOS Information Resource

- One-stop portal with access to all available information about WIGOS, e.g.
 - Regulatory material
 - Guidance material
 - Technical reports
 - Meeting reports
 - Presentations
 - **Station catalog (OSCAR/Surface)**
 - ...



OSCAR/Surface

(“What is WIGOS?”)

- Implementation layer of the *WIGOS Metadata Standard*:
Modern, electronic, searchable inventory of metadata for all observing stations/platforms under WIGOS
 - OSCAR/Surface will replace *WMO Pub. 9, Volume A*, but will also include information from similar inventories for other (non-GOS) components of WIGOS
 - Developed jointly by WMO and MeteoSwiss, with the Swiss government providing the major part of the funding
 - Operational since May 2016
 - Education and training Members in populating, editing and using OSCAR/Surface is a major priority for 2016-2019 financial period



Last updated: 2016-04-28

MINSK (Belarus)

in WMO Region VI - Europe

Station characteristics

Station name: MINSK
Station alias:
Date established: 1891-01-01
Station type: Land (fixed)
Station class(es):
WMO index No: 0-20000-0-26850
WMO region: VI - Europe
Country / Territory: > Belarus
Coordinates: > 53.9286111111°N, 27.6352777778°E



Time zone:
Climate zone:
Station URL:
Other link (URL):
Predominant surface cover:
Surface roughness:
Topography or bathymetry:
Population in 10km / 50km (in thousands):
Supervising organization: > Hydromet



WIGOS Data Quality Monitoring System (WDQMS)

- Real-time monitoring of performance (data availability and data quality) of all WIGOS components, searchable by region, country, station type, period, etc.

Delayed mode monitoring of data quality as measured against reference sources of information will be included for non-real time observations

Incident management component for mitigation of performance issues

- **The WDQMS will provide a complete description of how well WIGOS is functioning**

Current activities

- **Pilot project on NWP-based monitoring; ECMWF, NCEP, DWD, JMA**
- **RA-I Demonstration Project of monitoring and incident management involving Kenya and Tanzania running through 2017**



Regional WIGOS Centers (RWC)

- Why?
 - Many WMO Members requesting support from Secretariat for national implementation efforts
 - Can be addressed more efficiently and effectively at regional level
- What?
 - Initial role of RWC will be to support national WIGOS Implementation efforts, in particular as concerns
 - OSCAR/Surface; ensuring metadata input and QC
 - WDQMS; especially fault management component
- How?
 - To be decided by individual WMO Regions - will likely take place primarily at the sub-Regional level
 - Pilot RA-VI (Europe) RWC implemented in pilot mode around existing EUMETNET activities; approved by EUMETNET STAC/PFAC in March 2016



Regional WIGOS Centers (III)

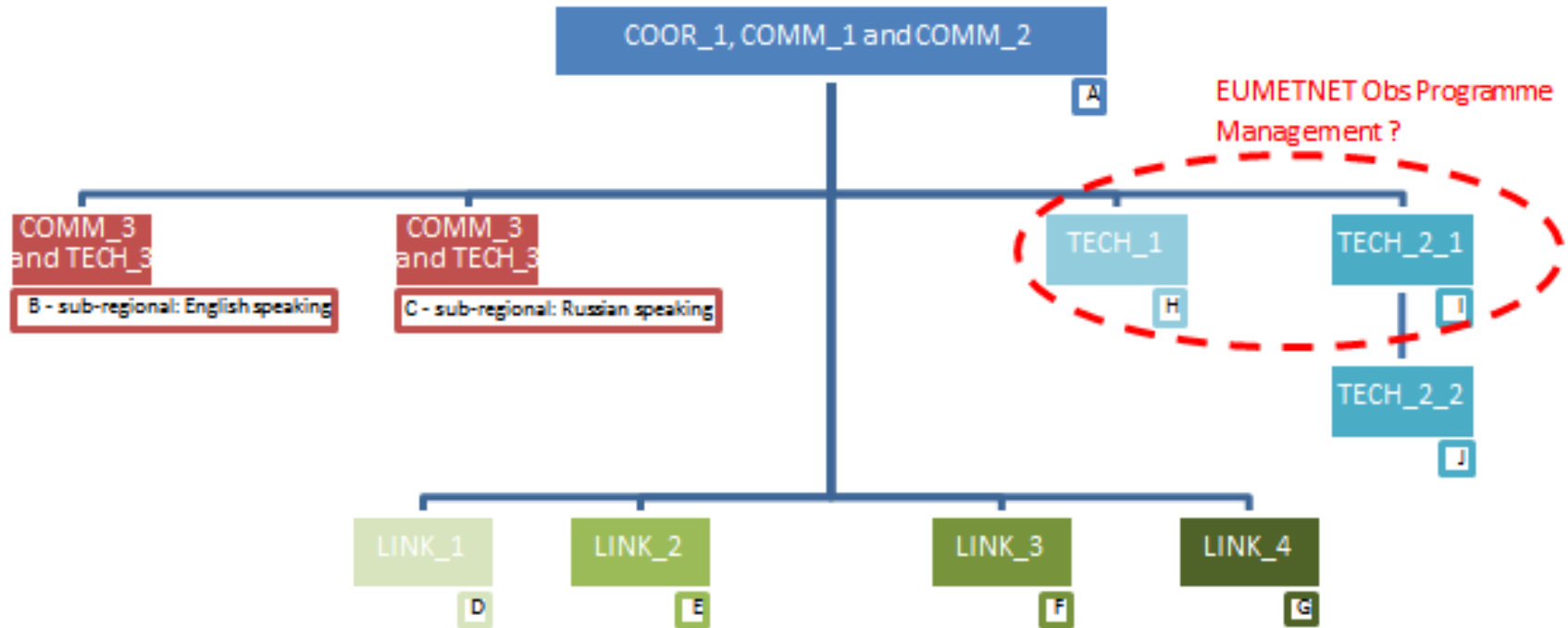
Benefits to Region and Members involved

- Helps maintain an up to date comprehensive online inventory (OSCAR/Surface) of observing systems/platform for the Region or sub-Region
- Helps support network design and network management activities
- Incident management component of WDAQMS will lead to better observations for the benefit of all users, both regionally and globally - most important data voids for global NWP are in Africa
- Capacity building for sub-Region and (especially) for host(s) of RWC
- Can play a role also in education and training, calibration and maintenance, ...



Structure of (virtual) RWC in RA VI

From RA-VI Workshop (Belgrade), shown by Ivan Cacic, RA-VI President, at ICG-WIGOS-5



National WIGOS Implementation

Main elements

- National WIGOS Implementation Plan, ideally building on a national observing strategy if one exists,
- Formal partnership agreements concluded with other (non-NMHS) organization with relevant observing systems, e.g. from other government agencies, academia, non-profit NGOs or the private sector
 - Should include data sharing, quality control, calibration support, archiving, common access portals, etc.
- WIGOS metadata for all national observing stations/platform accurately reported in OSCAR/Surface and updated regularly
- PoC for WIGOS Data Quality Monitoring System active and engaging with Regional WIGOS Center to resolve observational data quality issues.



Vision for WIGOS in 2040



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Why a "Vision for WIGOS in 2040"?

- ✦ Serves a reference for WMO Members and other service providers, providing context and expected boundary conditions relevant for observing system developments
- ✦ Forcing agent for satellite agencies – current 2025 Vision too near-term
- ✦ Sets frame for future systems deployment, development and integration
- ✦ Cg-17: Develop a “*Vision for WIGOS in 2040*”, to be submitted to CG-18 in 2019



Development of “Vision”

- ✦ Originally developed in three parts:
 - ✦ Overarching “Vision” providing purpose, scope and context; *ICG-WIGOS*
 - ✦ Vision for space-based component; *ET-SAT, CGMS, ...*
 - ✦ Vision for surface-based component, *CBS, CIMO, ...*
- ✦ Currently the three elements are being integrated into one coherent documents
- ✦ Will be reviewed by all WMO technical commissions and other program areas and will be open for comments from all Members prior to submission to WMO Congress in 2019



Summary and Conclusions

- WIGOS global framework is now in place and will be further developed during the Pre-operational Phase (2016-2019)
- Increased involvement of Regions and Members
- Five priority areas
 - Regulatory and guidance material
 - Technical systems (OSCAR/Surface and WDQMS); more about this tomorrow
 - Regional WIGOS Centers in support of national implementation
- Long-term Vision for WIGOS under development

