AOPC meeting: 20 April 2021

WIGOS Data Quality Monitoring System (WDQMS)

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Standing Committee on
Earth Observing Systems and
Monitoring Networks (SC-ON)

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Outline

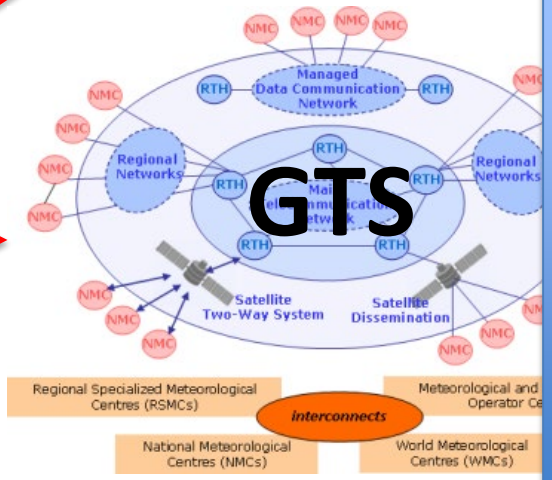
1. WDQMS concept and functions
2. The WIGOS tools
3. Status and plans for the implementation of WSI;
4. Status/release of WDQMS webtool
5. Evolution of WDQMS and suggested points for discussion

International data exchange essential for WIGOS Data Quality Monitoring System

National observing stations

Data transmission from site to HQ

NMHS HQ



WDQMS starts here

International users

e.g. global NWP centres

ECMWF

NCEP

DWD

気象庁 Japan Meteorological Agency

International exchange to be indicated in OSCAR Observing Systems Capability Analysis and Review Tool

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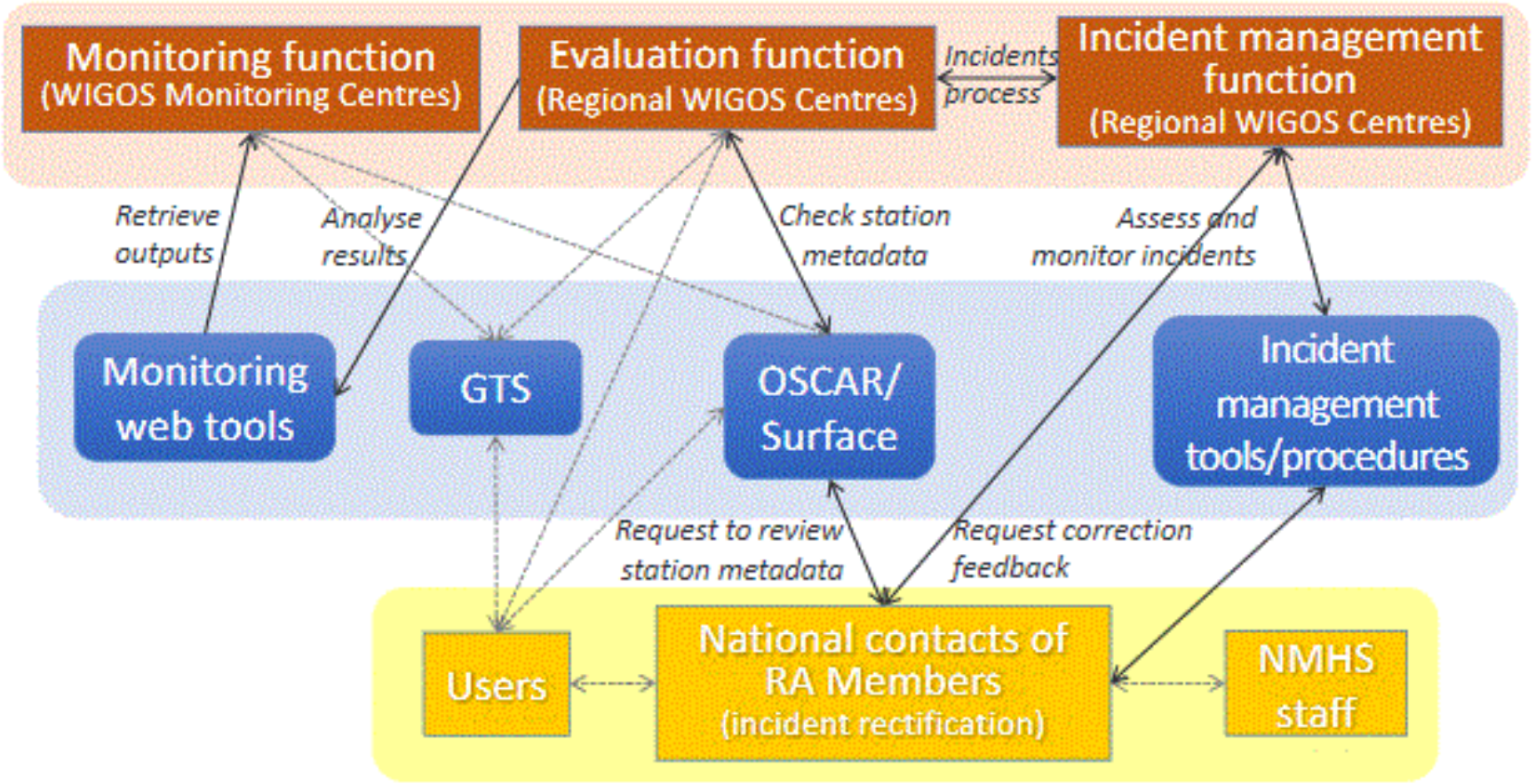
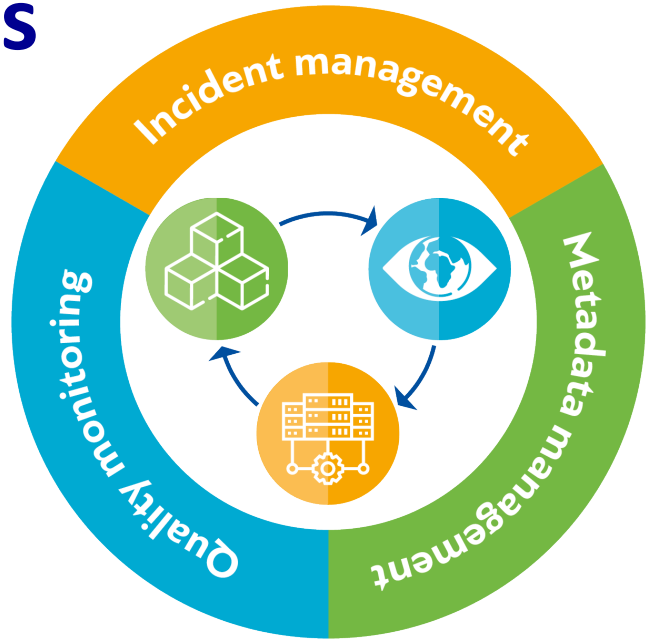
The WDQMS process



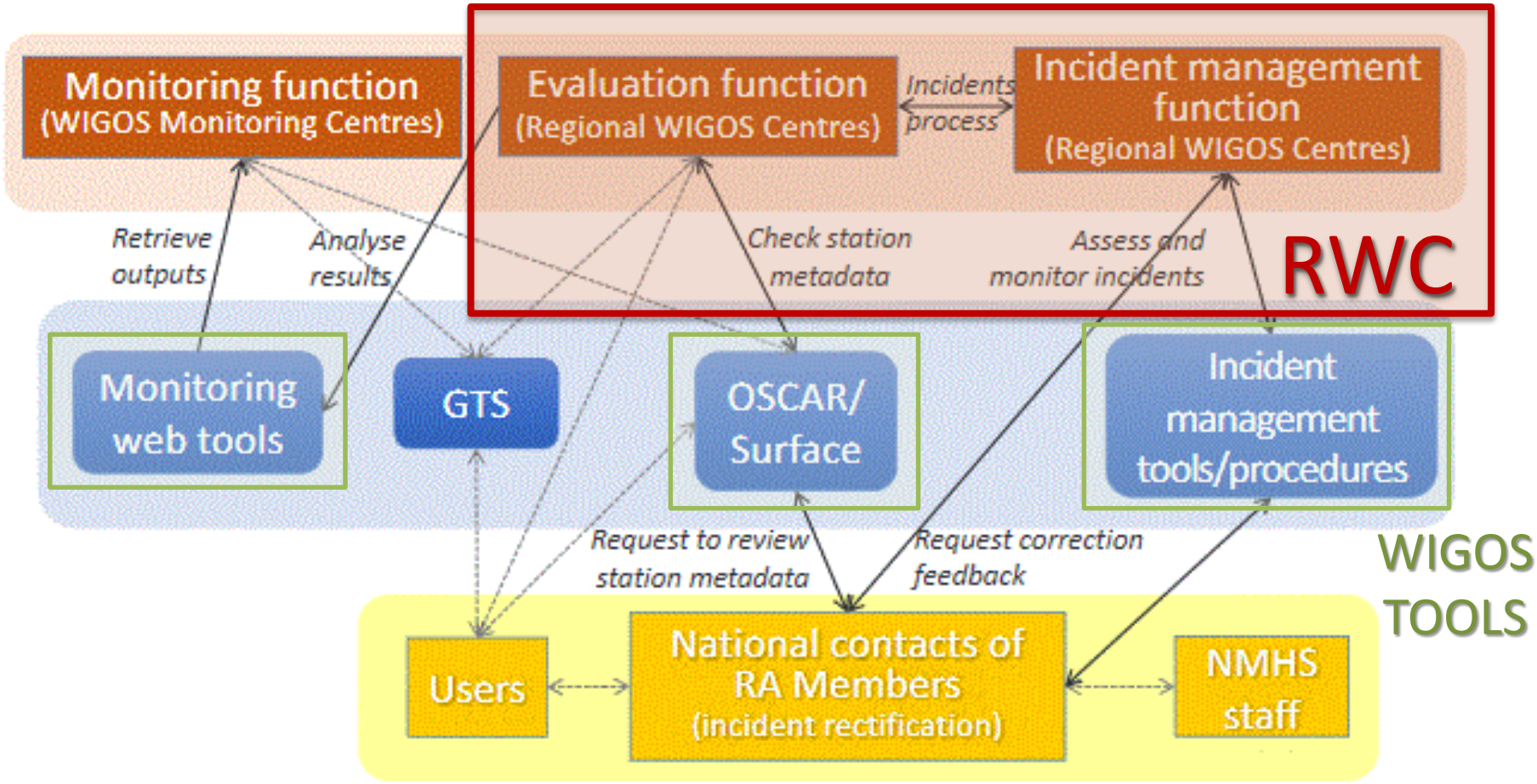
- WDQMS describes how well WIGOS is functioning

WIGOS tools



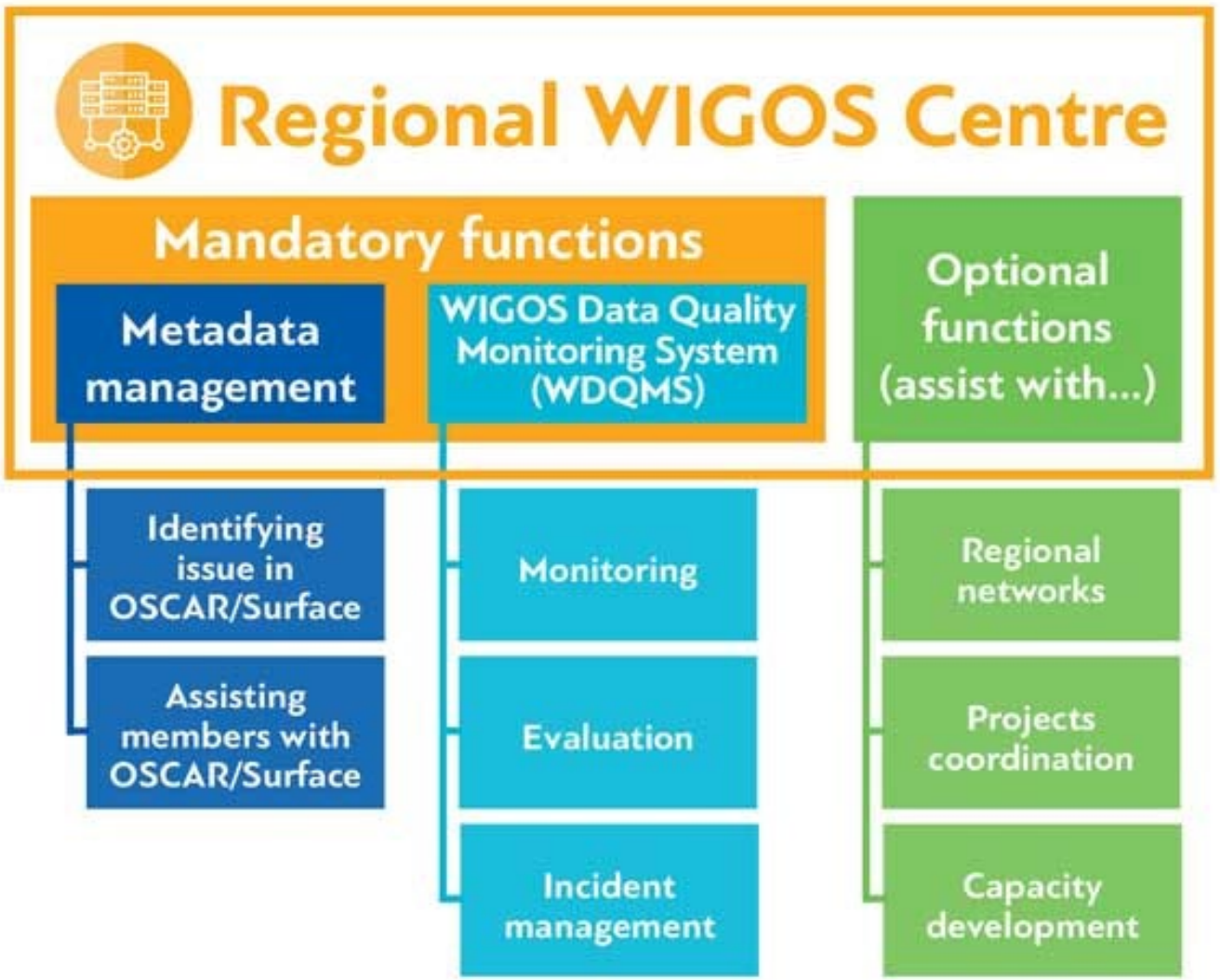
- WIGOS tools comprise of
  - WIGOS Data Quality Monitoring System (WDQMS) web-tool for quality monitoring and evaluation
  - Metadata repository OSCAR/Surface
  - WDQMS Incident Management System (IMS) web-tool
- WDQMS web-tool is directly linked to OSCAR/Surface.
- Regional WIGOS Centres (RWCs) are key users of the WIGOS tools; Members are requested to make use of the WIGOS tools as well.
- The WIGOS Station Identifiers (WSI) are a critical, common element for all WIGOS tools, which will help to increase the number of stations exchanging observations internationally for the benefit of all Members and users.

The WDQMS process – RWC and WIGOS Tools



- RWC evaluate the performances and initiate the incident management system in case of non-compliance

Regional WIGOS Centres (RWCs)



Regional WIGOS Centres

- **Current mandate**:
  - Assist Members with management of WIGOS metadata in OSCAR/Surface;
  - Perform the WDQMS functions (Evaluation and Incident Management functions);
- **Existing technical guidance**:
  - Land surface stations of the GOS;
- **RWCs established in pilot mode**:
  - RA I = East Africa (Kenya, Tanzania), Southern Africa (South Africa), North & West Africa (Morocco – coming soon);
  - RA II = the whole region (China, Japan);
  - RA III = the whole region (Argentina, Brazil);
  - RA V = the whole region (Indonesia, Singapore – coming soon);
  - RA VI = the whole region (EUMETNET – only monitoring function);

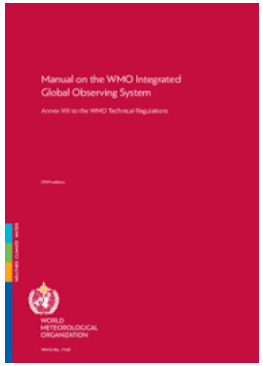
WIGOS Station Identifiers - WSI

Resolution 35 (Congress-18)

- **Decided** to delegate authority to:
  (1) The Comprehensive Nuclear-Test-Ban Treaty Organization (**CTBTO**);
  (2) The relevant authority for the observing component of the Global Atmosphere Watch (**GAW**);
  (3) The relevant authority for the observing component of the Global Cryosphere Watch (**GCW**);
  (4) The relevant authority for the Global Climate Observing System (GCOS) Reference Upper-Air Network (**GRUAN**);

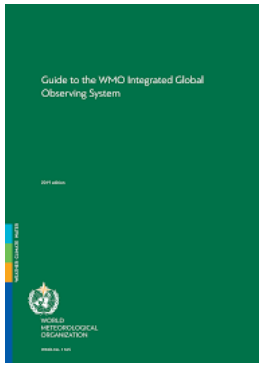
(referred to as "**WSI issuers**") to issue WSIs for non-NMHS observing stations that contribute to the relevant network on behalf of Members under specified circumstances

Integration of resolution 35-Cg.18 into the WIGOS Regulatory and Guidance material:



Amendments to the Manual on WIGOS (WMO-No1160):

- INFCOM-1 has endorsed the corresponding draft amendments
  - Section 2.4.1 – General requirements related to Implementation of WSIs
  - Attachment 2.2. - Adds two WSI Issuers with delegated authority
    - The Turkish State Meteorological Service -> WMO Radar Database (WRD);
    - The Copernicus Climate Change Service (C3S) operated by ECMWF



Updates to the Guide to WIGOS (WMO-No. 1165)

- just endorsed by INFCOM-1 Part III (12-16 April 2021)
  - Reviewed chapter 2 (Fundamentals and practices on WSI)
  - New chapter 10 “Guidance on the Implementation of Attributes Specific to WIGOS Component Observing Systems”
    - **describes the procedures for each WSI Issuer with delegated authority for various programmes/networks**:
    - GCW, GAW, WRD and GOOS
    - Missing: GRUAN and CTBTO -> next round of updates…

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New releases and features of WIGOS tools

OSCAR/Surface *Observing Systems Capability Analysis and Review Tool*

- Operational
- Several new releases expected per year
- Current release 1.6.0 includes Station Templates and Web Client Tool

WDQMS *WIGOS Data Quality Monitoring System*

- Operational
- Several new releases expected per year
- Current release 1.3.1 **includes monitoring the GCOS networks** and other added features

IMS *Incident Management System*

- In pilot mode operations since July 2020

WDQMS web-tool: New module for the monitoring of the GCOS Networks

Releases 1.3.0 and 1.3.1

- New modules for the monitoring of the GCOS networks:
  - GUAN and GSN
- Other added features

Near-real-time NWP monitoring of the Global Observing System networks

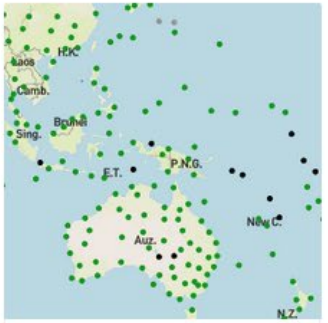
Surface land observations

Availability & Quality

Upper-air land observations

Availability & Quality

Monitoring of the Global Climate Observing System networks



Surface land observations

Availability & Completeness

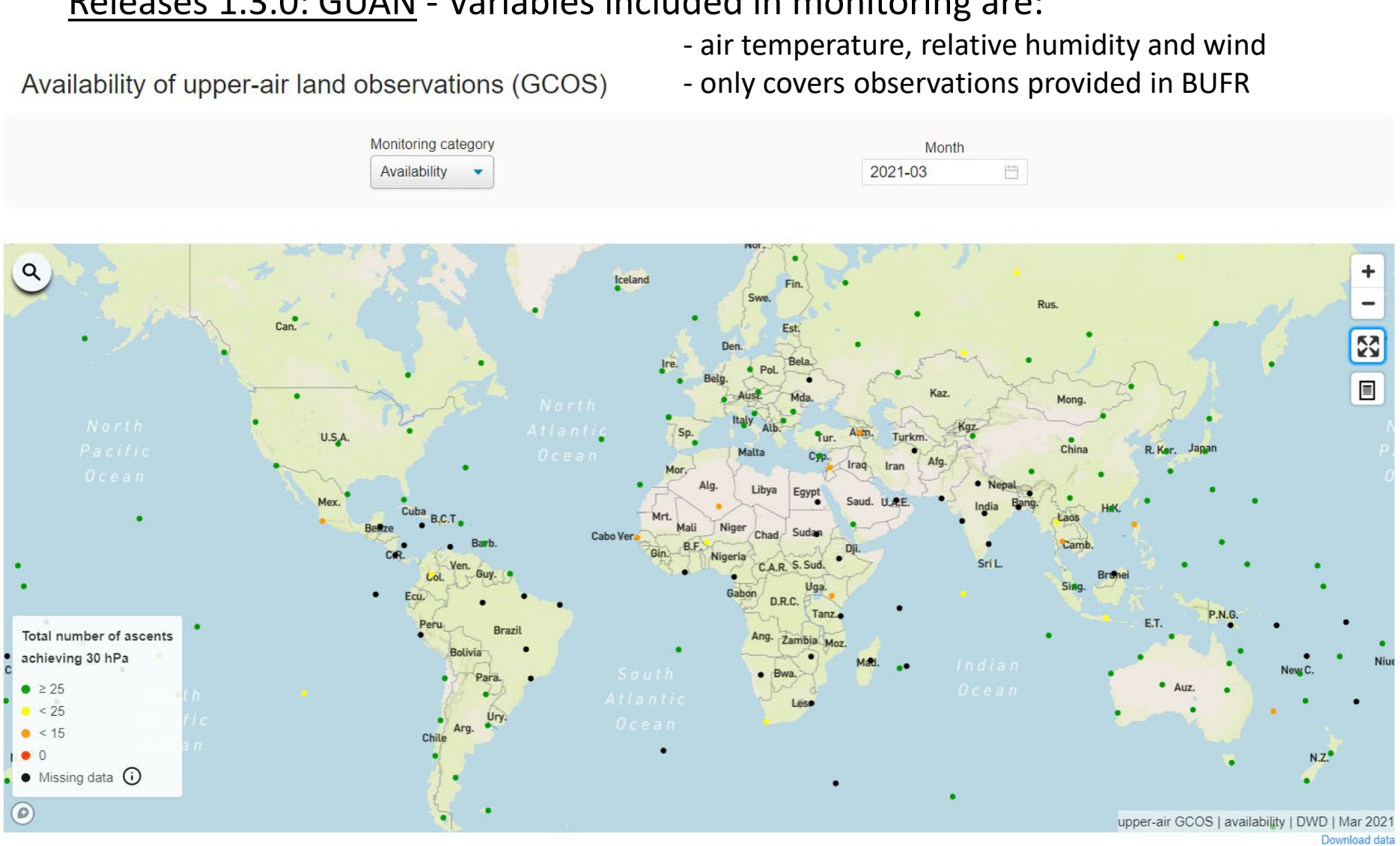
Upper-air land observations

Availability & Quality

WDQMS web-tool: New module for the monitoring of the GCOS Networks

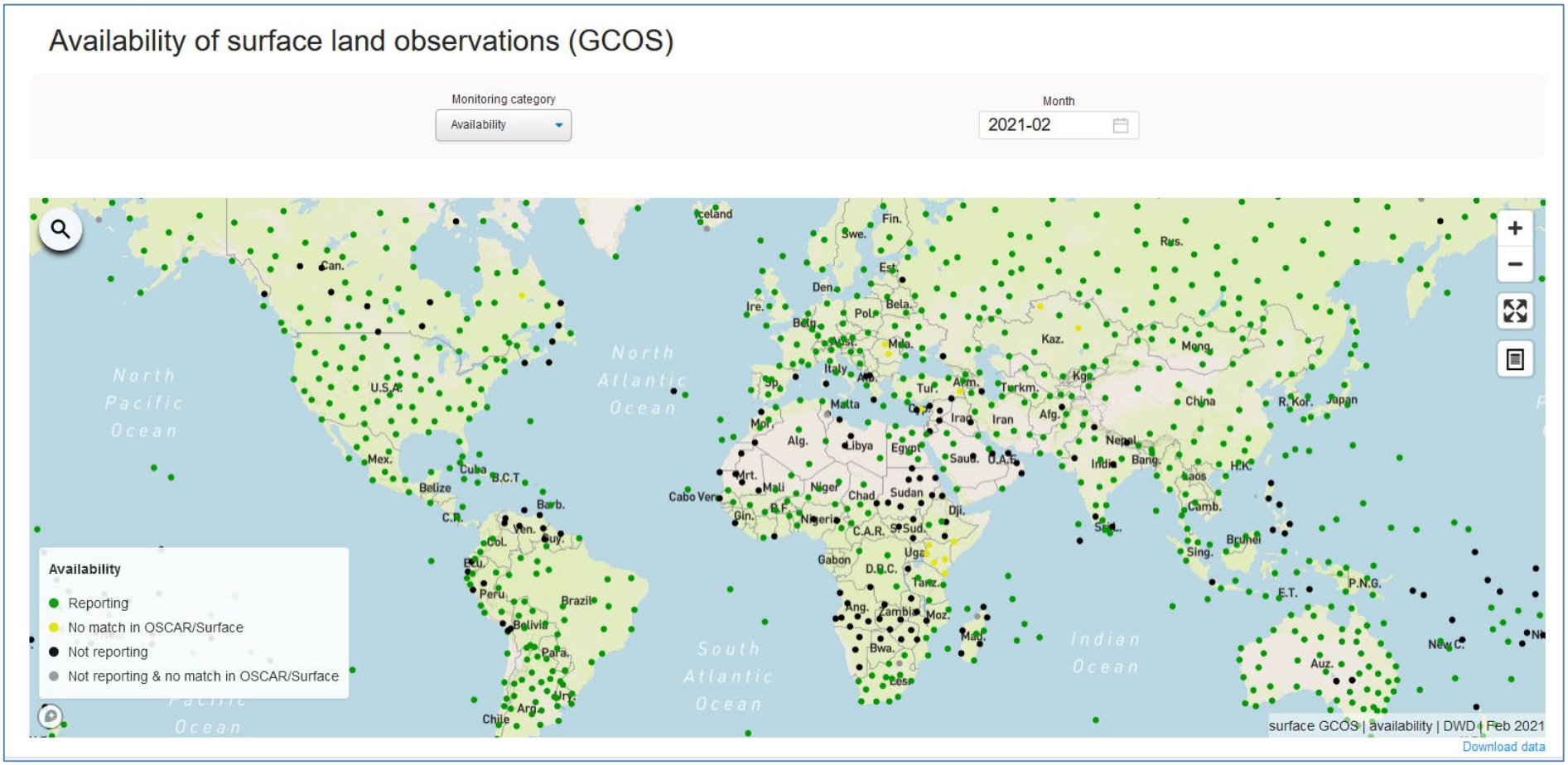
Releases 1.3.0: GUAN - Variables included in monitoring are:

- air temperature, relative humidity and wind
- only covers observations provided in BUFR



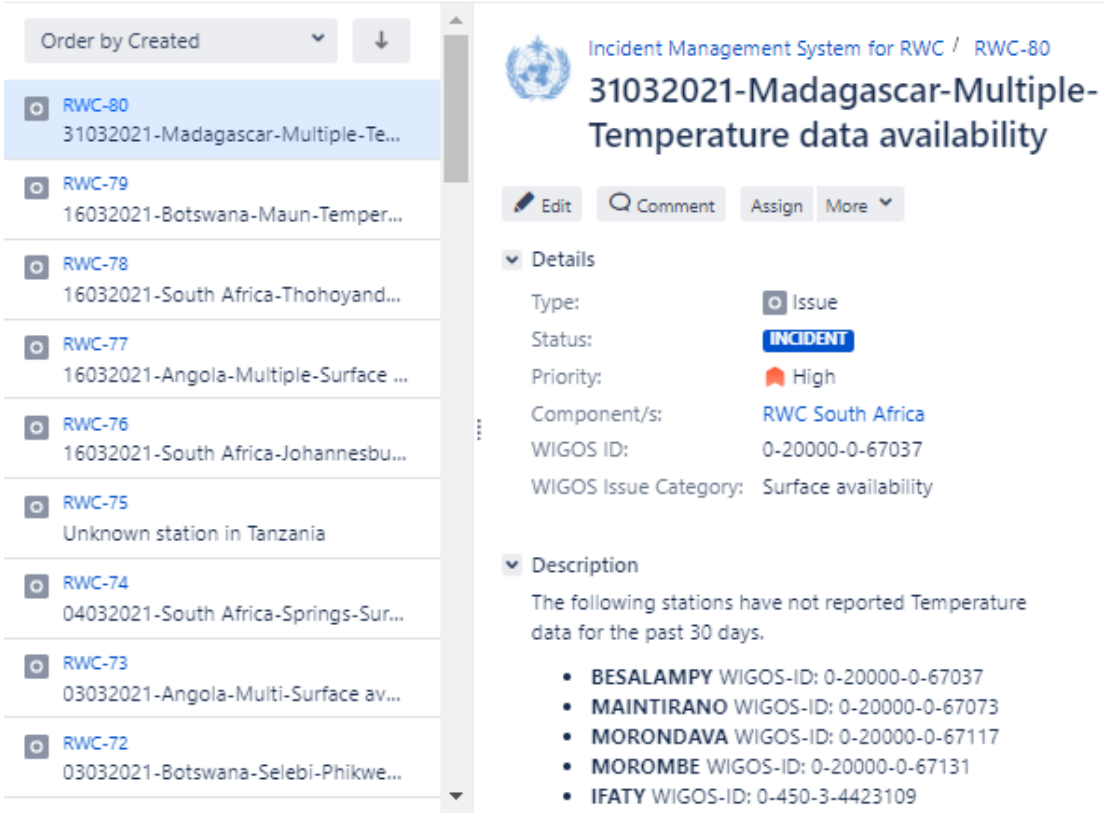
WDQMS web-tool: New module for the monitoring of the GCOS Networks

Releases 1.3.1: GSN Variables included in GSN monitoring are daily values of:
- mean surface pressure, mean air temperature, max air temperature, min air temperature, mean water vapour, total precipitation and total sunshine duration



The prototype of Incident Management System (IMS) for RWC

- A ticket system that follows the WDQMS incident management procedure
- Allows interaction between RWC, members and the WIGOS Monitoring Center to address issues of availability and quality of observational data
- The prototype of IMS is hosted by ECMWF
- RWC Kenya, RWC Tanzania, RWC Southern Africa, RWC Argentina and RWC Brazil have implemented the WDQMS Incident Management Procedure with this system



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Next steps in WDQMS evolution

- **WIGOS tools are operational** (besides IMS) but still evolving to facilitate the work of Members and Regional WIGOS Centres
- Work in progress to further improve the performance of tools
- Plans are being developed to integrate further networks / WIGOS components; questionnaires have been circulated
- Response related to GCOS mainly on OSCAR/Surface, as GCOS is already implemented into WDQMS

- **Points for discussion:**
  - Status and plans for the evaluation/incident management of GCOS networks
  - Need to develop guidance with the procedures for the implementation of WSI by GRUAN

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Thank you
Merci

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