Activities of Regional WIGOS Centre Tokyo

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Japan Meteorological Agency

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Contents

I. WIGOS

- WIGOS : WMO Integrated Global Observing System
  - WIGOS is a framework for integrating all WMO and WMO-related observing systems under a common regulatory and management framework.
    - WIGOS is not replacing or taking over existing observing systems

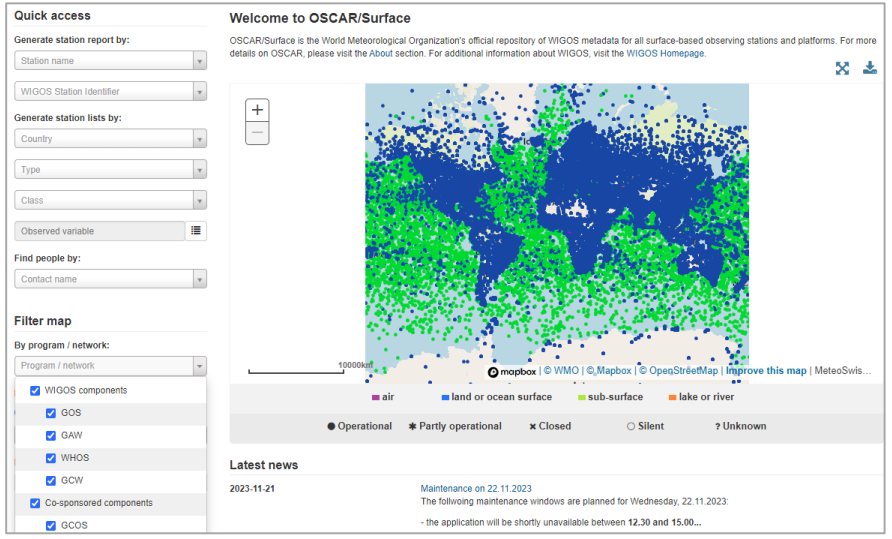
I. WIGOS (Cont.)

- OSCAR：Observing Systems Capability Analysis and Review Tool
  - OSCAR/Surface: metadata repository
  - Replace of WMO-No.9 Volume A

- WIGOS Station Identifier（WSI）
  - Replace of WMO Identifiers
  - (e.g. Tokyo)

    WMO Identifiers: 47662

    WSI: 0-20000-0-47662



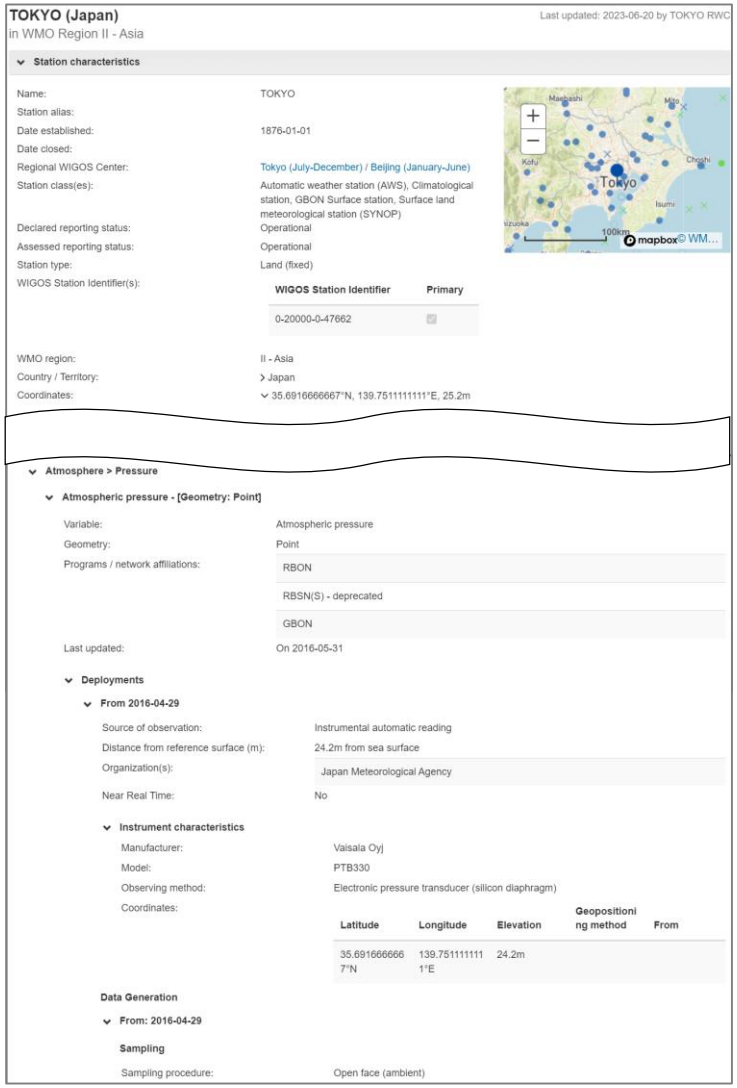
OSCAR/Surface https://oscar.wmo.int/surface/#/

➢ Understand the observation network of frameworks that consist of WIGOS

- Facilitate greater use of observation data, optimal placement of observation stations

I. WIGOS (Cont.)

- OSCAR: Observing Systems Capability Analysis and Review Tool
  - OSCAR/Surface
    - Repository of all surface observations metadata in WIGOS
      - Name
      - Date established
      - WSI
      - Coordinates(Latitude, Longitude, Elevation)
      - Supervising organization
      - Program / Network affiliations
      - Observation elements
      - Instrument characteristics
      - Reporting interval ….



I. WIGOS (Cont.)

- The WIGOS Station Identifiers（WSI）
  - (e.g. Tokyo) WMO Identifiers: 47662 → WSI: 0-20000-0-47662
  - Used to register an observing station or platform in the OSCAR/Surface database
  - Implementation by Members is mandatory, as part of the WIGOS Technical Regulations, including the WIGOS Metadata Standard
  - Members shall:
    - issue WSIs for stations/platforms within their geographic area of responsibility that contribute to a WMO or co-sponsored programme
    - ensure uniqueness, i.e. a WSI is issued to no more than one station
    - make available to WMO the updated metadata of each newly issued WSI
  - Members should (before issuing a WSI):
    - ensure that the operator of a station/platform has committed to providing and maintaining WIGOS metadata for that station/platform in OSCAR/Surf.

I. WIGOS (Cont.)

- The WIGOS Station Identifiers（WSI）
  - For “new stations” (those that started to operate or became affiliated with a WMO Programme after 1 July 2016)
    - using the 3-digits ISO Country code in the Issuer of Identifier (2nd block)
    - and defining the national rules for distributing the numbers in the 3rd and 4th blocks(Issue Number and Local Identifier) for the stations in their territory
  - For stations registered in WMO-No.9 Volume A prior to July 2016:
    - They have been migrated into OSCAR/Surface with their traditional 5-digits WMO identifiers being automatically converted into WSI:
      - range 20000-20010 in 2nd block, “0” in 3rd block and the traditional WMO ID in 4th block.
    - (e.g. Tokyo) WMO Identifiers: 47662 → WSI: 0-20000-0-47662

1st block (number)	2nd block (number)	3rd block (number)	4th block (character)
WIGOS Identifier Series	**Issuer of Identifier**	**Issue number**	**Local Identifier**
Allows future expansion	Allows to distinguish between identifiers issued by different organizations	Allows sub-delegation	Allocated to station
0	0…65534	0…65534	16 characters

- https://community.wmo.int/en/activity-areas/WIGOS/implementation-WIGOS/WIGOS-station-identifier
- Guide to the WIGOS: WMO-No.1165 *https://library.wmo.int/idurl/4/55696*

II. REGIONAL WIGOS CENTRES IN RA II

- WIGOS Tools to achieve integrated framework

➢ OSCAR – Observing Systems Capability Analysis and Review tool

– Knowing where, how, and why observations are made helps better planning of network evolution and allows users to understand their data.

➢ WDQMS – WIGOS Data Quality Monitoring System

– Monitoring of data ensures the data and products are reliable and correspond to agreed needs.

※WDQMS webtool https://wdqms.wmo.int/

➢ IMS – Incident Management System

– Registration and follow-up of WDQMS issues identified in the quality evaluation process.

■ RWCs – Regional WIGOS Centres

– RWCs help Members with the management of metadata in OSCAR and assist with following up on quality issues coming out of WDQMS.

– RWCs coordinate regional projects and build Members' capacity.

- RWC functions in RA II (RA II MG-16)

➢ Mandatory functions

– Regional WIGOS metadata management (to work with data providers to facilitate collection, updating and provision of quality control for WIGOS metadata in OSCAR/Surface)

– Regional WIGOS performance monitoring and incident management (WDQMS) and follow-up with data providers on availability/quality issues

➢ Optional functions

– Assistance with the coordination of regional/sub-regional WIGOS projects

– Assistance with regional and national observing network management

– Support for regional capacity development activities

• Regional WIGOS Centre Tokyo (RWC Tokyo)

➢ Development

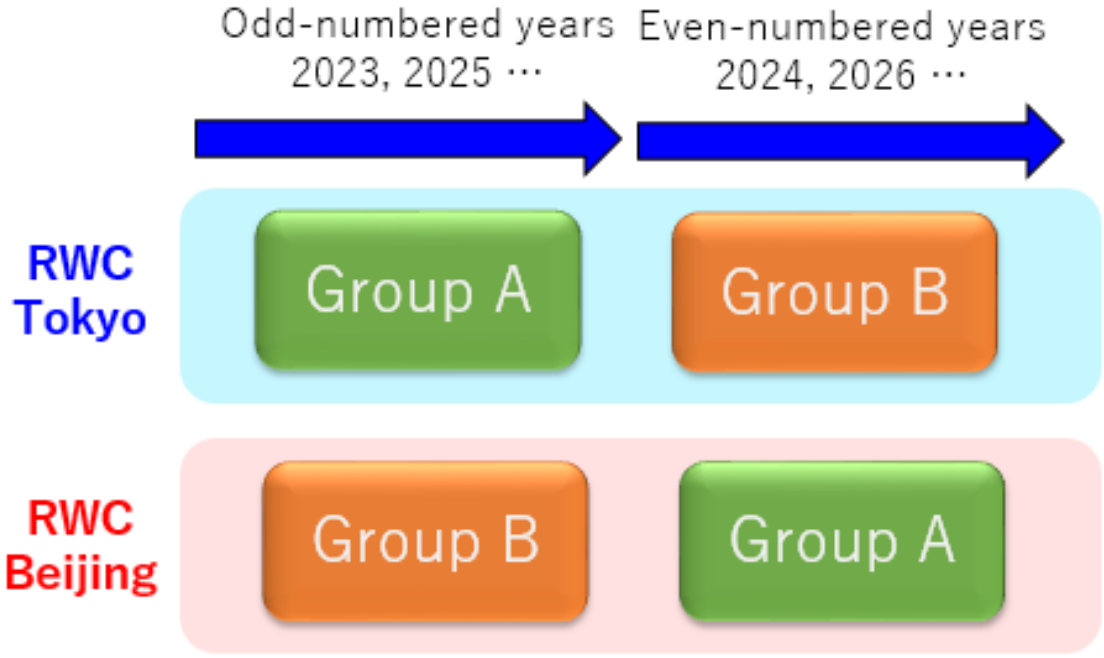
- Jun. 2018: Designated as a RWC in pilot mode
- Mar. 2019: Hold the RA II WIGOS Workshop in Tokyo
- Nov. 2019: Host the OSCAR/Surface Training Course in Tokyo
- Jul. 2021: Begin joint operation with RWC Beijing
- Sep. 2021: Designated as an operational RWC

➢ Operation

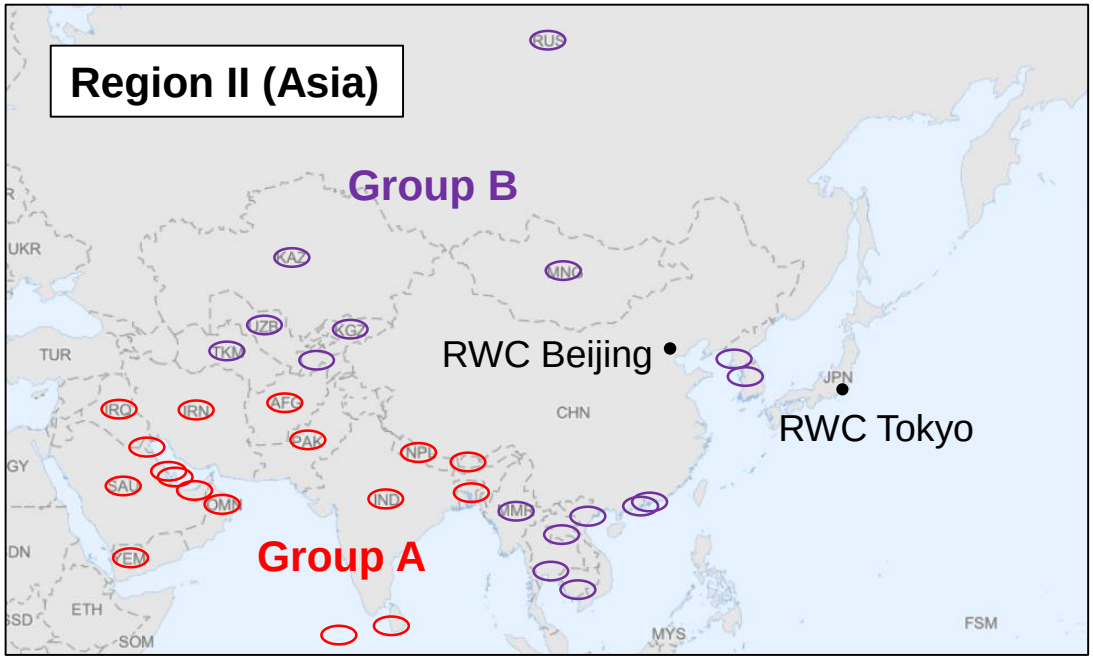
- Mainly run by the Observation Division of JMA
- Closely liaising with related WMO Centres
  - e.g. RSMC Tokyo, RIC Tsukuba, GISC Tokyo and TCC (RCC)
  - Organizing the working group for RWC functions in JMA

- Mandatory Functions
  - Joint operation of RWCs in RA II (RA II MG-16)

➢ RWC Beijing and RWC Tokyo take turns to cover their responsible area every year and share the work of mandatory functions.



➢ Responsible areas for mandatory functions



Group A (17 Members) RWC Tokyo: Odd-numbered years RWC Beijing: Even-numbered years		
Afghanistan	Islamic Republic of Iran	Qatar
Bahrain	Kuwait	Saudi Arabia
Bangladesh	Maldives	Sri Lanka
Bhutan	Nepal	United Arab Emirates
India	Oman	Yemen
Iraq	Pakistan	

Group B (16 Members) RWC Beijing: Odd-numbered years RWC Tokyo: Even-numbered years
Cambodia
Democratic People's Republic of Korea
Hong Kong, China
Kazakhstan
Kyrgyzstan
Lao People's Democratic Republic
Macao, China
Mongolia
Myanmar
Republic of Korea
Russian Federation
Tajikistan
Thailand
Turkmenistan
Uzbekistan
Viet Nam

*Among RA II Members, China and Japan are not involved in the Groups.

- Optional functions - RA II WIGOS Projects
  - ➢ Leadership in RA II WIGOS Projects is a pillar of optional functions of RWC Tokyo.
    - – Enhancement of Data Availability and Quality Management for NMHSs in Surface, Climate, and Upper-air Observations

      * This project was replaced with WDQMS-related activities in 2021.
    - – Capacity Building for Radar Techniques in Southeast Asia
    - – Development of Support for NMHSs in Satellite Data, Products, and Training
  - ➢ Various activities have been conducted under the projects.
    - – Holding workshops and technical meetings

RA II WIGOS Workshop - Regional WIGOS Centres and its services for Members (Tokyo, 6 – 9 March 2019)

OSCAR/Surface Training Course for the RA-II East Asia Subregion (Tokyo, 13 – 15 November 2019)

    - – Conducting surveys to collect Members' capabilities in each field

- # RWC Tokyo Webpage

https://www.jma.go.jp/jma/jma-eng/jma-center/rwc/index.html

気象庁 Japan Meteorological Agency

Japanese | Skip Navigation | About Us | Access | Links | Site Map

Home | Weather/Earthquakes | Services | Publications/Periodicals | News Releases | For NMHSs

Home > For NMHSs > Regional WIGOS Centre Tokyo

Regional WIGOS Centre Tokyo (RWC Tokyo)

The World Meteorological Organization (WMO) runs the WMO Integrated Global Observing System (WIGOS), which covers all WMO observing systems to support WMO Programmes and activities. To aid regional and national WIGOS implementation, Regional WIGOS Centres (RWCs) are tasked with vital roles within the system. In Asia, RWC Tokyo run by the Japan Meteorological Agency (JMA) was designated as one of the first operational RWCs in Asia at the 17th session of WMO's Regional Association II in September 2021.

RWC Tokyo provides WMO Members with regional WIGOS metadata management and regional WIGOS performance monitoring/incident management services as keys to WIGOS implementation. In this context, the RWC helps WMO Members to manage OSCAR/Surface operation and support improved performance via the WIGOS Data Quality Monitoring System (WDQMS). In addition to these essential services, RWC Tokyo engages in capacity development activities such as regional WIGOS projects.

RWC Tokyo liaises closely with related WMO Centres (e.g., the Regional Instrument Centre Tsukuba (RIC Tsukuba) and the Tokyo Climate Center (TCC)) to provide WMO Members with coordinated services regarding all WIGOS-related activities.

Home
News Releases
Work Plans
Reports

Latest News

- RWC Tokyo highlight activities at a Webinar meeting on WMO's WIGOS Learning Portal (14 February, 2022)
- Quality performance report was published.(24 December 2021)
- RWC Tokyo is designated as an operational RWC at the 17th session of RA II. (Online, 27-30 September 2021)

More news...

Contact Information

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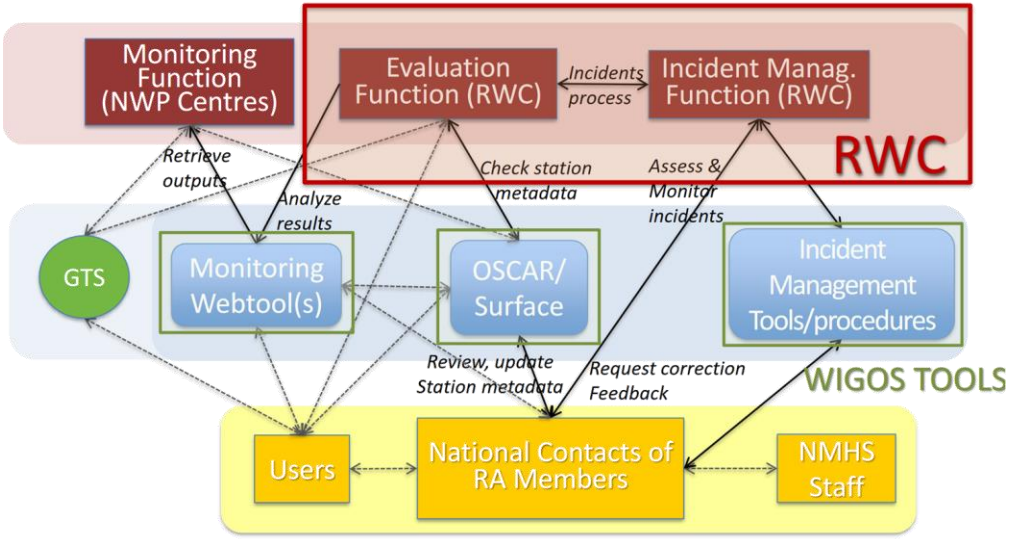
Access to JMA

III. WDQMS Implementation of RWC Tokyo

- WDQMS consists of three functions;
  - Monitoring Function
  - Evaluation Function
  - Incident Management Function

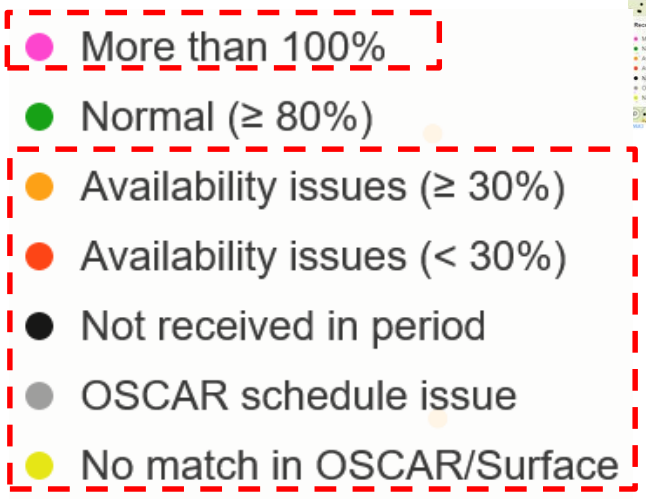


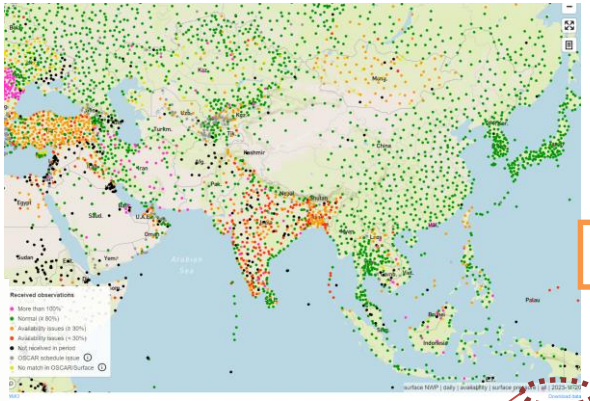
- RWC Tokyo engages in WDQMS;
  - Monitoring of availability, timing and quality of observation data provided by RA II Members using the WDQMS monitoring webtool
  - Members encouragement for response to incidents and related handling via the Incident Management System for WDQMS

• Monitoring and Evaluation Function

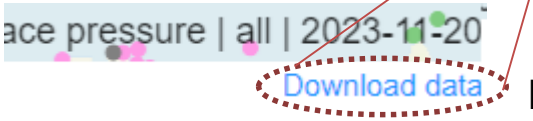
➢ Availability

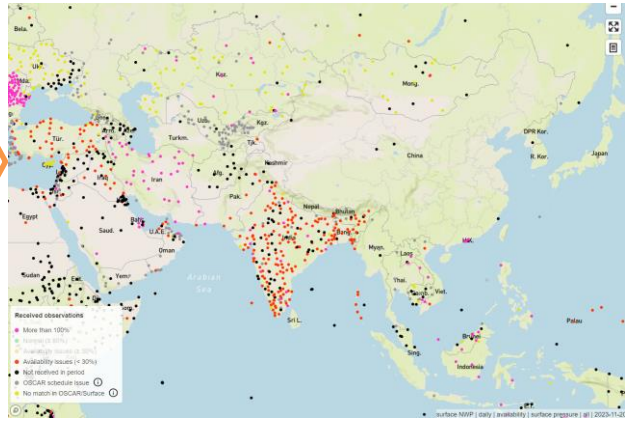
– The results are based on the comparison between the report schedule registered in OSCAR/Surface with the actual acquisition by WIGOS Monitoring Centres.





All observing stations



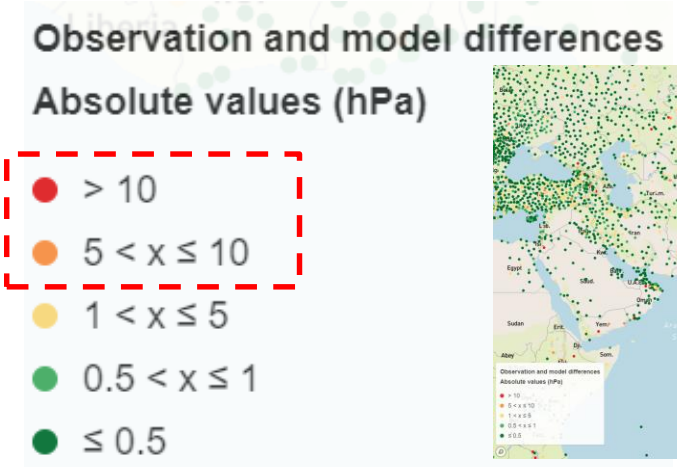


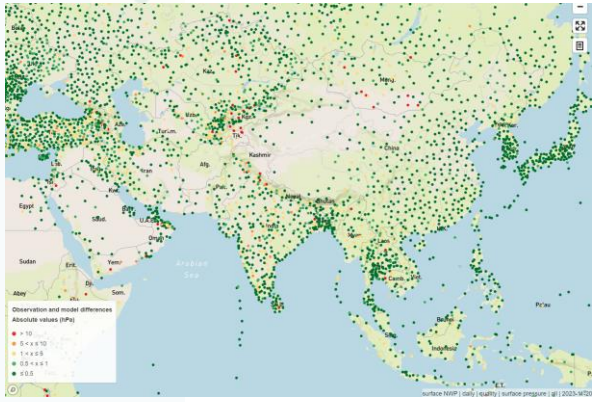
Extracted stations by reporting results

- Monitoring and Evaluation Function (cont.)

➢ Quality

– The results show the value of “Observation against Background” (O-B) averaged over 6-hourly or daily obtained by WIGOS Monitoring Centres.

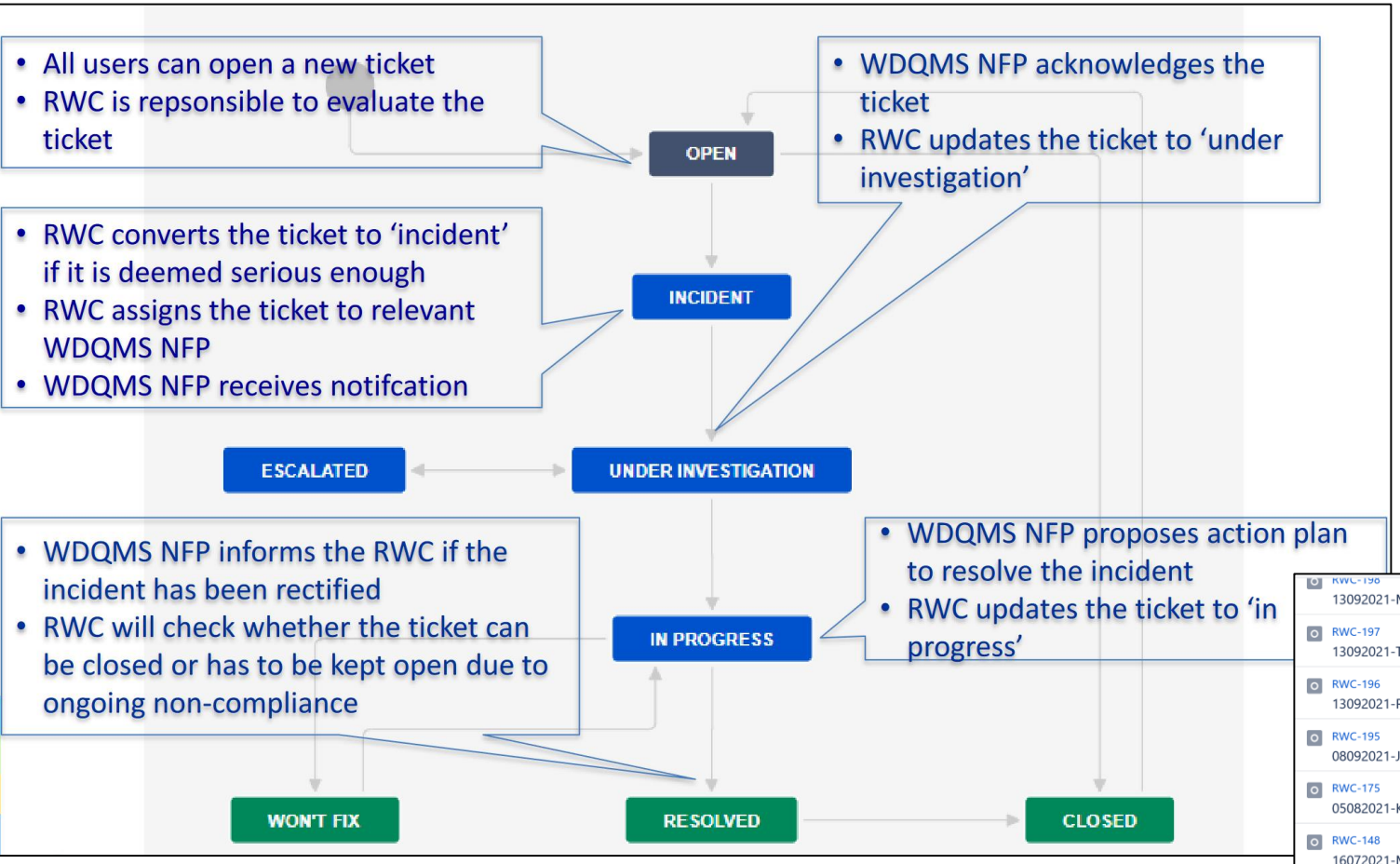




All observing stations

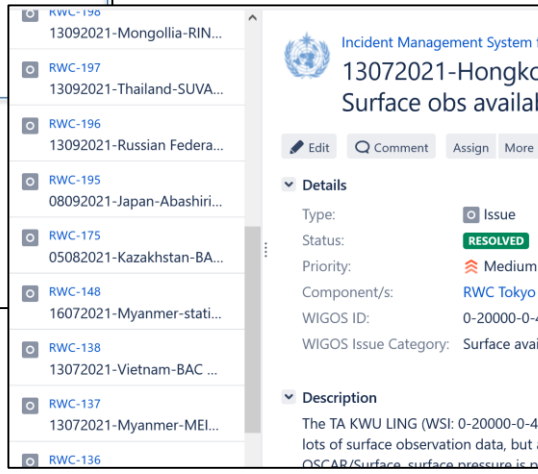
Extracted stations by O-B results

• Incident Management Function



Workflow of the Incident Management System

Incident ticket list on IMS



- The number of incident tickets issued by RWC Tokyo (Jul 2021 – Nov 2023)

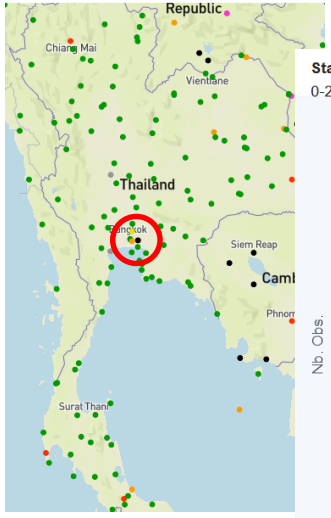
Group A	number	Group B	number
Afghanistan		Cambodia	
Bahrain	1	Democratic People's Republic of Korea	
Bangladesh	1	Hong Kong, China	2
Bhutan	1	Kazakhstan	1
India	4	Kyrgyzstan	
Iraq		Lao People's Democratic Republic	1
Islamic Republic of Iran		Macao, China	1
Kuwait	1	Mongolia	3
Maldives	2	Myanmar	2
Nepal	1	Republic of Korea	
Oman	2	Russian Federation	1
Pakistan	1	Tajikistan	1
Qatar		Thailand	2
Saudi Arabia	2	Turkmenistan	
Sri Lanka	2	Uzbekistan	
United Arab Emirates	1	Viet Nam	2
Yemen		Japan	6

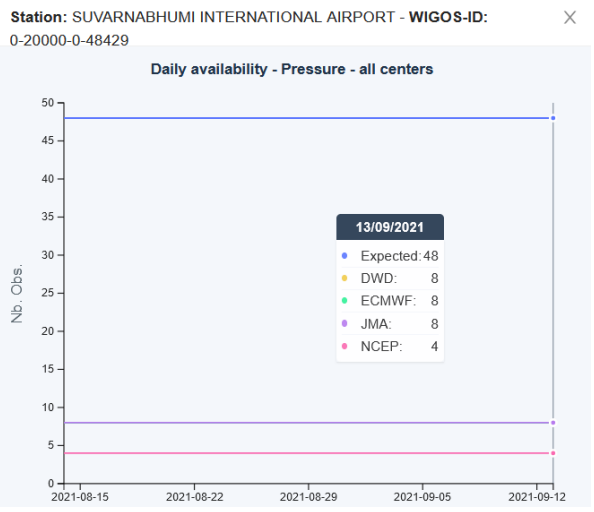
- RWC Tokyo issued 41 tickets as incidents for 23 countries
  - ✓ 19 tickets have been resolved and 86 stations' metadata have improved

• Examples of working on the RWC Tokyo functions in assisting Members

➢ Example 1: Surface availability incident (Thailand)

- Availability of SUVARNABHUMI INTERNATIONAL AIRPORT was < 30%
  - Report number: Expected = 48, Actual = 8
  - The reporting interval needed to be fixed
  - Other 4 stations in Thailand also needed to be fixed the reporting interval
- RWC Tokyo worked with WDQMS NFP, from activating the IMS account to solving the incident.
  - The first contact with NFP who has already been nominated was made via email.
  - The IMS account was activated with the support of WMO WIGOS Branch.



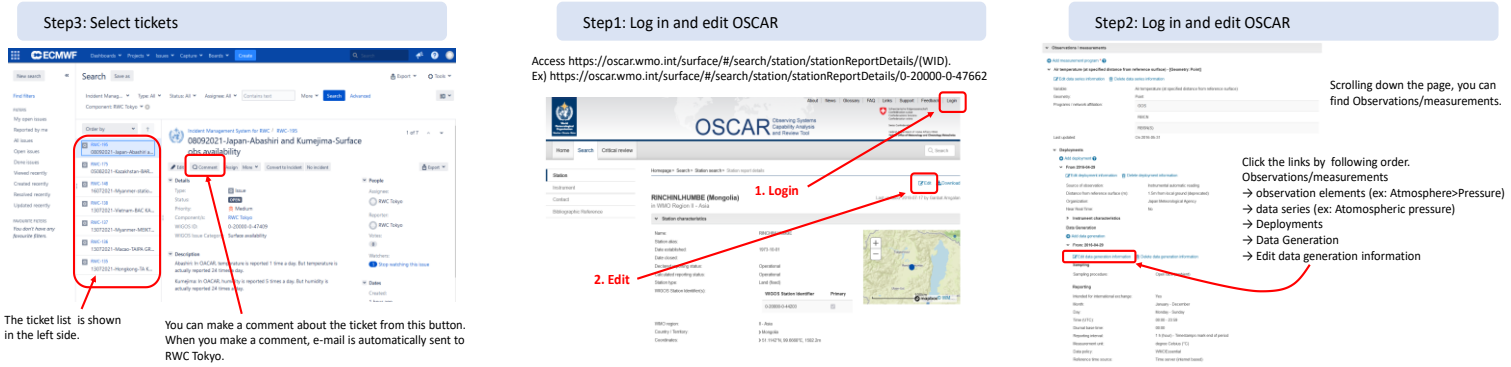


Availability of surface pressure

The reporting interval needed to be fixed(RWC-197)

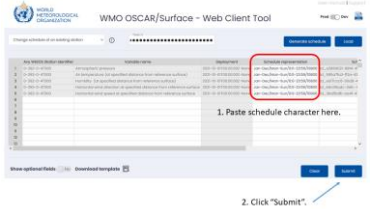
Example 1: Surface availability incident (Thailand) (Cont.)

- Some screenshots explaining how-to use IMS and OSCAR/Surface were sent to the NFP to help with the rectification work.



Screenshot of IMS and OSCAR/Surface sent to NFP

- The communication conducted using emails was logged on IMS by RWC Tokyo later.
- The Web Client Tool of OSCAR/Surface can be used to fix multiple stations efficiently.
  - The period needed to resolve the issue; approximately 3.5 months



A screenshot of the Web Client Tool

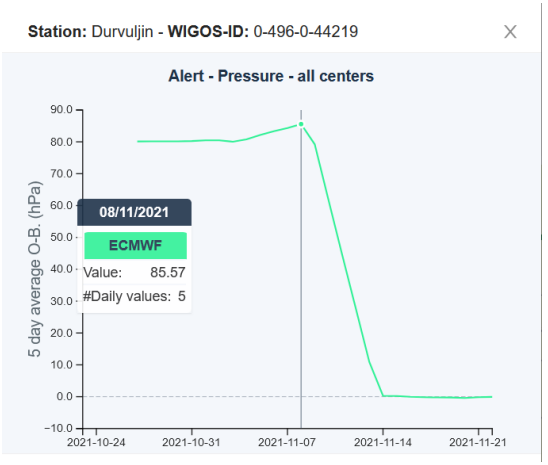
➢ Example 2: Surface quality incident (Mongolia)

- In October 2021, ECMWF (WDQMS Monitoring Centre) found possible incidents regarding barometer height at a part of stations in Mongolia, and the notice was sent to RWC Tokyo via the WMO WIGOS Branch.
- After an incident management process in cooperation with the NFP, O-B values of the stations have been reduced drastically.
- In total, the value of barometer height

  at 17 stations has been fixed

  on OSCAR/Surface.
  - The period needed to resolve

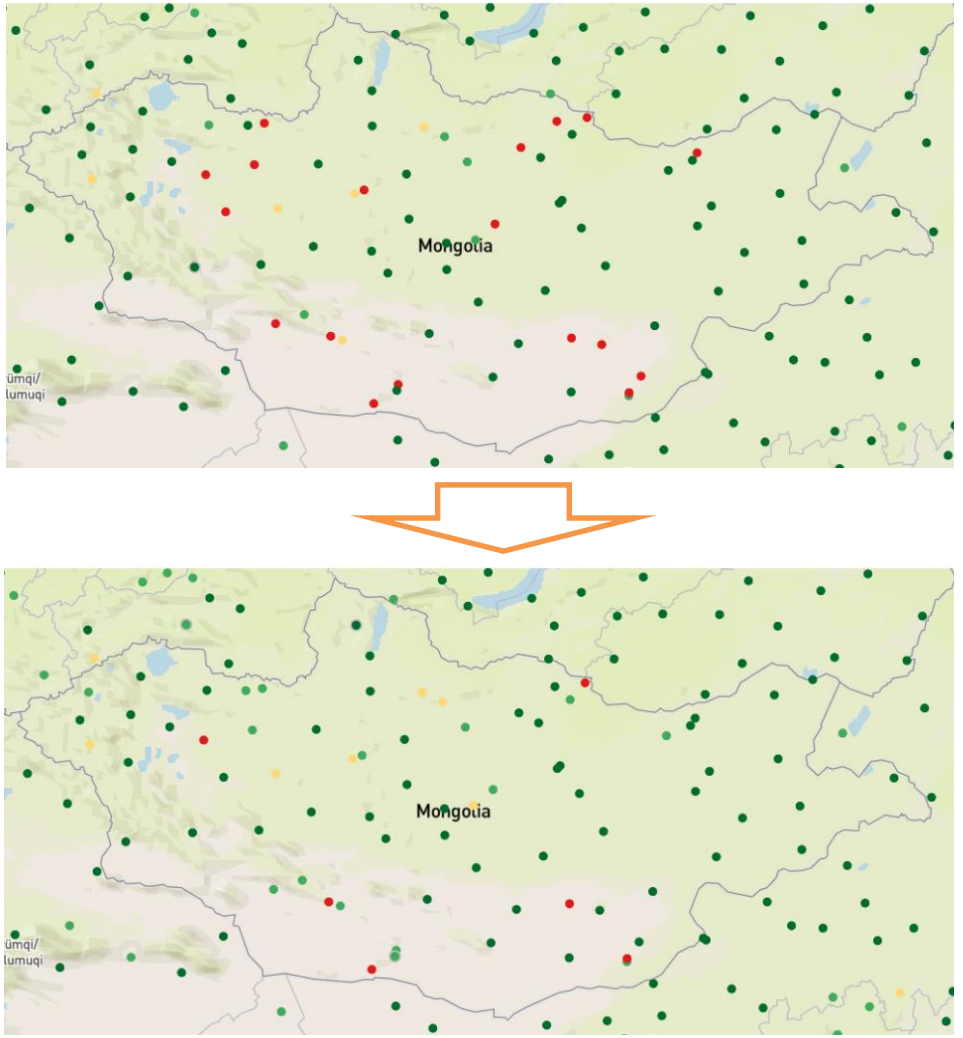
    the issue; approximately 2.5 months



Daily average of O-B (surface pressure)(RWC-211)

➢ Example 2: Surface quality incident (Mongolia) (cont.)

- The quality map of surface pressure has improved visibly.



5-day average of O-B (surface pressure)

• Quality performance report

➢ RWC Tokyo provides monthly and semester-based quality performance reports.

– The content outlines availability and quality monitoring, and semester reports also cover incident management.

– Reports are published in collaboration with RSMC Tokyo.

https://www.jma.go.jp/jma/jma-eng/jma-center/rwc/reports.html

(As of 23 August 2023)

Regional WIGOS Centre Monitoring Report
January – June 2023
Regional Association II (Asia)

RWC Tokyo, Japan Meteorological Agency (JMA)

The regional WIGOS Centre (RWC) Tokyo provided mandatory RWC functions for Group A Members during the period from January to June 2023.

I. WDQMS incident tickets (Closed, Resolved)
No incident tickets issued to NMHSs have been resolved. Two incident tickets have been closed due to handover and duplication respectively. (APPENDIX I)

II. WDQMS incident tickets (Ongoing)
Three new incident tickets issued to Nepal, Oman and Sri Lanka are in progress. Those incidents will be continuously managed by RWC Tokyo. (APPENDIX II)

III. Quality performance
Quality monitoring reports evaluating surface and upper-air observation in Asia which include suspect station lists are available at the following website.
- Monthly Statistics on Availability:
https://www.jma.go.jp/jma/jma-eng/jma-center/rwc/reports.html
- Monthly Statistics on Quality:
http://qc.kishou.go.jp/
Quality reports are issued by the Regional Specialized Meteorological Centre (RSMC) Tokyo operated by the Japan Meteorological Agency (a partner of RWC Tokyo).

IV. Others
There is one notice for future reference. (APPENDIX III)

[APPENDIX I] WDQMS incident tickets (Closed, Resolved)

No.	Date of issue raised	Variable(s) with issues	Station Name / WIGOS ID	Country	Performance category	Remarks
RWC-198	13/Sep/2021	Temperature, humidity, wind, pressure	RINCHINLHUMBE / 0-20000-0-44203	Mongolia	Surface availability	This ticket was inherited by RWC-497.
RWC-663	20/Apr/2023	Temperature, humidity, wind, pressure	KUSHIRO(47418-1) / 0-20001-0-47418 WAJIMA / 0-20000-0-47600 MATSUE / 0-20000-0-47741 SHIONOMISAKI(47778-1) / 0-20001-0-47778 TOKUSHIMA AB / 0-20000-0-47881 IWOTO / 0-20000-0-47981	Japan	Upper-air availability	This ticket issued by ECMWF is the same as RWC-278 and RWC-279.

[APPENDIX II] WDQMS incident tickets (Ongoing)

No.	Date of issue raised	Variable(s) with issues	Station Name / WIGOS ID	Country	Performance category	Remarks
RWC-175	05/Aug/2021	Temperature, humidity, wind, pressure	BARSHINO / 0-20000-0-35357	Kazakhstan	Surface availability	Reporting interval in OSCAR/Surface is possibly incorrect.
RWC-229	06/Jan/2022	Position	DWARKA / 0-20000-0-42731 KODAIKANAL / 0-20000-0-43339 MINICOY / 0-20000-0-43369	India	Surface quality	The position in OSCAR/Surface is incorrect.
RWC-232	12/Jan/2022	Temperature, humidity, wind, pressure	TSAMPA / 0-20000-0-44517	Bhutan	Surface availability	Reporting interval in OSCAR/Surface is possibly incorrect.

Semester report

IV. Challenges

- There are many stations that need to improve the metadata in OSCAR/Surface.
  - It often takes a few months to resolve one incident.
    - WDQMS NFP should liaise closely with OSCAR/Surface NFP and the other related staff members in the technical field and international affairs
    - Not all Members have nominated WDQMS NFP and/or OSCAR/Surface NFP.
    - Need to be familiar with WIGOS tools.

    - Taking advantage of WIGOS Learning Portal
      - ➢ WIGOS Learning Portal provides a lot of tutorials and informative materials (https://etrp.wmo.int/course/view.php?id=146)
    - RWC assists Members
      - ➢ Please don't hesitate to contact RWCs

Thank you!

https://www.jma.go.jp/jma/jma-eng/jma-center/rwc/

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気象庁
Japan Meteorological Agency