Key Activities of RWC Tokyo

MINEMATSU Hiroaki
Regional WIGOS Centre Tokyo
Japan Meteorological Agency

14 December 2021
Sixth Marine Instrumentation Workshop for Asia-Pacific Region

RWC Tokyo's development

June 2018 :	Designated as a RWC in pilot mode
2019 :	Develop RWC pilot activities
March 2019 :	Hold RA II WIGOS Workshop in Tokyo
November 2019 :	Host OSCAR/Surface Training Course in Tokyo
Second half of 2019 - 2020:	Develop WDQMS in pilot mode
July 2021 :	Begin joint operation of RWC
September 2021:	Designated as operational RWC

Outline

I. Mandatory Functions
   1. Regional WIGOS metadata management
   2. WDQMS (monitoring, evaluation, incident management)

II. Joint operation of RWCs

III. Optional Functions

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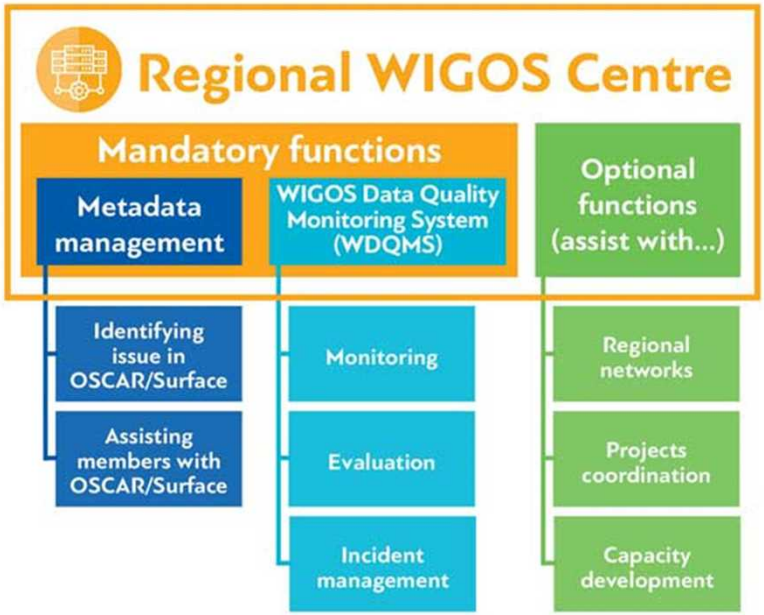
I. MANDATORY FUNCTIONS

I. RWC's Mandatory Functions

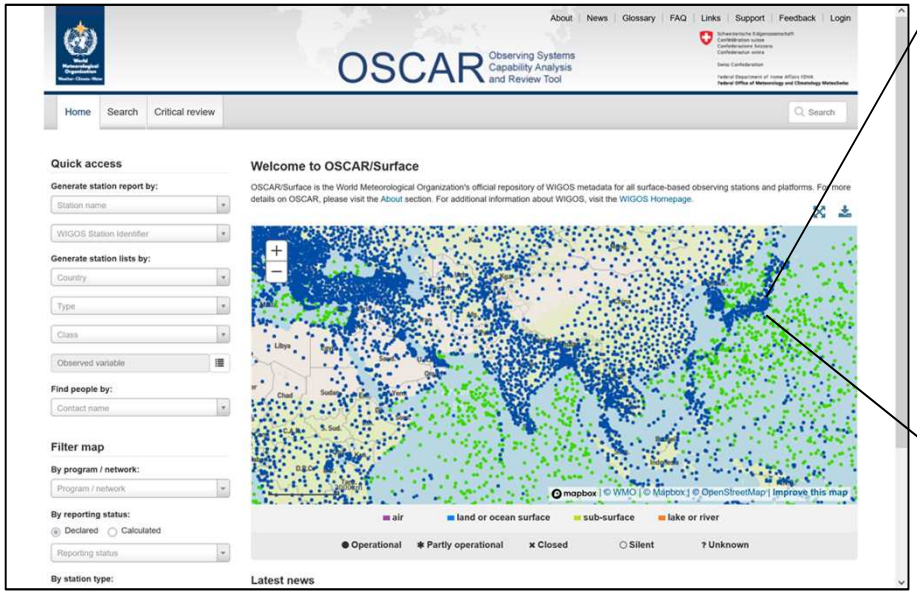
I-1) Regional WIGOS metadata management (to work with data providers to facilitate collection, updating and provision of quality control for WIGOS metadata in OSCAR/Surface)

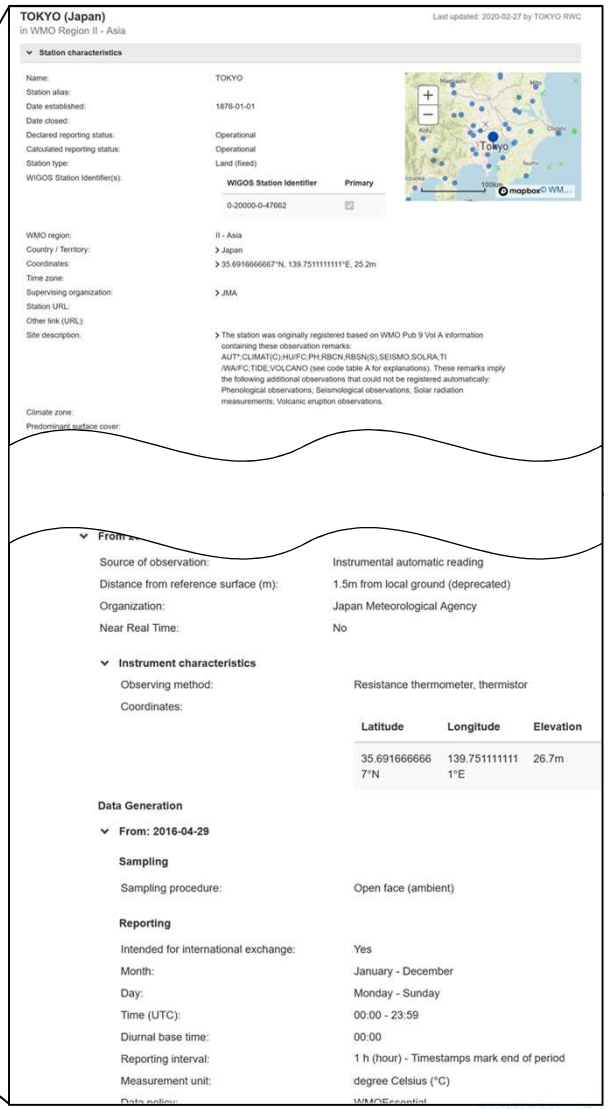
I-2) Regional WIGOS performance monitoring and incident management (WIGOS Data Quality Monitoring System; WDQMS) and follow-up with data providers on availability/quality issues



I-1. Regional WIGOS metadata management

- ✓ RWC Tokyo helps RA II Members identify issues in OSCAR/Surface and update it through exercising WDQMS and other means.





https://oscar.wmo.int/surface/

I-1. Regional WIGOS metadata management

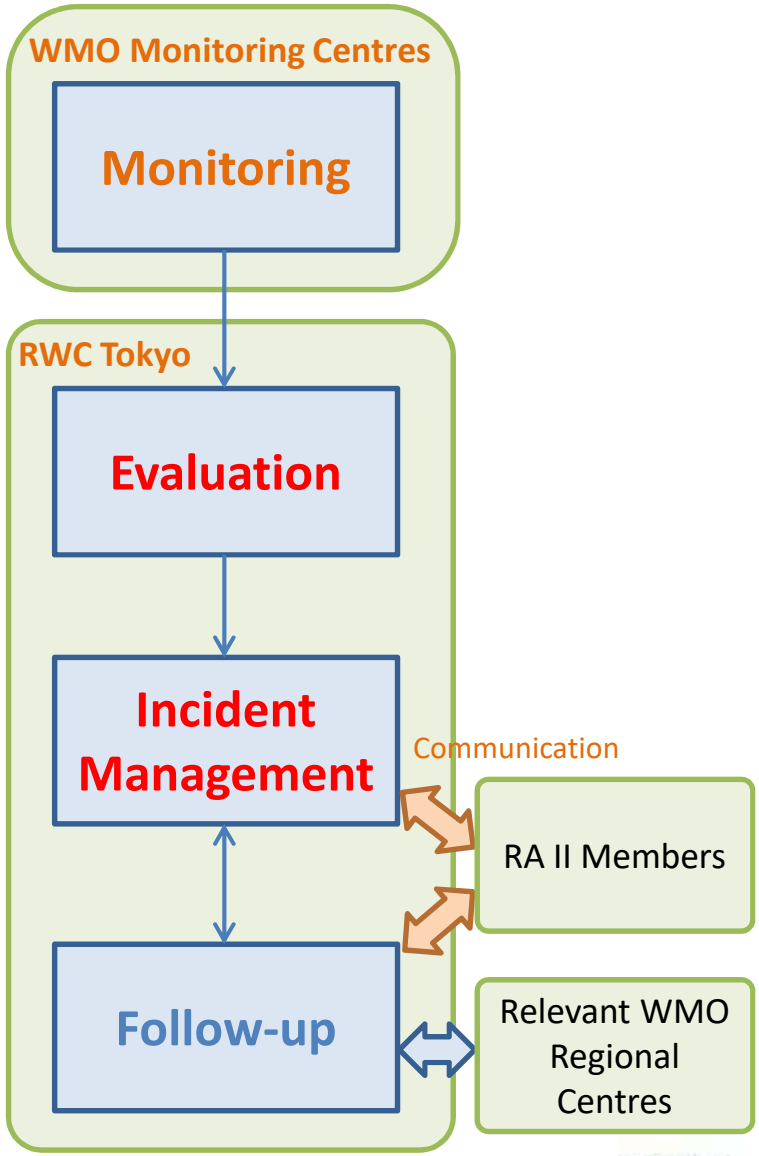
– OSCAR/Surface Training Course for the RA-II East Asia Subregion –
(Tokyo, Japan, 13 - 15 November 2019)

- ✓ The event was attended by 16 OSCAR/Surface National Focal Points or their alternates from 14 NMHSs.
  - ✓ NFPs from Bangladesh, Bhutan, China, India, Iran, Japan, Lao PDR, the Maldives, Mongolia, Myanmar, the Republic of Korea, Sri Lanka, Thailand and Vietnam
- ✓ The course covered the WIGOS Metadata Representation model, updating of metadata for surface-based observation systems with the OSCAR/Surface web interface, and review/improvement of national processes related to metadata collection and processing.

https://www.jma.go.jp/jma/en/photogallery/OSCAR_Surface_Training_201911.html

I-2. WDQMS

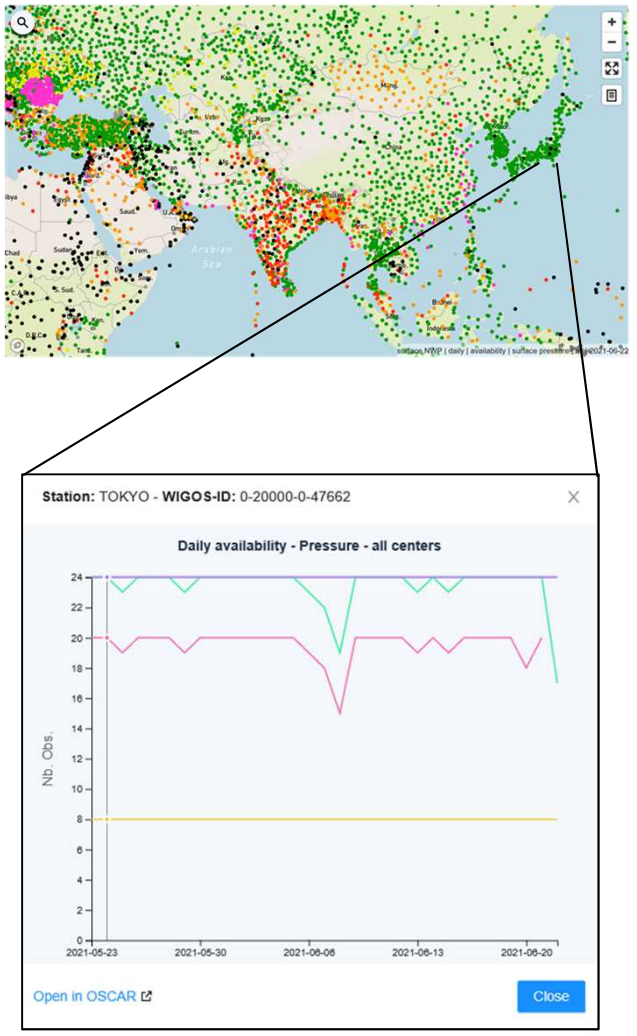
1. Monitoring:
   To monitor availability, timeliness and quality of observation data
2. Evaluation:
   To evaluate the monitoring results and specify problematic stations
3. Incident Management:
   To Notify the problem to Members and keep track of rectifying progress
4. Follow-up:
   To assist Members in solving problems in collaboration with relevant WMO Regional Centres
   e.g. RIC Tsukuba, GISC Tokyo, Tokyo Climate Center



I-2. WDQMS (Monitoring)

- ✓ RWC Tokyo uses the WDQMS webtool launched by WMO as a resource to monitor the performance of WIGOS observing components.

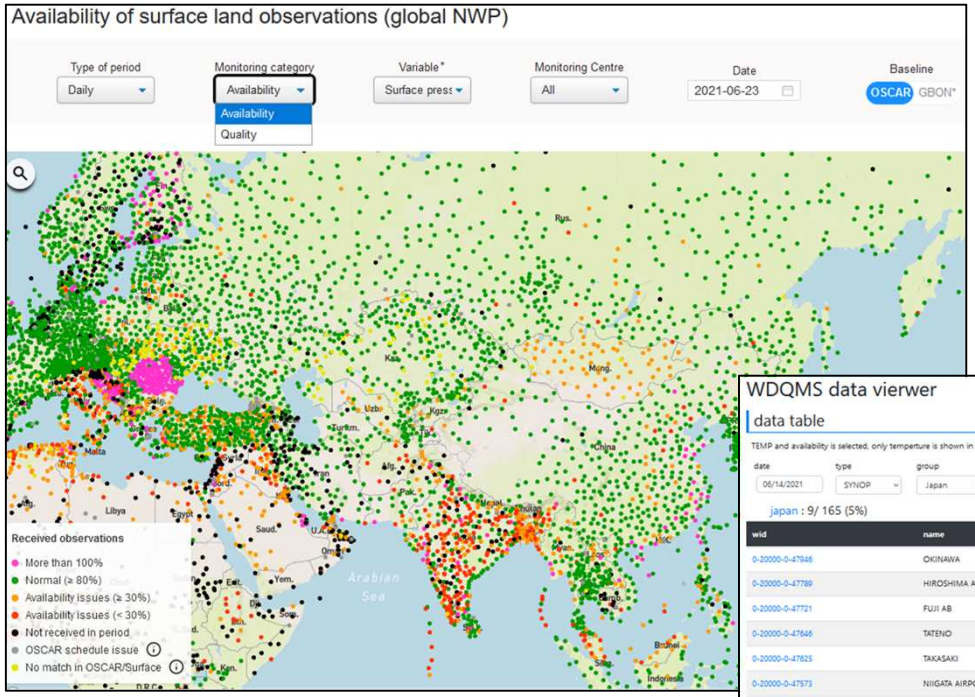
- ✓ The webtool shows the availability and quality of surface/upper-air observational data based on OSCAR/Surface and near-real-time NWP monitoring information from DWD, ECMWF, JMA and NCEP.
  - ✓ JMA has participated in the NWP Quality Monitoring Pilot Project on WDQMS since 2016 and provided monitoring output.

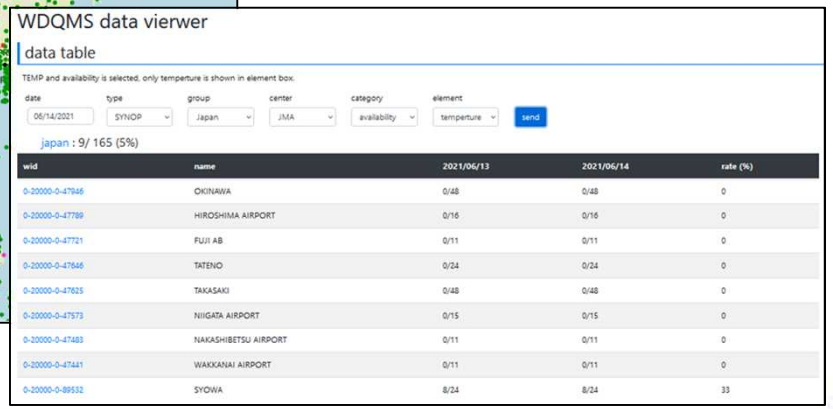


https://wdqms.wmo.int/

I-2. WDQMS (Evaluation)

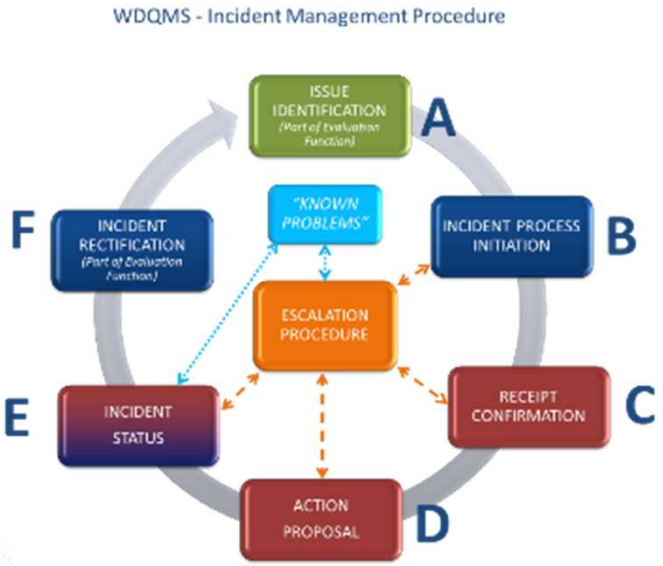
- RWC Tokyo evaluates the results of the monitoring process and find problematic stations.
- Key areas; Data availability, timeliness and accuracy
  - The areas are defined by WDQMS Technical Guidelines.

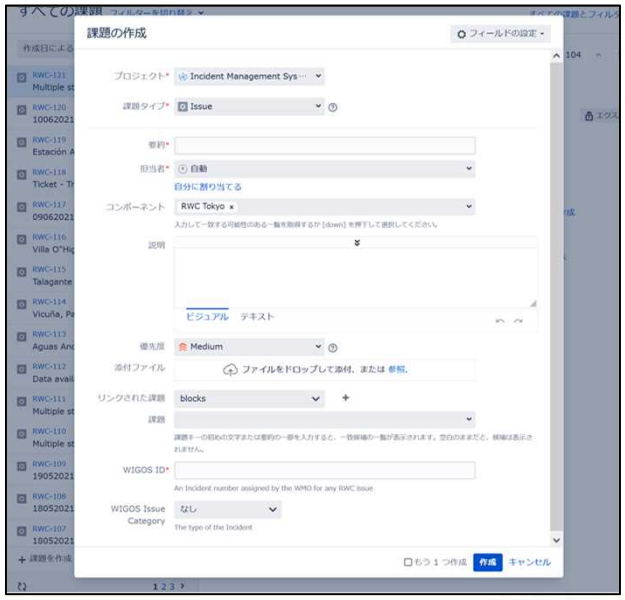




I-2. WDQMS (Incident Management)

- RWC Tokyo notifies incidents to Members when finding problematic stations. Since then, RWC Tokyo communicates with the Members while they deal with the incidents.
- During the whole incident management process, RWC Tokyo uses JIRA, the common Incident Management System of WDQMS, to conduct its function.
  - On JIRA, RWC Tokyo issues an incident ticket for every incident.





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II. JOINT OPERATION OF RWCS

II. Joint operation of RWCs in RA II

Group A Lead by RWC Tokyo (From 1 Jan. to 30 Jun.) Lead by RWC Beijing (From 1 Jul. to 31 Dec.)	Group B Lead by RWC Beijing (From 1 Jan. to 30 Jun.) Lead by RWC Tokyo (From 1 Jul. to 31 Dec.)
Afghanistan	Cambodia
Bahrain	Democratic People's Republic of Korea
Bangladesh	Hong Kong, China
Bhutan	Kazakhstan
India	Kyrgyzstan
Iraq	Lao People's Democratic Republic
Islamic Republic of Iran	Macao, China
Kuwait	Mongolia
Maldives	Myanmar
Nepal	Republic of Korea
Oman	Russian Federation
Pakistan	Tajikistan
Qatar	Thailand
Saudi Arabia	Turkmenistan
Sri Lanka	Uzbekistan
United Arab Emirates	Viet Nam
Yemen	

RWCs: China and Japan

Regional WIGOS Centre Tokyo

III. OPTIONAL FUNCTIONS

III. RWC Tokyo's Optional Functions

JMA has conducted regional activities and keeps doing them as "RWC Tokyo's Optional Functions" in collaboration with relevant WMO Centres.

III-1) Assistance with the coordination of regional/sub-regional and national WIGOS projects

- ✓ Coordinating the RA II WIGOS Implementation Projects as the Project Leaders/Coordinators, and advising national WIGOS projects in each Member

III-2) Assistance with regional and national observing network management

- ✓ Providing advices on management of regional and national observing networks in collaboration with relevant WMO Centres (RIC, RCC, RRC, WCC and QA/SAC)

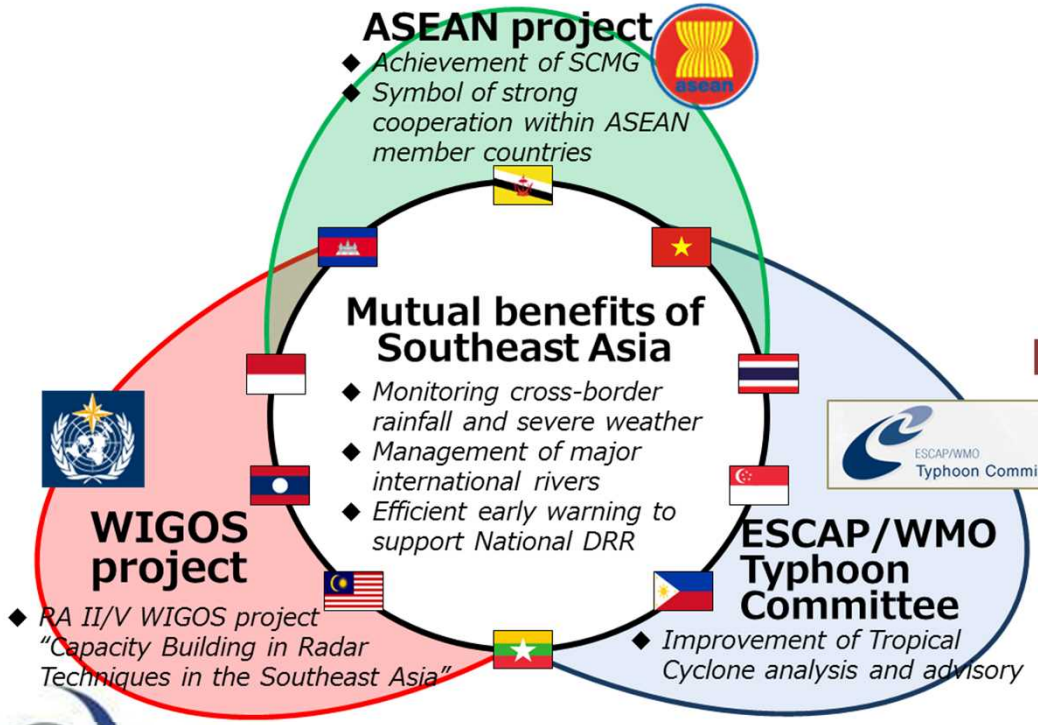
III-3) Support for regional capacity development activities

- ✓ Supporting regional capacity development activities through technical cooperation in collaboration with relevant WMO Centres (RSMC for Nowcasting, RIC and RCC)

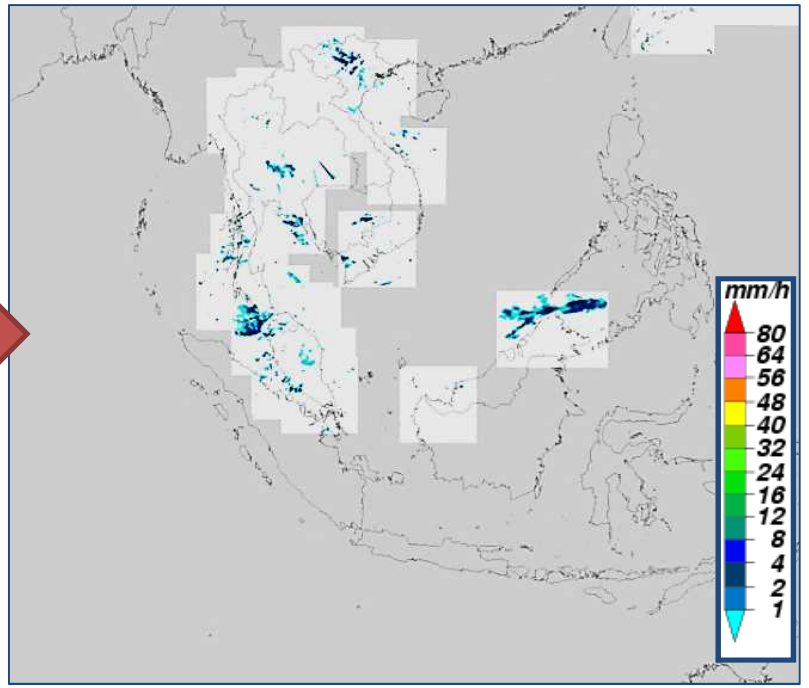
RA II WIGOS Project

Capacity Building in Radar Techniques in Southeast Asia

- ✓ WMO RA II & V WIGOS regional radar project (since 2013)
- ✓ Technical cooperation on development of regional radar network in Southeast Asia under the ESCAP/WMO Typhoon Committee (since 2011)
- ✓ ASEAN Radar Workshops (2014 and 2018)



Southeast Asian Radar Network



RA II WIGOS Project

Enhance the Availability and Quality Management Support for NMHSs in Surface, Climate and Upper-air Observations

Survey ➡ Workshop ➡ Report ➡ Actions

Round 1

Gap-analysis between user requirements and current status in NMHSs in RA II
(27-30 July 2010, Tokyo, Japan)

Round 2

Improvement of understanding of and skills in traceability of measurements in NMHSs in RA II
(19-22 February 2013, Tsukuba, Japan)

Round 3

Capacity building on Quality Management techniques in rainfall observation in NMHSs in RA II
(19-23 March 2018, Tokyo, Japan)

* This project ended in 2020. WDQMS-related activities for capacity development have been carried out since 2021.

RA II WIGOS Project

Develop Support for NMHSs in Satellite Data, Products and Training

(1) Support for the preparation of satellite data users in relation to the new generation of geostationary meteorological satellites

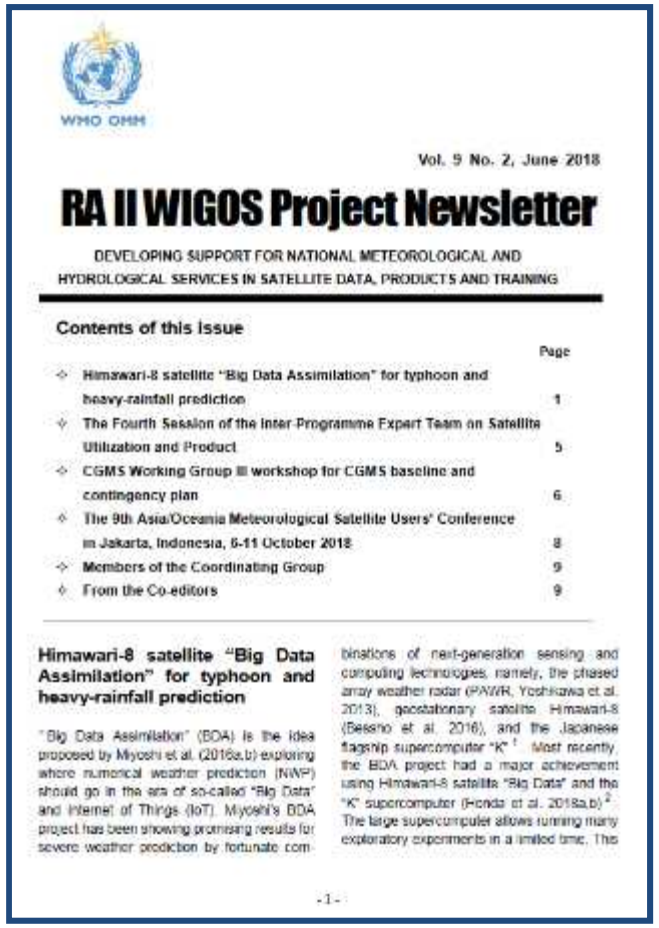
(2) Establishment of close coordination between the RA II WIGOS Project and the RA-V Task Team on Satellite Utilization

(3) Establishment of the new webpage of the RA II WIGOS Project (hosted by JMA)

(4) Convening the series of Asia/Oceania Meteorological Satellite Users' Conference (AOMSUC)

(5) Conducting the trainings and questionnaires on the utilization of new generation of geostationary meteorological satellites through the AOMSUCs

(6) Quarterly newsletters for RA II Members



WMO OMM

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RA II WIGOS Project Newsletter

DEVELOPING SUPPORT FOR NATIONAL METEOROLOGICAL AND HYDROLOGICAL SERVICES IN SATELLITE DATA, PRODUCTS AND TRAINING

Contents of this issue

Himawari-8 satellite "Big Data Assimilation" for typhoon and heavy-rainfall prediction

"Big Data Assimilation" (BDA) is the idea proposed by Miyoshi et al. (2016a,b) exploring where numerical weather prediction (NWP) should go in the era of so-called "Big Data" and Internet of Things (IoT). Miyoshi's BDA project has been showing promising results for severe weather prediction by fortunate com-

binations of next-generation sensing and computing technologies, namely, the phased array weather radar (PAWR, Yoshikawa et al. 2013), geostationary satellite Himawari-8 (Bessho et al. 2016), and the Japanese flagship supercomputer "K" [1]. Most recently, the BDA project had a major achievement using Himawari-8 satellite "Big Data" and the "K" supercomputer (Honda et al. 2018a,b) [2]. The large supercomputer allows running many exploratory experiments in a limited time. This

-1-

https://www.jma.go.jp/jma/jma-eng/satellite/ra2wigosproject/ra2wigosproject-intro_en_jma.html

Thank you!

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