Session 1.4
Review of the results of the questionnaire on Quality Management of Surface Meteorological Observations in RA II

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Thank you
for joining this workshop
Communication with you in the last two months

And many e-mail messages
Draft report

2 tables and 32 graphs
Why?

Why do we assemble here?
Recent disasters

3. Major recent rainfall-related disaster

Heavy rain in Quang Ninh 2015
- From 2015/02 to 2015/04, heavy rains and subsequent floods affected the northeastern region of Vietnam, particularly in Quang Ninh province.
- Daily rainfall in some areas reached 400 mm.
- 17 people died, over 1700 houses destroyed, 4000 hectares of rice and banana crops damaged.

Country report previews
JMA’s approach

Observation

Nowcasts
- Real time
- QPE
- QPF

Hydrological indices

NWP

Weather forecast and warning/advisory services
The questionnaire survey on Quality Management for Surface Meteorological Observations in RA II was conducted in 2016.

Twenty NMHSs in RA II Members responded to the questionnaire.

JMA analyzed the responses and prepared the draft report of the survey results.
Four groups: manned weather stations, manned precipitation/hydrological stations, automatic weather stations and automatic precipitation/hydrological stations are used.

Four icons are used:
- Manned
- Automatic
- Weather
- Rainfall

precipitation/hydrological
Major findings (1/4)

Automatic precipitation/hydrological stations are operated by only one third of NMHSs.
Precipitation/hydrological stations are operated with difficulties in a quality check of the observation data and an environmental check of the stations.

Only one half of NMHSs manually check observation data.
Precipitation/hydrological stations are operated with difficulties in a quality check of the observation data and an environmental check of the stations.

Lower activities are conducted for checking station conditions.
A percentage of NMHSs which utilize observation data of the precipitation/hydrological stations for application effective in Disaster Risk Reduction, such as advisories/warnings and nowcasting, is generally lower than that of NMHSs utilizing observation data of weather stations.
A percentage of NMHSs which utilize observation data of the precipitation/hydrological stations for application effective in Disaster Risk Reduction, such as advisories/warnings and nowcasting, is generally lower than that of NMHSs utilizing observation data of weather stations.
NMHSs recognized “lack of skilled staff” rather than “lack of knowledge.”
Many NMHSs which responded to the questionnaire operate services in rainy regions.

Although a precipitation observation is one of key components for DRR, it was recognized that many observation stations faced difficulties in both the quality check of observation data and the environment check of the stations.

It was also found that there was room for improvement in applications of observation data such as nowcasting or issuing advisories/warnings.
Given that DRR is one of the highest priorities, multi-scale challenges should be discussed by Member countries to solve issues.

We are focusing on the precipitation observation in this workshop.
Although we focus on rain...
What?
What do we learn and discuss?
Rain
Heavy Rain

Big

≠ Big raindrop
Science!

We need science
Workshop outline

Session 1
- WIGOS
- Survey
- Country report

Session 2
- Calibration/traceability

Session 3
- Operational QM
- Science

Session 4
- Discussions
- Workshop outcome
Huge raindrop

Unnatural?
Raindrop shape and size

Equilibrium drop shapes for drop diameters of 1-6mm.

https://pmm.nasa.gov/education/articles/shape-of-a-raindrop
Motivation and inspiration
Motivation and inspiration

The Water Cycle

1. Evaporation
2. Transportation
3. Sublimation
4. Condensation
5. Transportation
6. Precipitation
7. Deposition
8. Infiltration
9. Runoff and Percolation
10. Plant Uptake
9. Surface Flow
8. Surface Flow
7. Surface Flow
6. Precipitation
5. Transportation
4. Condensation
3. Sublimation
2. Transportation
1. Evaporation

http://www.noaa.gov/resource-collections/water-cycle

JMA / WMO Workshop on Quality Management of Surface Observations - RA II WIGOS project Tokyo, Japan 19-23 March 2018
Automatic precipitation/hydrological stations are operated by only one third of NMHSs.

Precipitation/hydrological stations are operated with difficulties in a quality check of the observation data and an environmental check of the stations.

A percentage of utilization of precipitation/hydrological observation data for Disaster Risk Reduction applications is generally.

NMHSs recognized “lack of skilled staff” rather than “lack of knowledge.”

(A) Visions of surface observation networks

(B) Short-term or long-term goals of the quality of observation data

(C) Improvement of on-site quality management

(D) Approach to training skilled staffs
How?

How do we discuss?
### Organization

#### (A) Visions of surface observation networks

- Ms. Al Hameli, Ms. Al Mandoos
- Ms. Do, Mr. Faisal, Mr. Le Xuan

#### (B) Short-term or long-term goals of the quality of observation data

- Dr. Cui, Mr. Douangmala
- Mr. Phapany, Mr. Promsut
- Mr. Sungkhawanna
- Mr. Thala Bandaralage
- Mr. Wimalasuriya

#### (C) Improvement of on-site quality management

- Mr. Abdul Karrem, Dr. Ahmad
- Mr. Hak, Mr. Lwin, Ms. Nan
- Mr. Toe Aung

#### (D) Approach to training skilled staffs

- Ms. Baten, Mr. Chowdhury
- Mr. Gayyoom, Mr. Lyhon

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Key words

(A) Visions of surface observation networks
design, DRR, integrated, international/inter-agency, observation/analysis, regional climate

(B) Short-term or long-term goals of the quality of observation data
DRR, field work, international collaboration, quality information, services/products, study

(C) Improvement of on-site quality management
calibration, environment, instrument, integration, spatiotemporal scale, system

(D) Approach to training skilled staffs
cooperation, face-to-face, post-workshop newsletters, practical demonstration, telecommunicated, training materials
### Related stories

| (A) Visions of surface observation networks | Rain and snow (25 Jan)  
Quality of design and service (31 Jan) |
| (B) Short-term or long-term goals of the quality of observation data | Quality of design and service (31 Jan)  
Qualitative or quantitative (6 Jan) |
| (C) Improvement of on-site quality management | Qualitative or quantitative (6 Jan)  
Quality management for WIGOS era (19 Feb) |
| (D) Approach to training skilled staffs | Training for improving skill (14 Feb)  
Workshop (19 Feb) |
## Schedule

### Session 4.1
Discussion on future activities/actions for improvement of quality management of observation data in RA II

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0900-0910</td>
<td>Discussion guidance</td>
</tr>
<tr>
<td>0910-1030</td>
<td>Group discussions</td>
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<tr>
<td></td>
<td>- Discuss a group’s topic with referring other sessions’ lectures, key words and related stories (newsletter dated 19 Feb.).</td>
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<tr>
<td></td>
<td>- Write presentation slides on a summary of group discussions using a template below.</td>
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<tr>
<td>1030-1100</td>
<td>Break</td>
</tr>
<tr>
<td>1100-1130</td>
<td>Presentations on group discussion results</td>
</tr>
<tr>
<td>1130-1230</td>
<td>General discussion on proposal for action plan</td>
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</tbody>
</table>
Session 4.1
Discussion on future activities/actions for improvement of quality management of observation data in RA II
0910-1030 Group discussions
(A) Visions of surface observation networks

(B) Short-term or long-term goals of the quality of observation data

(C) Improvement of on-site quality management

(D) Approach to training skilled staffs

Because ultimately only skilled staffs would realize (A), (B) and (C). Therefore, discussions on (A), (B) and (C) should be linked to (D).
It is noted that many NMHSs recognized “lack of skilled staff” rather than “lack of knowledge” according to the survey.

Sharing knowledge and information is becoming easy through technological innovations of telecommunication.

We live in our highly-telecommunicated age and the telecommunicated approaches must provide many people opportunity to learn.

Face-to-face meetings still have a significant role such as learning, training, and finding common goals.

A face-to-face meeting works to unite the people concerned.
Satellite Infrared Imagery

In the troposphere, temperature decreases with height. You can estimate cloud top height using infrared brightness temperature.
Visions – integration (2/3)

Precipitation below limit
Data quality is OK.

Precipitation exceeds limit.
Data quality is suspected.

Infrared brightness temperature - surface temperature [K]

Upper limit of precipitation intensity

Grey dot: precipitation

Rain gauge observation data

10-min rainfall [mm]

Precipitation below limit
Data quality is OK.

Precipitation exceeds limit.
Data quality is suspected.
The current HRPN operational algorithm is designed to correct wind-induced horizontal drift that occurs when raindrops fall based on the wind speed of several layers.

The nature of complex raindrop tracks associated with air flow (left) and the orographic concentration of raindrops are currently being researched.
Summary

The questionnaire survey on Quality Management for Surface Meteorological Observations in RA II was conducted in 2016.

Twenty NMHSs in RA II Members responded to the questionnaire.

JMA analyzed the responses and prepared the draft report of the survey results.

It was recognized that many observation stations faced difficulties in both the quality check of observation data and the environment check of the stations.

Improvement in DRR applications of observation data is needed.

WE WILL DISCUSS
(A) Visions of surface observation networks

(B) Short-term or long-term goals of the quality of observation data

(C) Improvement of on-site quality management

(D) Approach to training skilled staffs
Between atmosphere and people

The bottom of the atmosphere is the surface of the earth where people live. Therefore, meteorological observation on the surface is very close to people’s daily life. We are working...
Thank you