Session 4.8

Discussion: How do we improve observing system?
- Review of Tokyo Action Plan 2018 status -

All participants

with Seiichiro Kigawa (JMA)

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As an introduction, we would like to review the JMA/WMO Workshop on Quality Management of Surface Observations held in March 2018.

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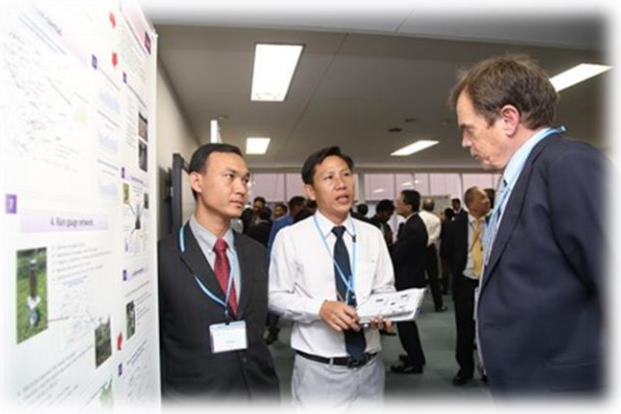


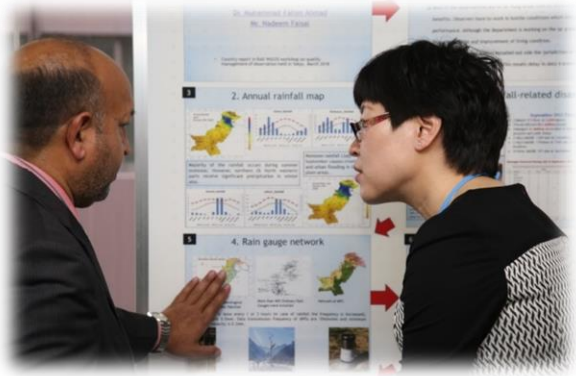
Major recent rainfall related disaster

Water stagnation in Dhaka city

Dhaka receives about 200mm rainfall annually , of which almost 80% falls during monsoon period . Floods are one of the main natural hazards affecting the city

Heavy rainfall in Chittagong city in June 2017.

There was over 300 mm of rain in between the early mornings of June 13 and 14.



3 Participants shared information on challenges in rainfall observation.

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Regional Instrument Centres (RICs) Tsukuba, Beijing and Manila reported on their services.

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The WMO/CIMO Lead Centre on Precipitation Intensity gave a presentation on rain gauges.

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We discussed responses to challenges and then …

WORKING TOGETHER

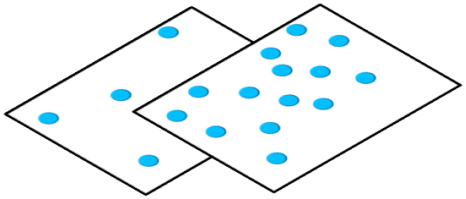
2020

Devise and implement training on quality improvement

2023

Improve quality management

2028



Enhance observation networks

The Tokyo Action Plan 2018 was formulated.

WORKING TOGETHER

2020

Devise and implement training on quality improvement

TAP2018 Newsletter

23 April, 2018 #1

Post-workshop series launched

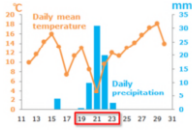
- Post-workshop series

  Thank you very much for your comments on revised TAP2018 proposal with many heart-warming words. We were really encouraged and then we launched the post-workshop newsletter series as part of TAP2018.

  Because we are working together, please let us know if you find potential topics for this newsletter. Regional or local issues are also welcome, since we are focusing on a common challenge as we fully understood on Day 1 of the workshop. Even if it would be a local subject, someone might have already found solution. Please don't hesitate to contact us.

- Tokyo's weather

  As shown in the right figure, the week of the workshop was really rainy and cold. Do you think that the workshop's theme brought such weather? If we believe so, our reunions must be a good idea to establish our hypothesis scientifically.



- CIMO TECO-2018

  JMA has submitted an abstract of our workshop summary with configuration study for CIMO TECO-2018. The configuration study corresponds to one of short-term actions: conduct research to determine optimal observation network configuration. It will introduce one middle-term action: develop guidance on integrated observing systems for surface observation with remote sensing, and will develop two long-term actions: (1) Improve observation resolution and (2) Increase station observation network density. Therefore, this study includes the essentials of TAP2018.

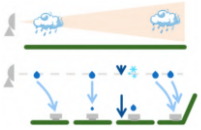
- Study?

  We have the following scenario for the study. As you know, one of keys for precipitation observation is a combination of rain gauge and radar observations. In this study, polarimetric-radar is supposed. Polarimetric-radar-based rainfall estimation contributes toward improving the accuracy of the precipitation observation. However, even if the polarimetric radar variables are available, the uncertainty of radar-based rain rate estimation increases when:

  - the volume of observation is large due to a great distance away from radar, or
  - a radar beam that reaches high altitudes causes:
    - increased wind-induced horizontal drift
    - increased evaporation
    - more opportunities for phase transformation
    - increased orographic concentration

    of raindrops/snowflakes that occur when they fall from the beam altitude to the surface.

  The above-mentioned factors of the rain rate uncertainty have been considered in the algorithm of advanced Quantitative Precipitation Estimation (QPE) like JMA's High-resolution Precipitation



TAP2018 Newsletter

22 June, 2018 #2

Short-term actions

- Summary report update

  As we informed you on 29 May, the summary report of the workshop has been refined by polishing some expressions to clarify our actions and plans more appropriately. This process is essentially required to publish a report via JMA's Web site. Contract specialists are involved in this process. Since we learned a lesson from this time that required a long time, we will try to refine a report promptly next time; hopefully by almost real-time processing.

- TAP2018 Short-term actions

  We are trying to define short-term actions as more specific plans. For example:

  - *Increase the number of reporting stations and observation resolution (every three hours or hourly).*

    We are planning evaluation of Quantitative Precipitation Estimation (QPE) using data obtained by manned precipitation observation stations. The evaluation will also show that increased reporting stations and observation resolution will contribute toward improving DRR-related information through enhancing QPE. These will be compiled as a document that can be used for various planning activities to strengthen observation networks.
  - *Conduct research to determine optimal observation network configuration.*

    Study on the configuration of precipitation observation networks will be summarized for CIMO TECO-2018. The status, documents and issues of the study will be shared to enhance its application by your feedback.
  - *Encourage all countries to implement WDQMS and other tools.*

    Practical trainings will be provided on Workshop #1 to encourage the operational use of WDQMS and other tools.
  - *Improve QC techniques in instrument calibration, field inspection and other areas.*

    A low-cost inspection kit will be proposed with some experts enabling to deploy improved on-site instrument calibration as part of site inspection activities.
  - *Implement standard operating procedures (SOPs) for AWS maintenance, including methods for instrument inspection after extreme events.*

    It is unclear how SOPs were implemented in NMHSs based on the survey result reported at the workshop. Therefore, additional survey will be planned about AWS SOPs with some experts' assistance. Your responses will be analyzed, and then specific plans for our discussion will be proposed.
  - *Engage in post-workshop activities, including newsletter issuance and provision of e-mail-based support.*

    We continue issuing this newsletter series. The editorial team of the newsletter also provides e-mail-based support to enhance your and TAP2018 activities.
  - *Encourage OSCAR surface training in all countries.*

    Practical trainings will be provided on Workshop #1 to encourage OSCAR surface activities.

  Your comments and suggestions are most welcome.

Editorial messages

We are discussing in JMA moving up Workshop #1 for promoting TAP2018 activities, especially for practical trainings at the appropriate time. FYI. Kigawa

As the short term activities, two newsletters were distributed, …

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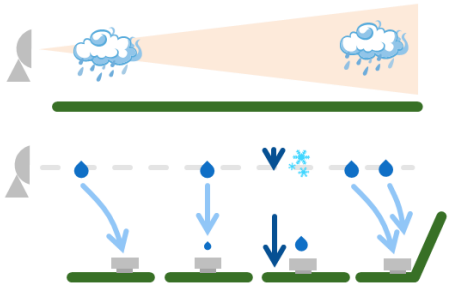
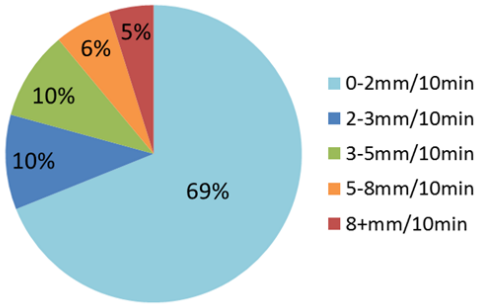
2020





Devise and implement training on quality improvement

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conduct research to determine optimal observation network configuration, and …

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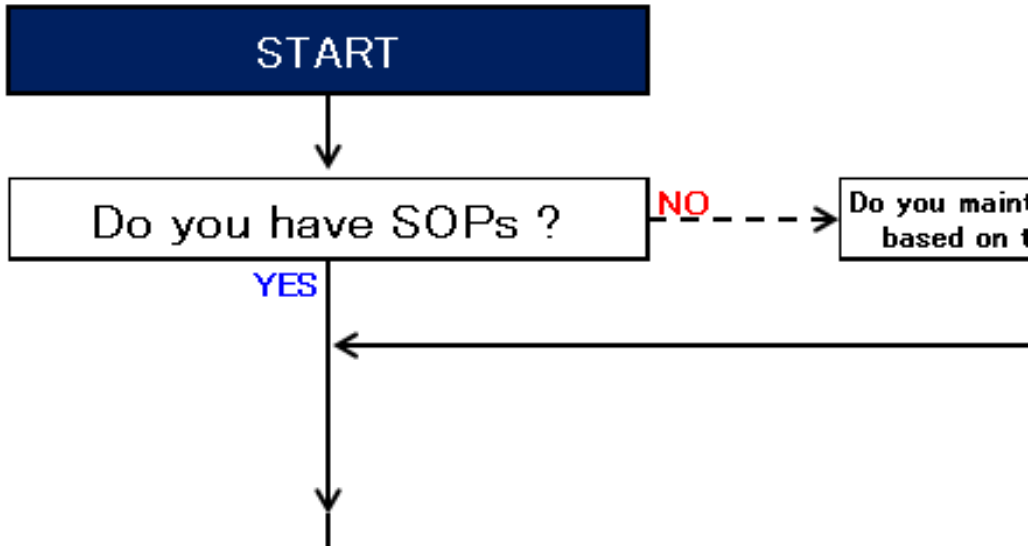
2020



Devise and implement training on quality improvement

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prepare for survey on standard operating procedures (SOPs) for AWS maintenance.

WORKING TOGETHER

2020

Devise and implement training on quality improvement

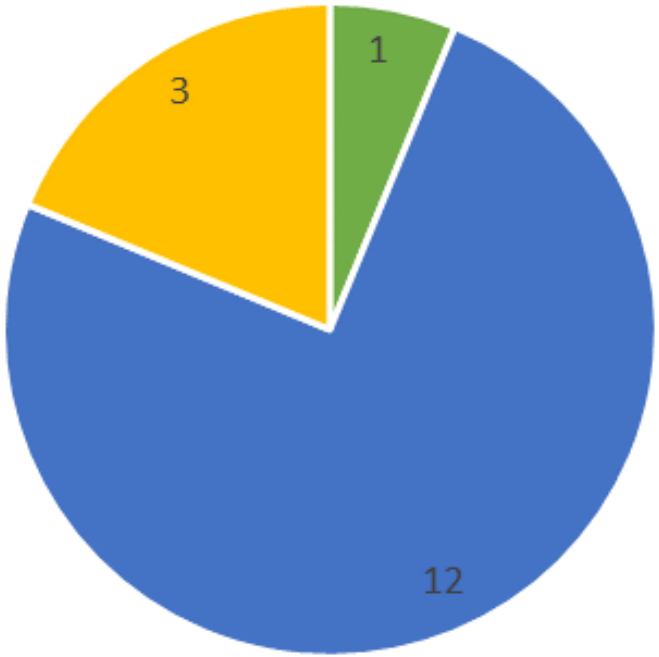
We also gave one poster presentation in CIMO TECO-2018 to enhance our activities.

FY		2018	2019	2020	2021	2022	2023-2027
		Phase I		Phase II			Phase III
Provision of materials and training for users		• Draw up product specifications for Phases II and III • Provide user manual		• Standardize product specifications • Provide training			• Provide mobile training centers
		• Engage in activities for technical/ development transfer					
Satellite	Identification of Rapidly Developing Cumulous Areas (RDCA)	• Conduct evaluation to determine detection uncertainty • Improve detection accuracy		• Develop regional lightning nowcasting in Asia			• Develop severe storm alert content for Asia
Satellite	Himawari products (HCAI & HRPA)	• Launch Phase I website in December 2018		• Develop regional integrated QPE/QPF in Asia			
Satellite	JAXA/GSMaP	• Conduct evaluation to determine uncertainty in rainfall analysis and prediction					
Radar	Southeast Asian Radar Network -Regional WIGOS Project	• Improve quality checking techniques • Expand and enhance international exchange of observation data					
Surface	Tokyo Action Plan	• Devise and implement training on quality improvement		• Improve quality management			• Enhance observation networks

Now the Tokyo Action Plan 2018 is one of key components for JMA's 10-year development plan. The efforts of TAP2018 directly contribute to regional WIGOS projects.

Pre-workshop survey results

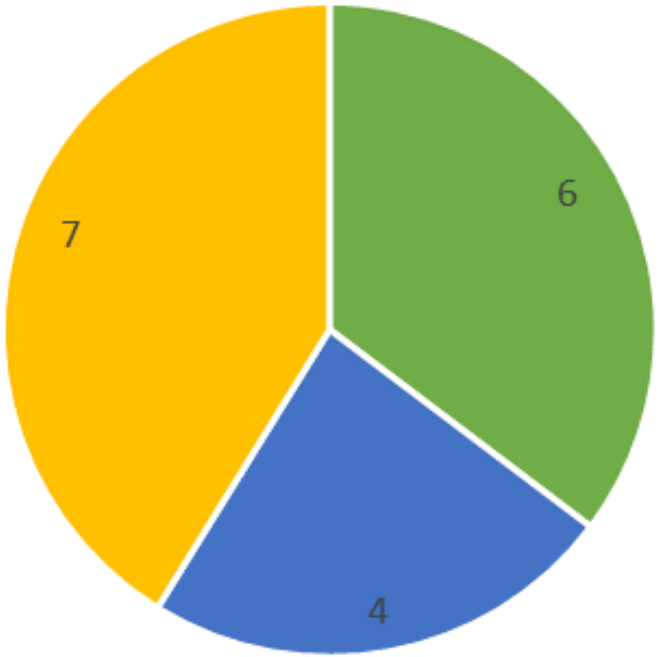
Q4.8-1 What is necessary to accelerate the plan?



- 1. Increase JMA staff
- 2. Promote the plan by each member's collaboration
- 3. Explore more experts' participation

Three quarters of NMHSs suggested to promote the plan by each member's collaboration.

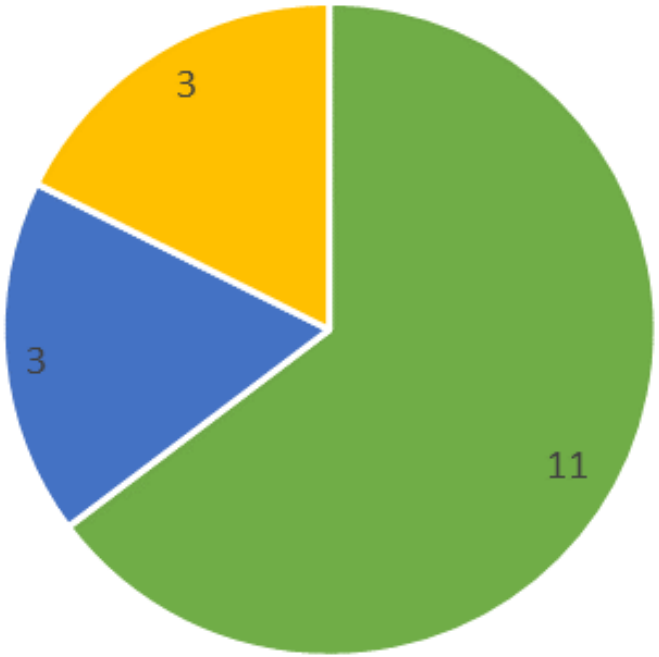
Q4.8-2 What is necessary for qualitative improvement of rainfall observation network?



- 1. Introduce the latest technology
- 2. Develop experts or highly skilled people
- 3. Increase the number of rain gauges

Your opinions were divided on this question.

Q4.8-3 What is necessary to improve skills of observers?



- 1. Training or technological transfer
- 2. Develop experts to be instructors
- 3. Training materials in national languages

Two thirds of NMHSs indicated that training or technological transfer is necessary.

Video messages from Workshop-2018 participants to enhance our discussion

Dr. Muhammad Fahim Ahmad
Pakistan Meteorological Department

Mr. Md. Mizanur Rahman Khan Chowdhury
Bangladesh Meteorological Department

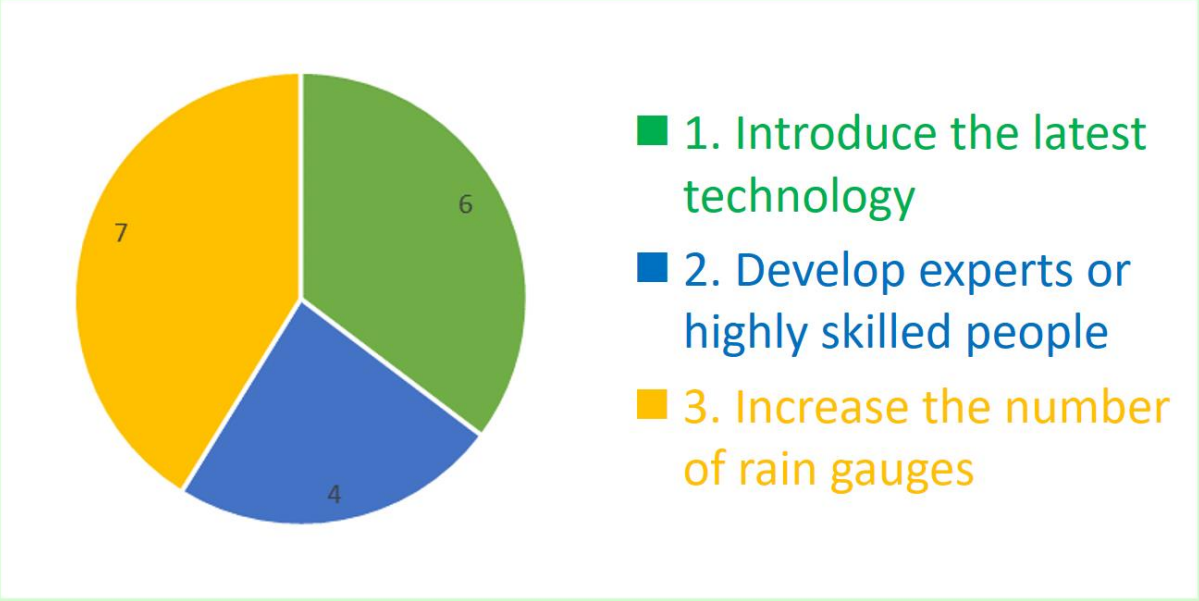
Mr. Abdul Gayyoom
Maldives Meteorological Service

Dr. Luca Giovanni Lanza[*1], Dr. Mattia Stagnaro[*1]
and Ms. Arianna Cauteruccio[*2]

*1 University of Genoa/WMO-CIMO Lead Centre
"B.Castelli" on Precipitation Intensity
*2 University of Genoa

Discussion

Q4.8-2 What is necessary for qualitative improvement of rainfall observation network?



Your opinions were divided on this question.

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Your opinions were divided. Why?