Session 1.3

Development Framework

Seiichiro KIGAWA

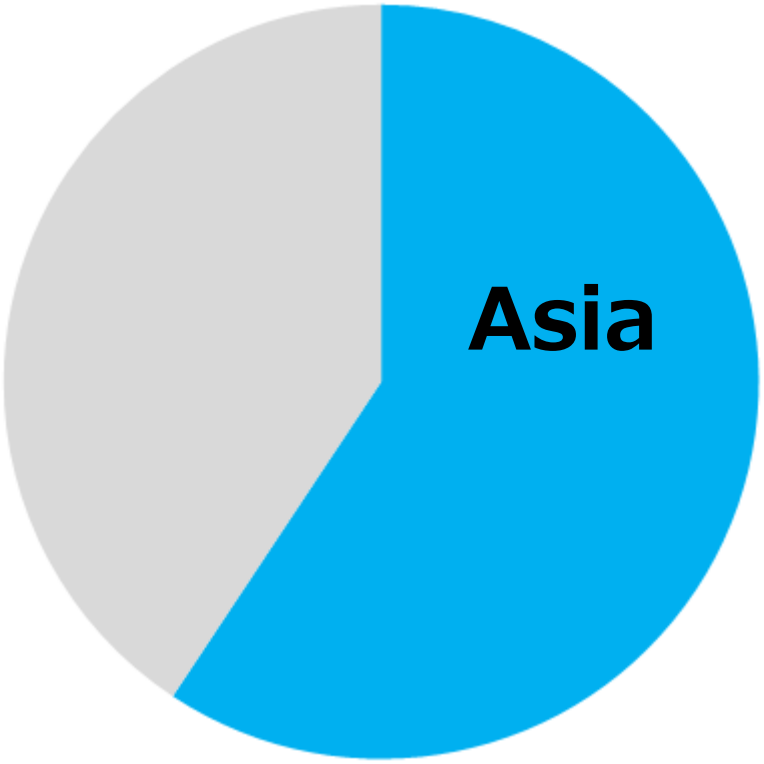
Japan Meteorological Agency

Regional Development Framework

2

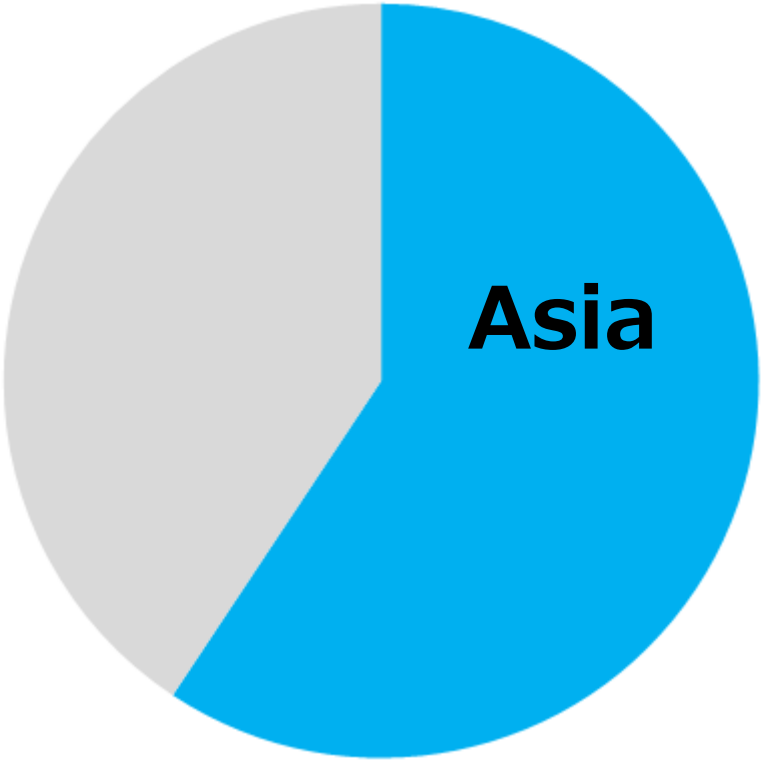
Today I would like to talk about regional development framework as an ice-breaking topic.

Population



First of all, let’s think about this “region”, that is “Asia”. Sixty percent of the world population live in Asia.

Population



Asia's challenge

Floods, landslides and other natural disasters caused by heavy rain have significant regional impacts. Therefore, disaster risk reduction (DRR) is a major consideration there.

Regional Specialized Meteorological Centre for Nowcasting

JMA's regional centre is one of efforts to face the Asia's challenge. We urge this effort onward.

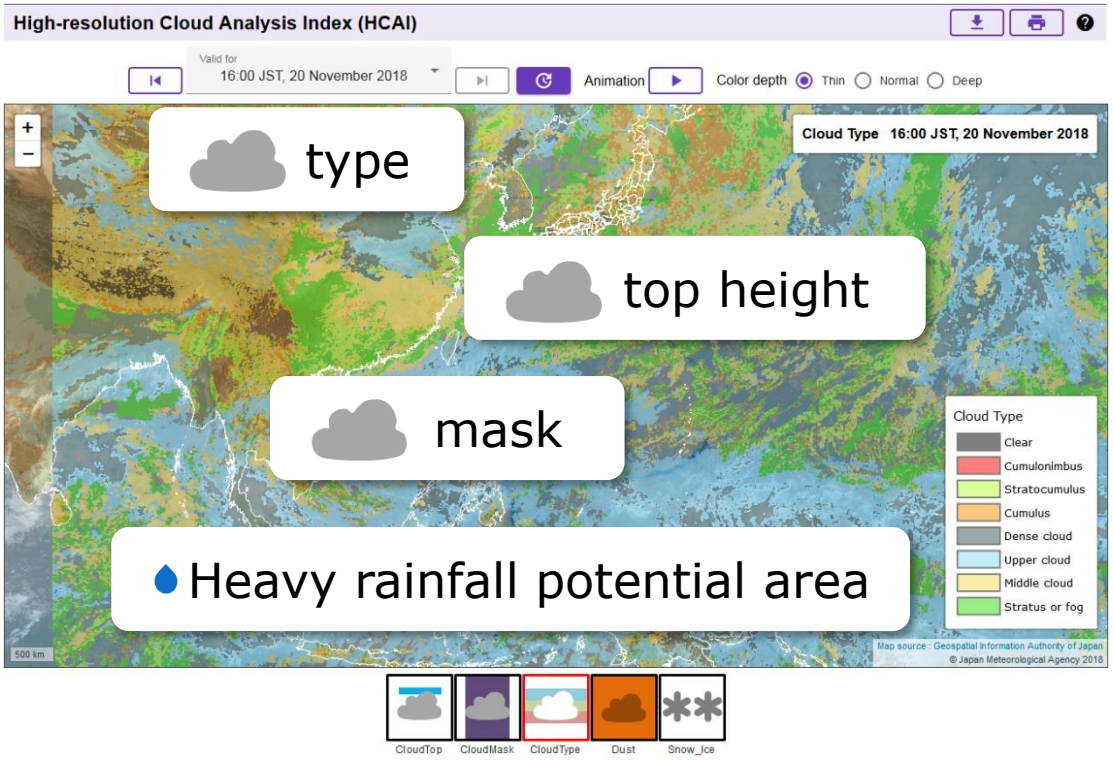
Regional Specialized Meteorological Centre for Nowcasting

JMA commenced Regional Specialized Meteorological Centre (RSMC) for Nowcasting in December 2018.

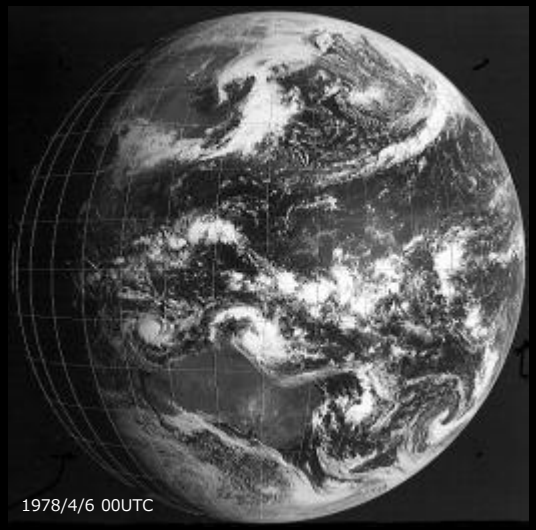
Web-based
real-time product

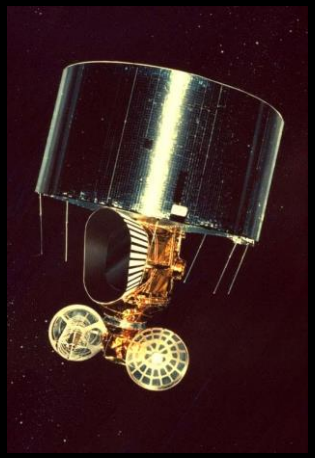
Product
development

This regional centre provides nowcasting products to the region with their development framework.

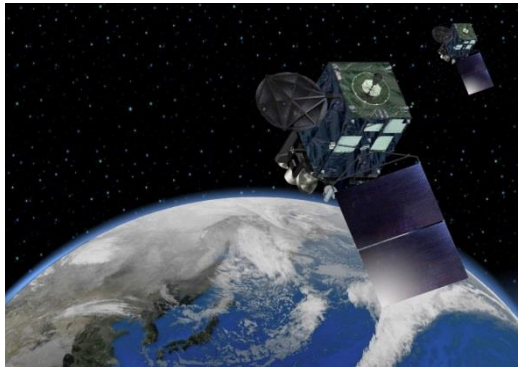


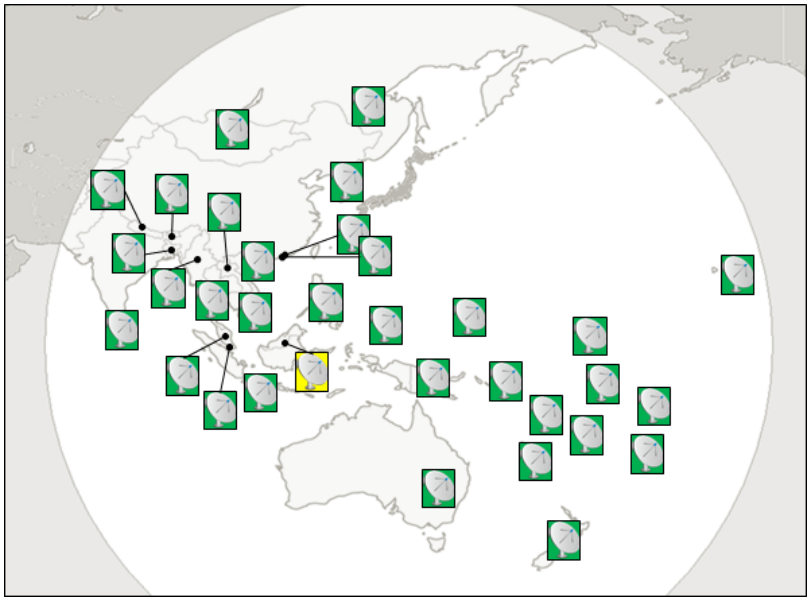
We provide satellite-derived products via JMA's website regarding cloud and heavy rainfall.
Why satellite-derived?

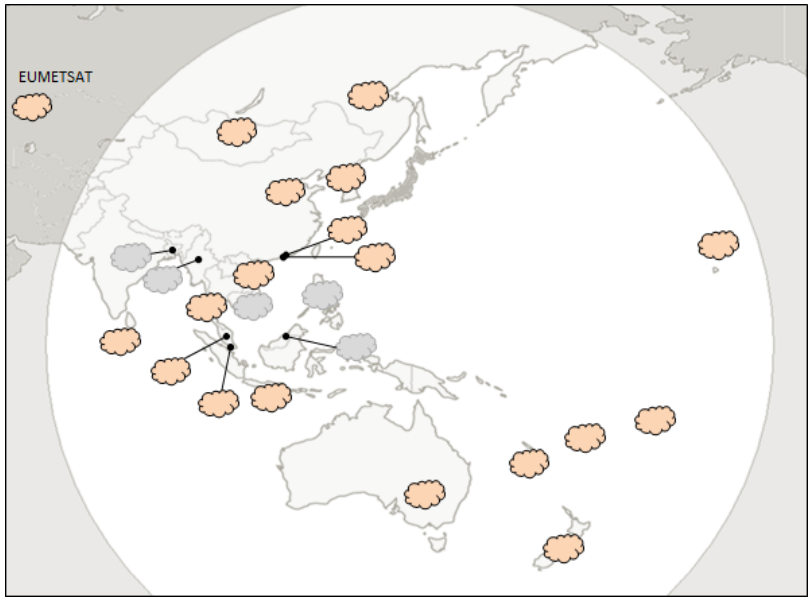




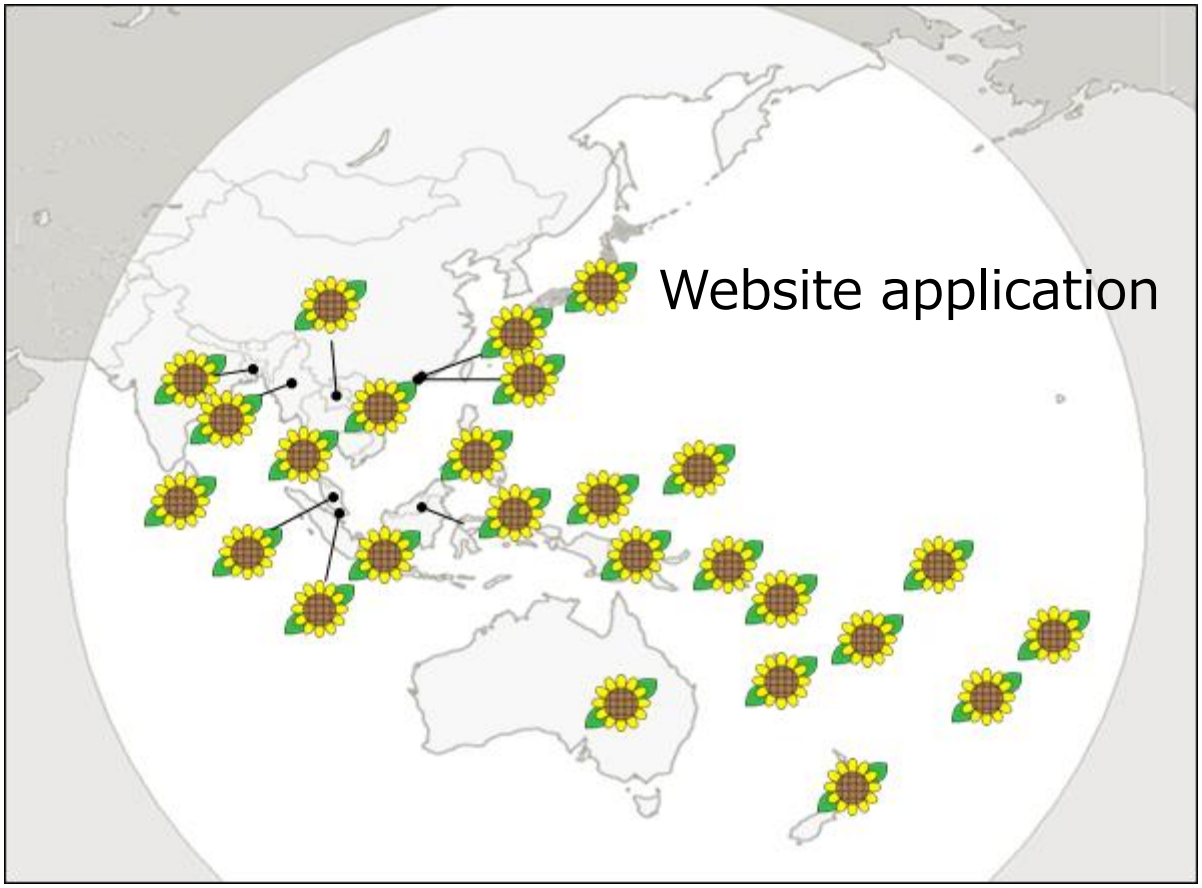
In 1977, the first Japanese geostationary meteorological satellite, Himawari was launched. Himawari has contributed to the Asia-pacific region over the last 40 years.



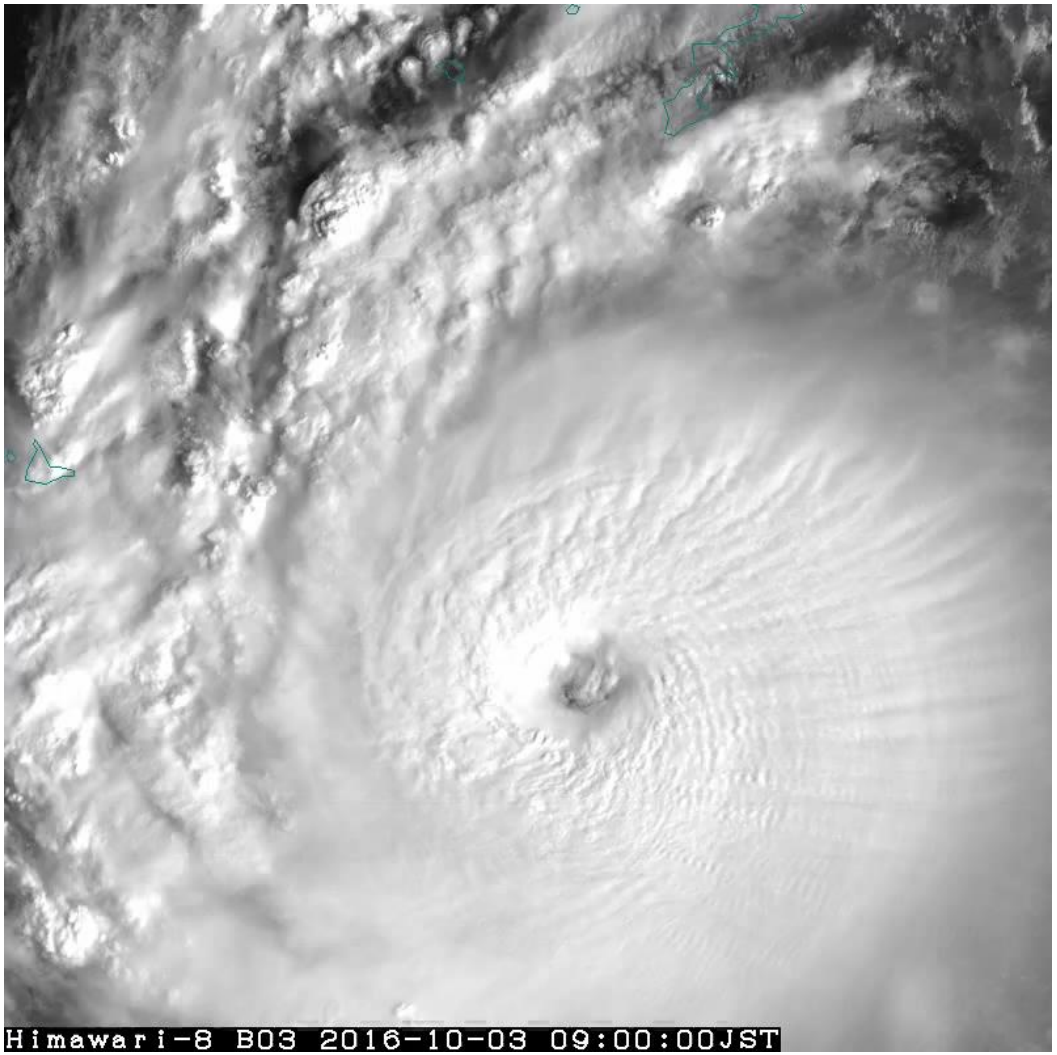




In the Himawari-8 era, HimawariCast and HimawariCloud support the National Meteorological and Hydrological Services (NMHSs); weather services in the Asia-Pacific region.



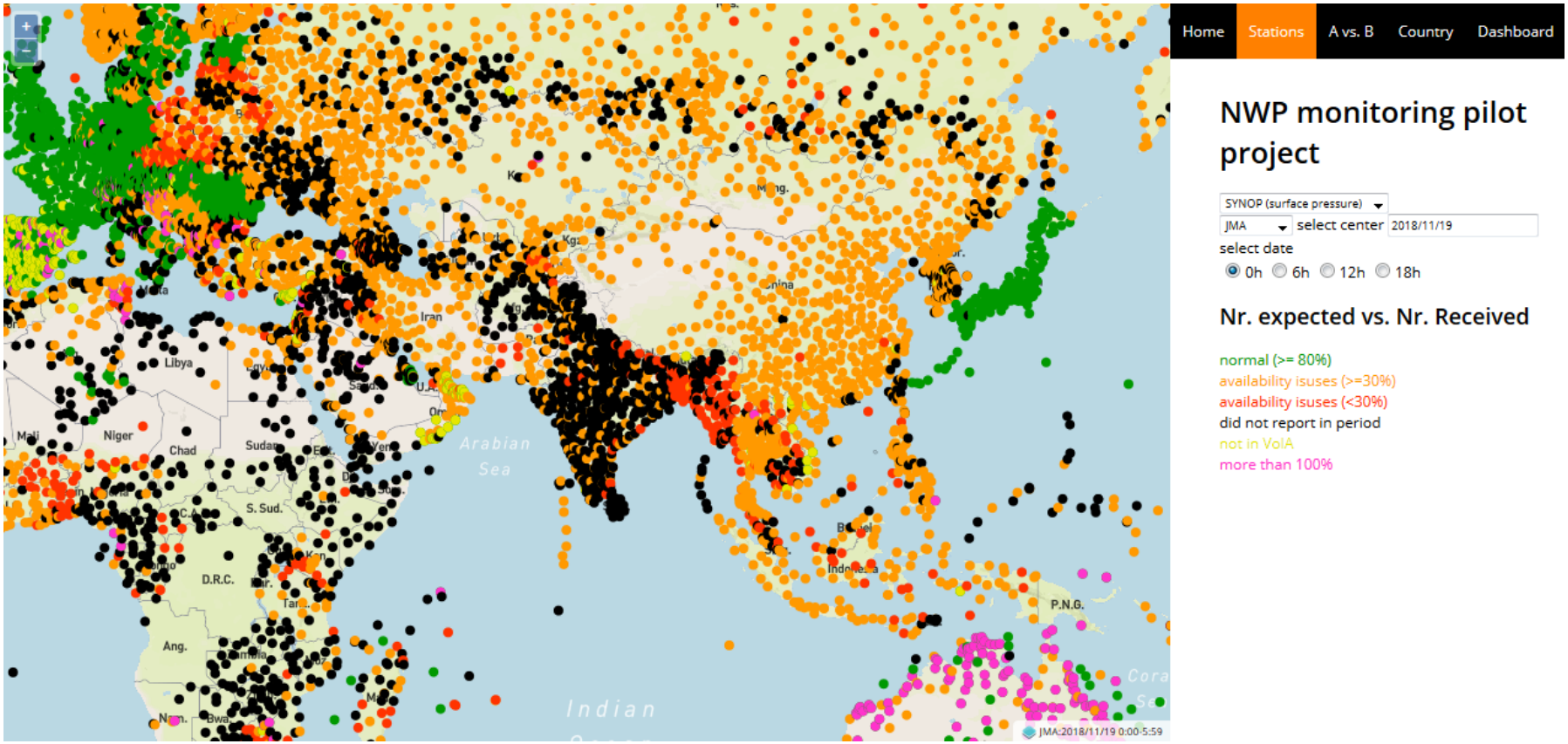
Many weather services make use of Himawari imagery on their website. Because Himawari services have already taken root in the region, …



JMA provides the satellite-derived products as the regional centre operations.

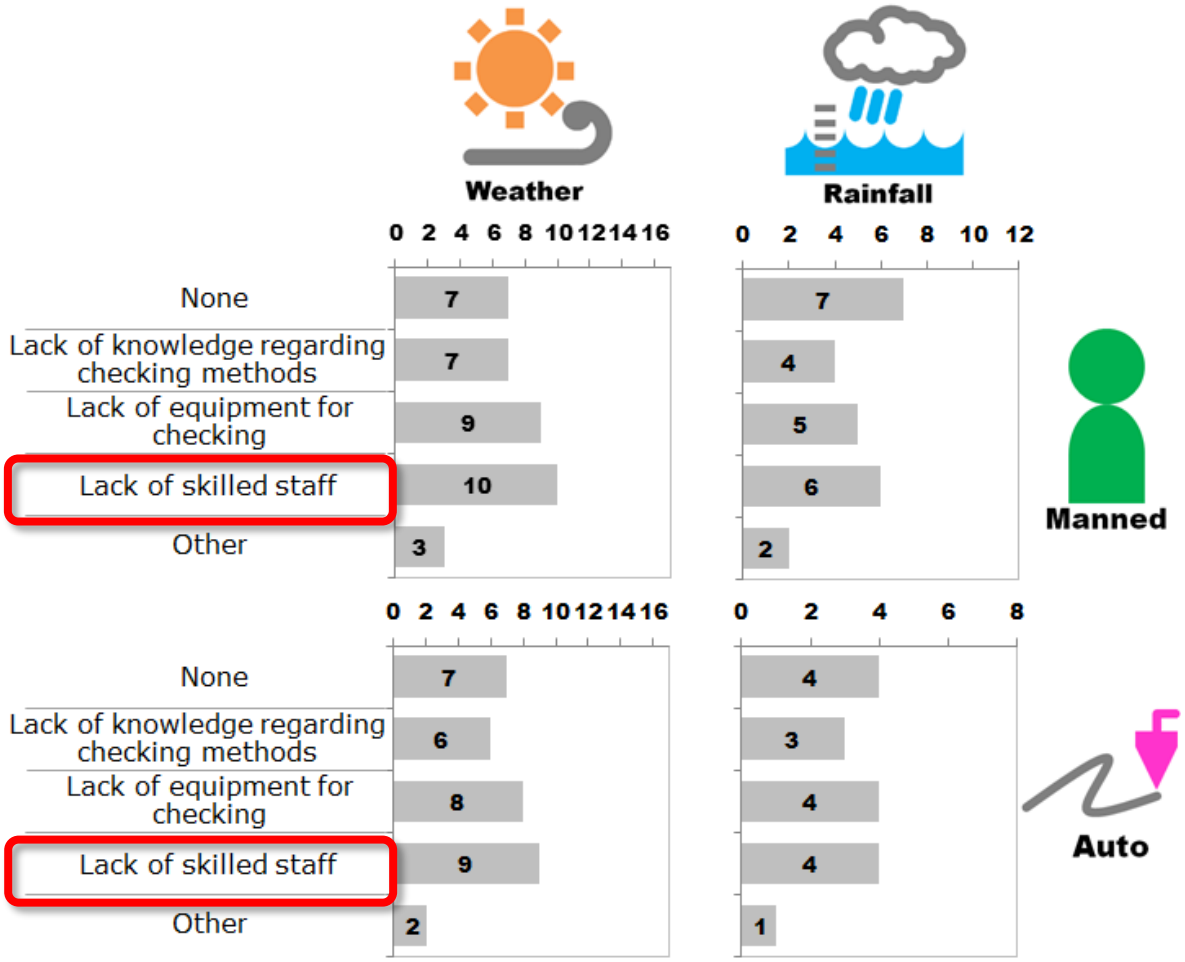
Sufficient?

Right then, are the satellite-derived products sufficient for the region?

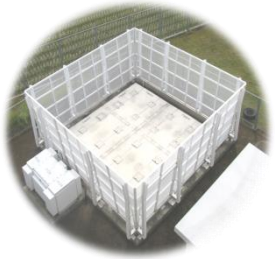


Nobody thinks so. According to the NWP-based monitoring of observation data, it is clear that we need to enhance and improve the observation network in this region.

Q1-10-4: What problems are experienced in checking?



JMA's survey of surface observation also demonstrated that more countries indicated a lack of skilled staff than a lack of expertise.



These indications urge us to the next step.

JMA is also scheduling regional WIGOS center pilot phase operation to commence in 2019. It is perfect timing for us.

Quality Management

Training & support

The regional WIGOS center will work for the quality management of observation data. It also provides training and technical support.

Quality Management

Training & support

In consideration of regional WIGOS center work in the provision of training and technical support to Asian nations, …

Web-based
real-time product

Product
development

Quality
Management

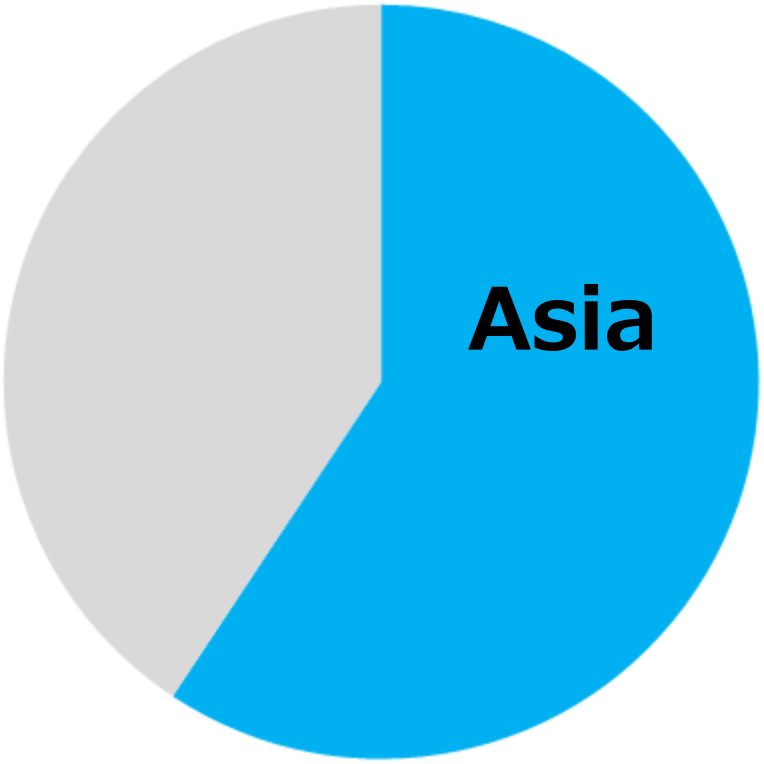
Training & support

JMA combines the development of nowcasting products with such training and support to provide expertise.

?

Now let’s think about this combination. What is the greatest advantage of the combination?

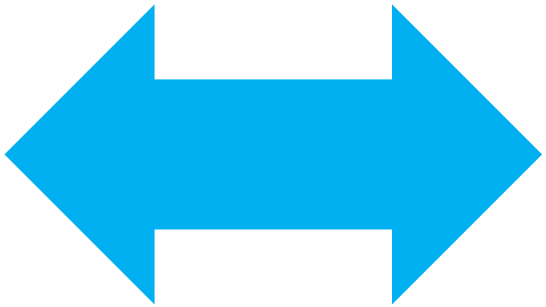
Population



Asia's human resources

We recognized a large population in Asia at the beginning. It means that we will be able to work with large-scale human resources for the development in the future.

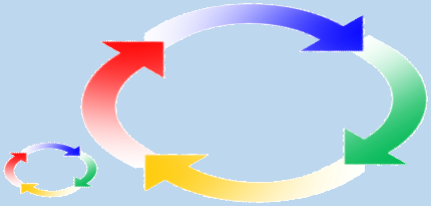
Collaboration should be based on “respect”
- B. Calpini, Ex-president of WMO/CIMO



Partnership

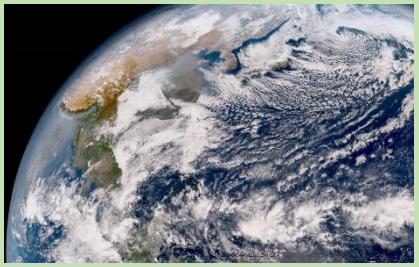
Another aspect of working together with Asian countries is “partnership”. Technical transfer is sometimes one-way. We believe that collaboration should be based on “respect”.

2020



Collaborative quality improvement

2023



QPE/QPF/ Lightning nowcast in Asia

2028

Severe storm alert content in Asia

The plan comprises three phases toward the development of a high-level nowcasting product created using data from surface, radar and satellites observations.

Himawari products & JAXA/GSMaP

Southeast Asian Radar Network

Tokyo Action Plan 2018

Key components are Himawari products, GSMaP, Southeast Asian radar network and Tokyo Action Plan 2018.

2020

2023

2028

We weave these key components into three phases.

<table>
<tr><td colspan="2">FY</td><td>2018</td><td>2019</td><td>2020</td><td>2021</td><td>2022</td><td>2023-2027</td></tr>
<tr><td colspan="2"></td><td colspan="2">Phase I</td><td colspan="3">Phase II</td><td>Phase III</td></tr>
<tr><td colspan="2">Provision of materials and training for users</td><td colspan="2">• Draw up product specifications for Phases II and III
• Provide user manual
• Engage in activities for technical/</td><td colspan="3">• Standardize product specifications
• Provide training
development transfer</td><td>• Provide mobile training centers</td></tr>
<tr><td rowspan="3">Satellite</td><td>Identification of Rapidly Developing Cumulous Areas (RDCA)</td><td colspan="2">• Conduct evaluation to determine detection uncertainty
• Improve detection accuracy</td><td colspan="3">• Develop regional lightning nowcasting in Asia</td><td rowspan="3">• Develop severe storm alert content for Asia</td></tr>
<tr><td>Himawari products (HCAI & HRPA)</td><td colspan="2">• Launch Phase I website in December 2018</td><td colspan="3" rowspan="2">• Develop regional integrated QPE/QPF in Asia</td></tr>
<tr><td>JAXA/GSMaP</td><td colspan="2">• Conduct evaluation to determine uncertainty in rainfall analysis and prediction</td></tr>
<tr><td>Radar</td><td>Southeast Asian Radar Network -Regional WIGOS Project</td><td colspan="2">• Improve quality checking techniques
• Expand and enhance international exchange of observation data</td><td colspan="3"></td></tr>
<tr><td>Surface</td><td>Tokyo Action Plan</td><td colspan="2">• Devise and implement training on quality improvement</td><td colspan="3">• Improve quality management</td><td>• Enhance observation networks</td></tr>
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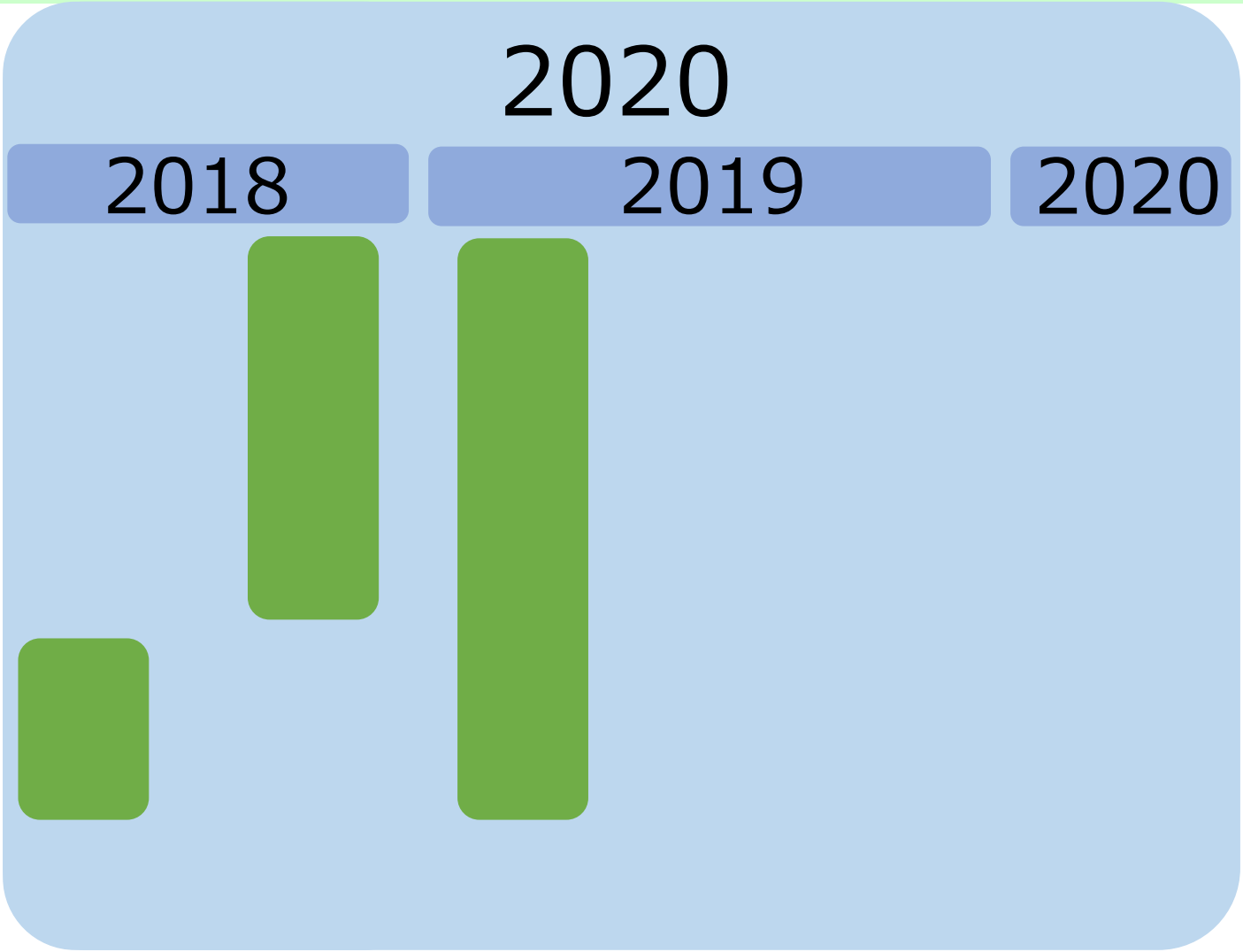
As a result, JMA's 10-year plan was framed including technical support and training.

2020 2023 2028

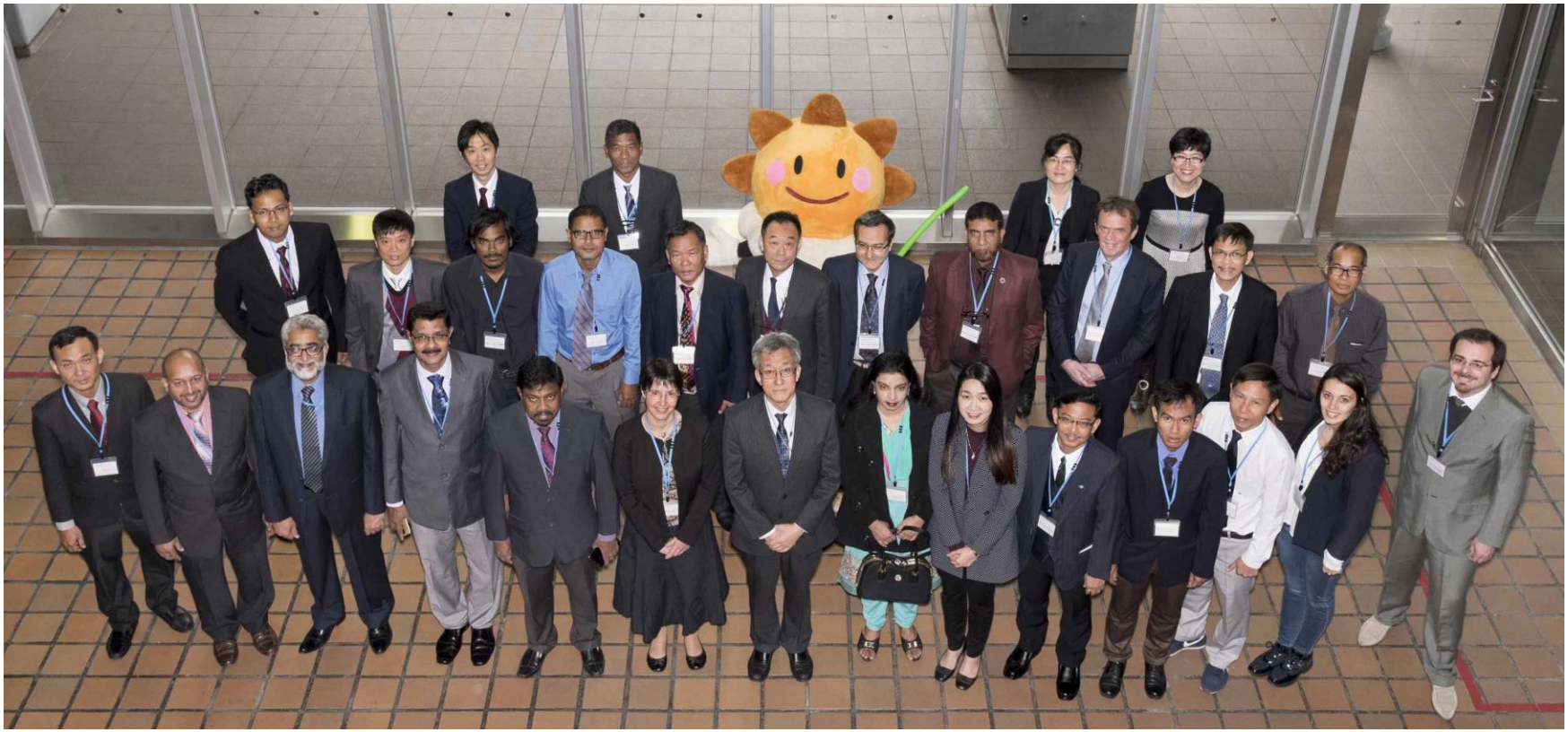
JMA strives to progress with this 10-year plan.



We are now working hard to boost the 10-year plan. I will outline it next.

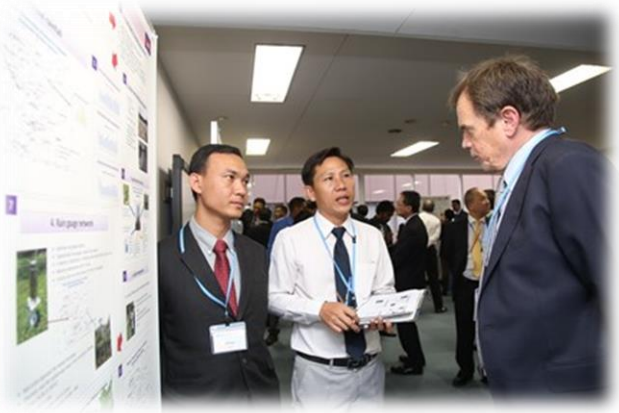
We marked an epoch in the 10-year plan one year ago.
JMA and WMO held “Workshop on Quality Management of Surface Observations”.

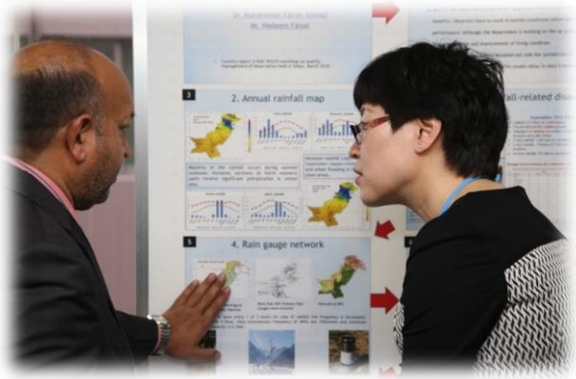
WORKING TOGETHER



and from other nations/organizations, 28 experts gathered in Tokyo.

WORKING TOGETHER





We shared information on challenges in rainfall observation.

WORKING TOGETHER

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

WORKING TOGETHER

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

WORKING TOGETHER

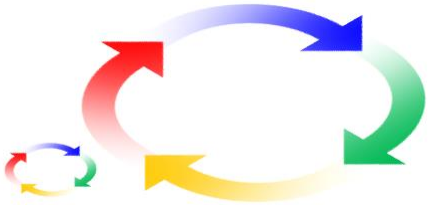
We discussed responses to challenges and then …

WORKING TOGETHER

2020

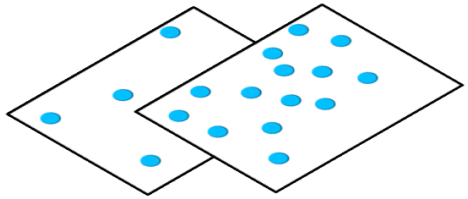
Devise and implement training on quality improvement

2023



Improve quality management

2028



Enhance observation networks

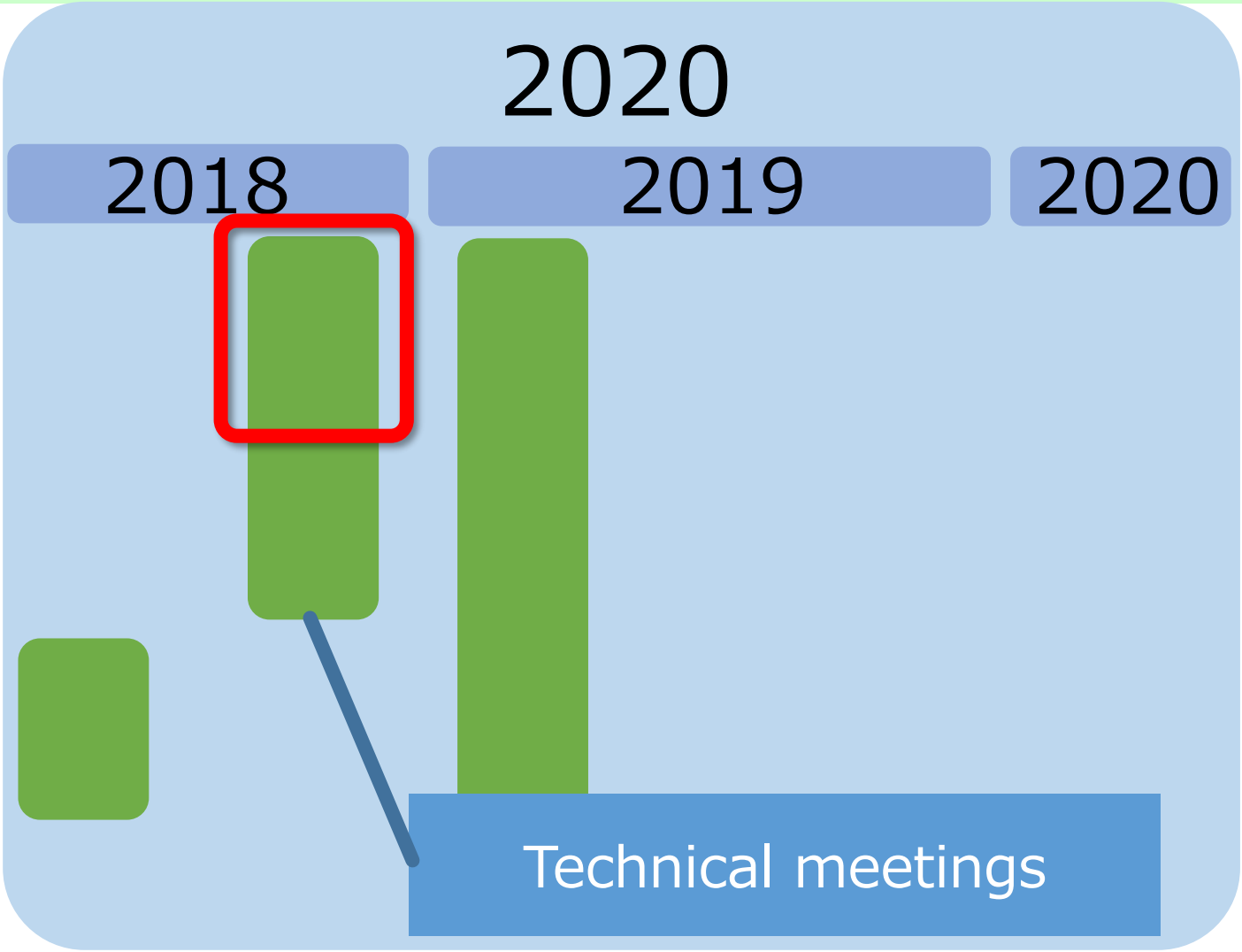
The Tokyo Action Plan 2018 was formulated.
Based on the plan, we are …

(from Lao PDR) Working together!

Yes, we are

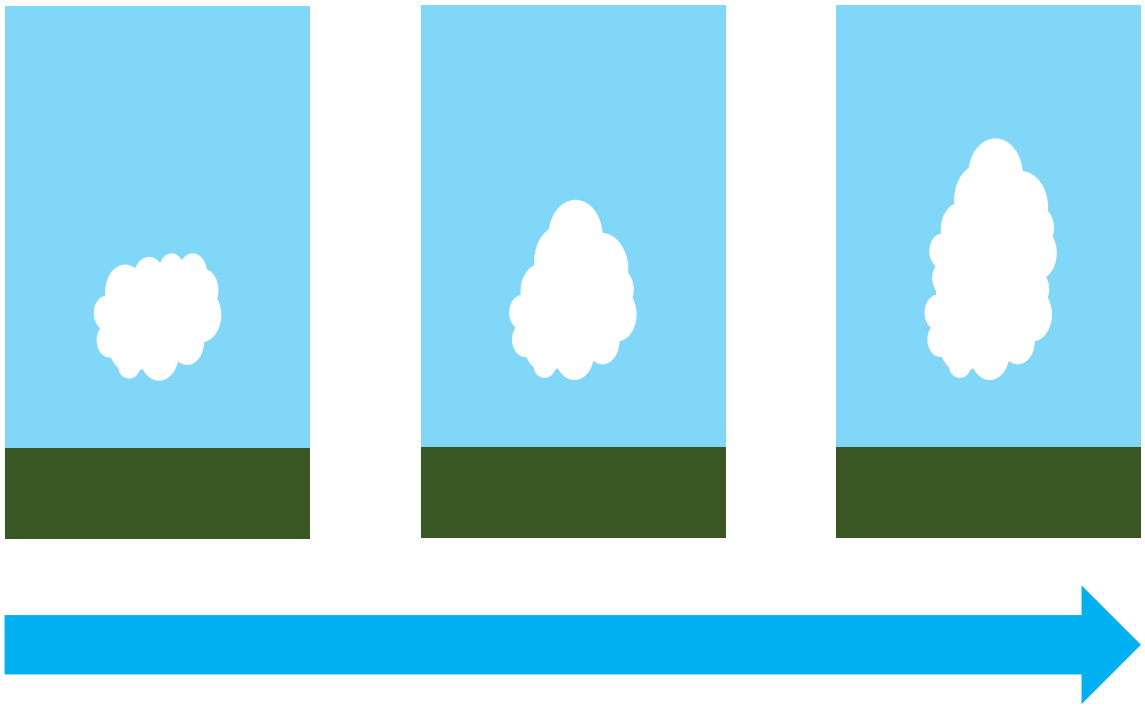
WORKING TOGETHER

!



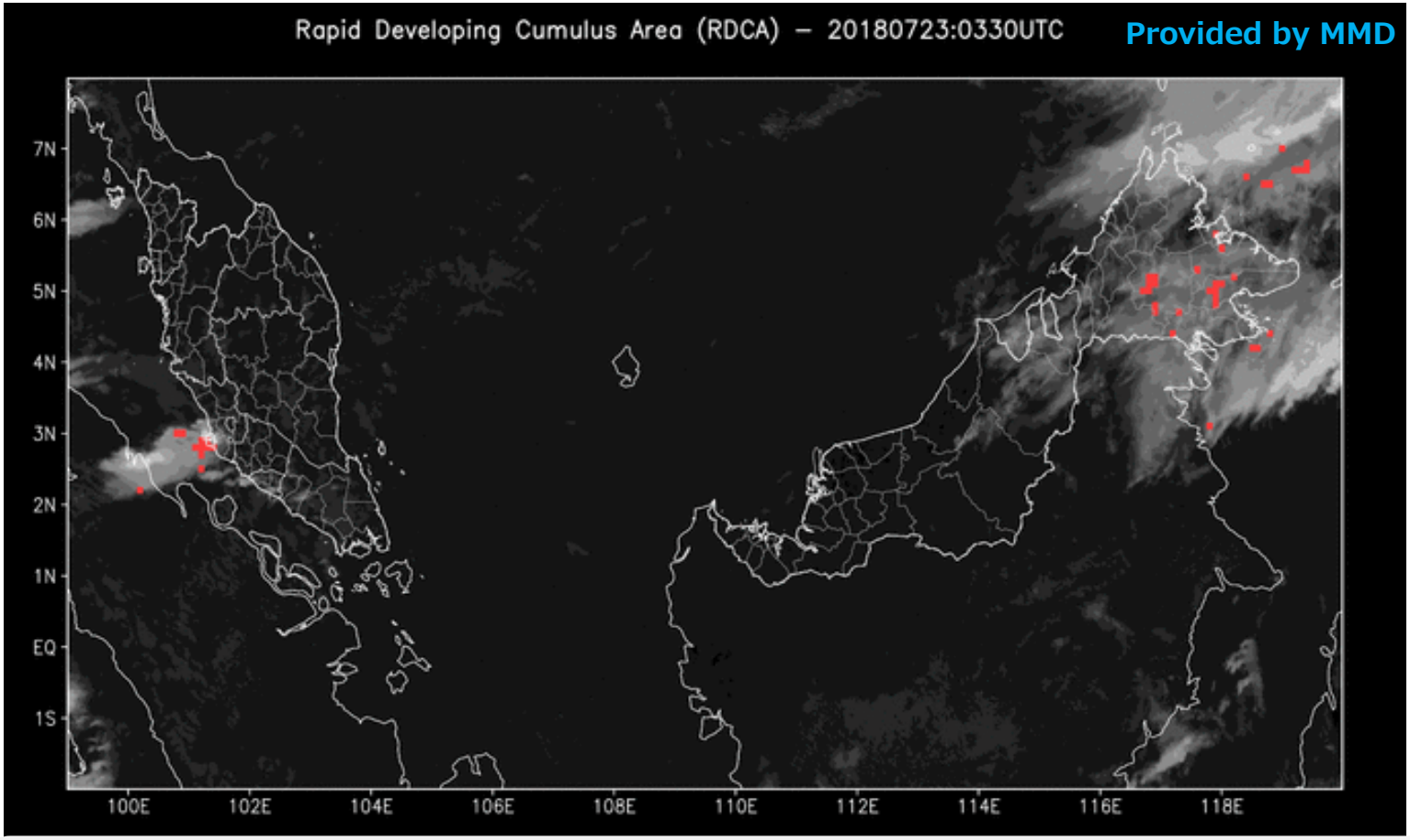
A half year later, we arrived at the first milestone; technical meetings in October 2018. Regarding the satellite products, …

WORKING TOGETHER



we had the technical meeting of Rapidly Developing Cumulus Area (RDCA) that is one of advanced Himawari products.

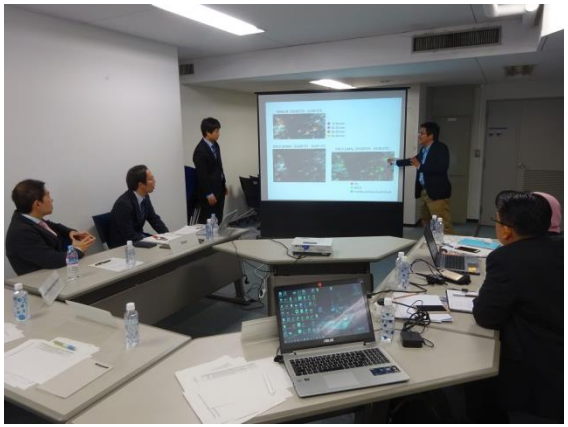
WORKING TOGETHER



JMA collaborates with Malaysian Meteorological Department (MMD) to develop and enhance RDCA.

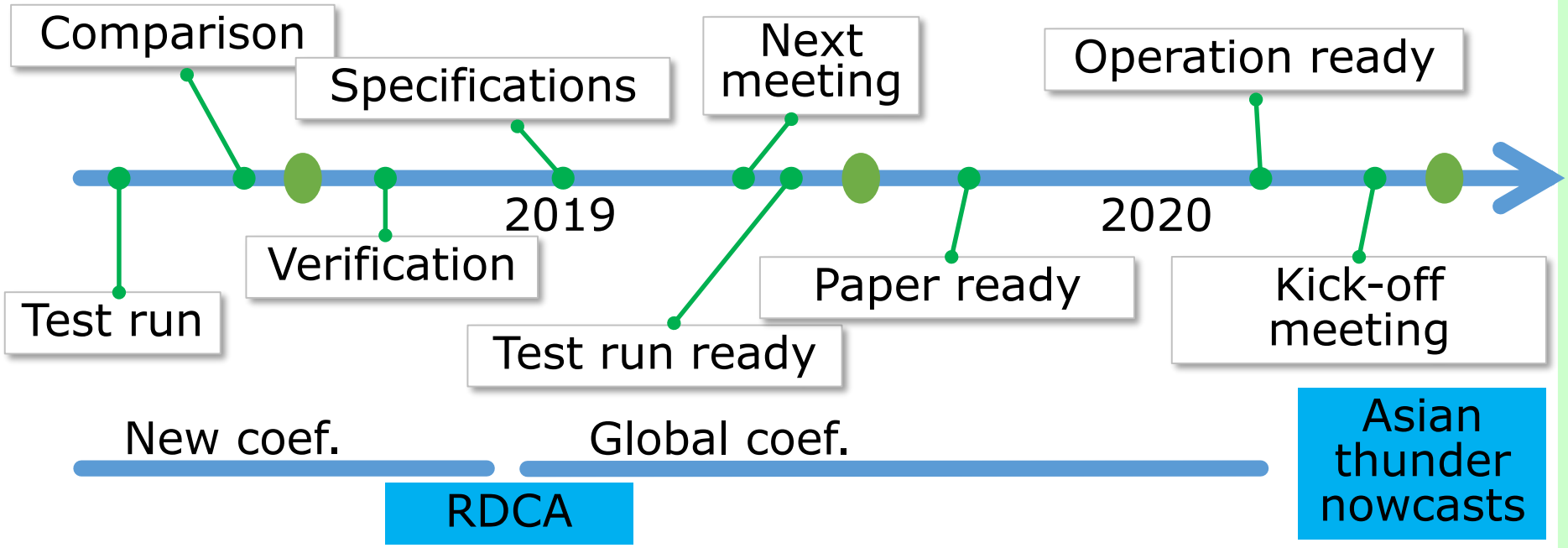
WORKING TOGETHER

Technical meeting on Himawari-8/9
Rapidly Developing Cumulus Area (RDCA) products
22-25 October 2018

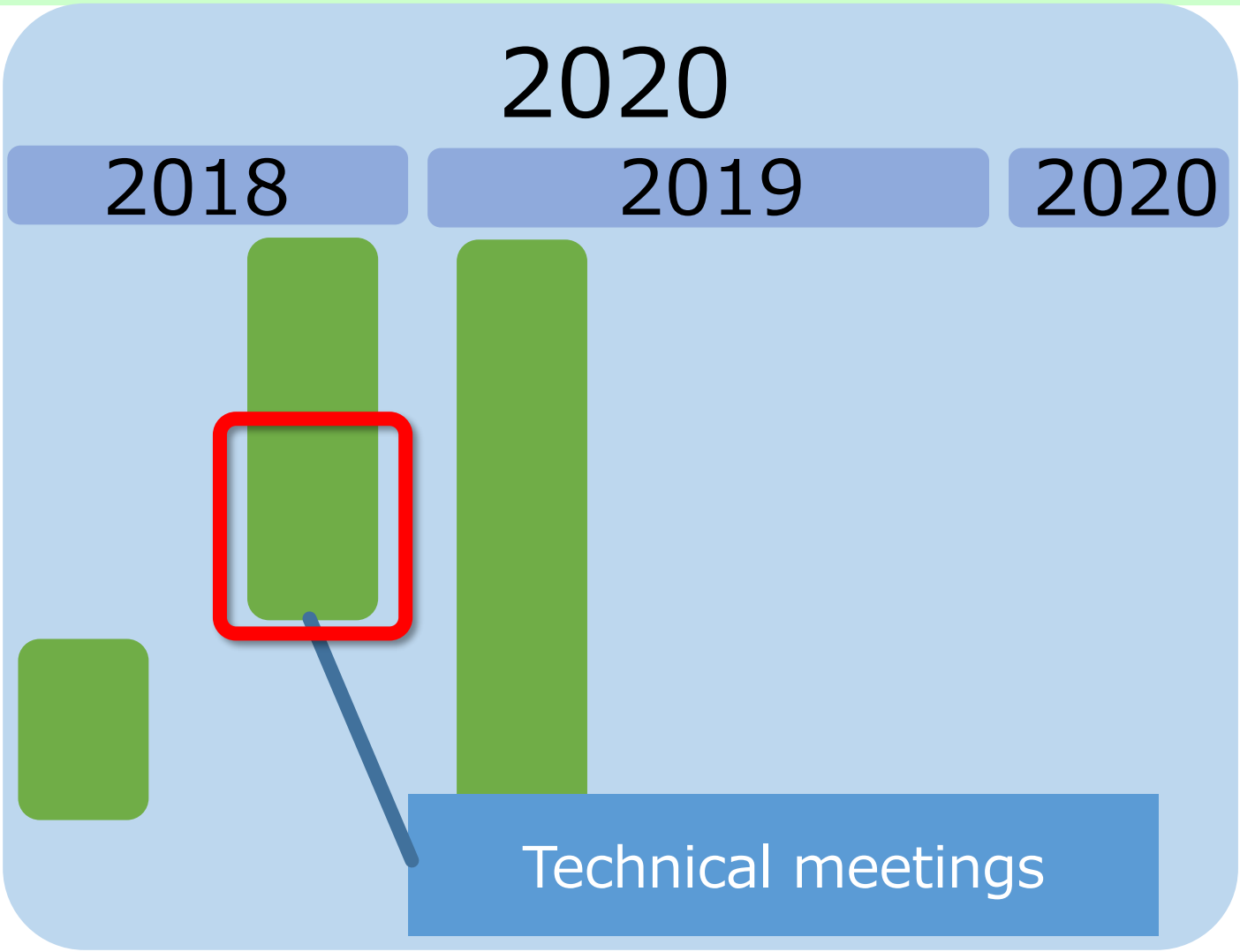


MMD and JMA exchanged information on recent progress and ideas for advanced products in the field.

WORKING TOGETHER

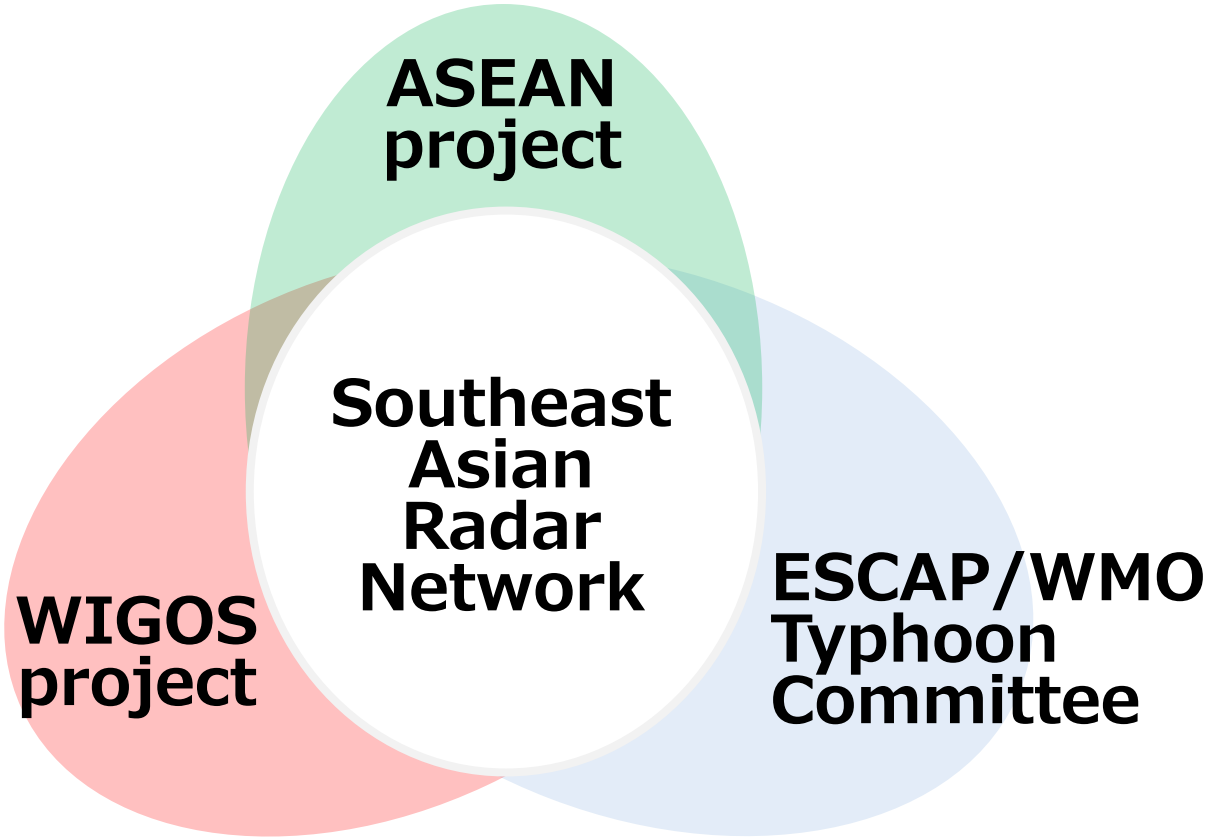


Further discussion led to an action plan for future collaborative development.



Another meeting was held at the same week to enhance a regional radar network.

WORKING TOGETHER



JMA works with many nations to the Southeast Asian radar network.

WORKING TOGETHER

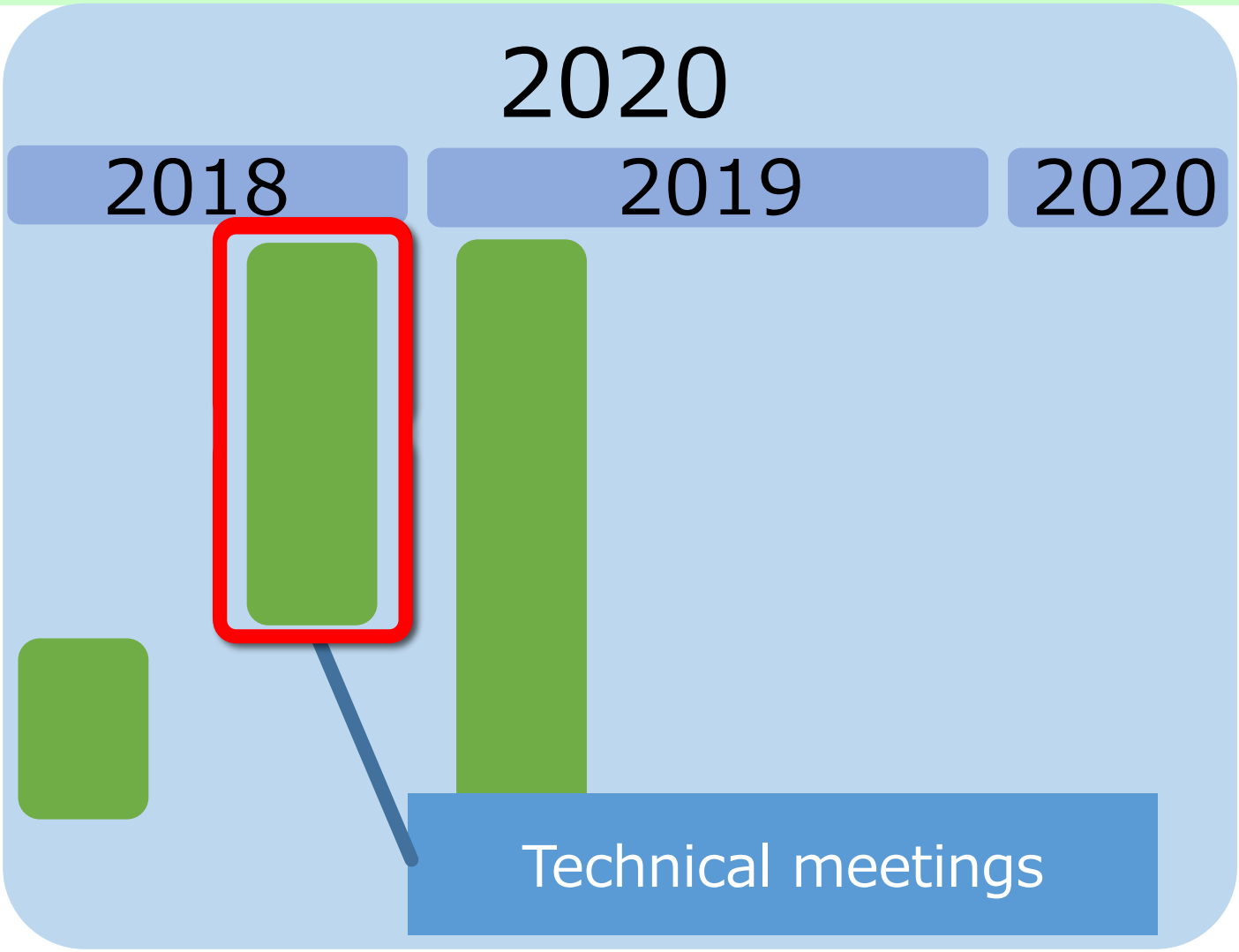
Technical meeting on regional weather radar networks in Southeast Asia

To expand on the regional radar network, we shared information on experiences and challenges relating to data exchanges and quality control.

WORKING TOGETHER

Technical meeting on regional weather radar networks in Southeast Asia

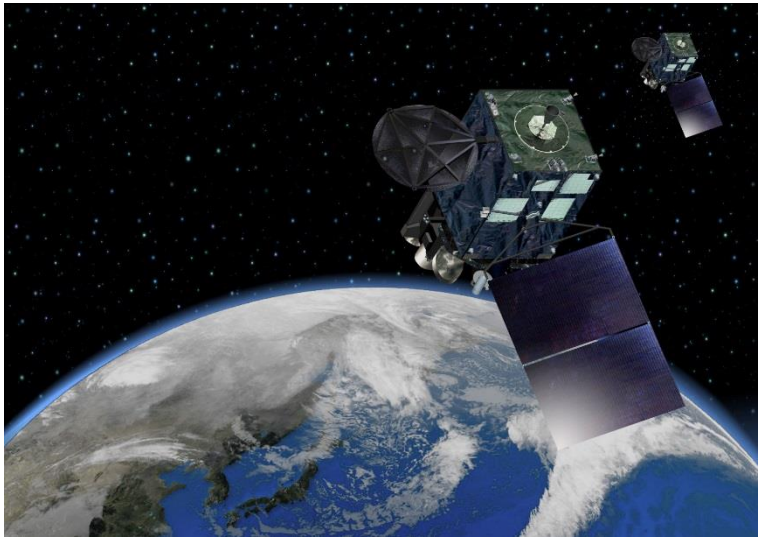
We concluded discussion with formulating a new direction for future collaboration.



These satellite and radar meetings merged together …

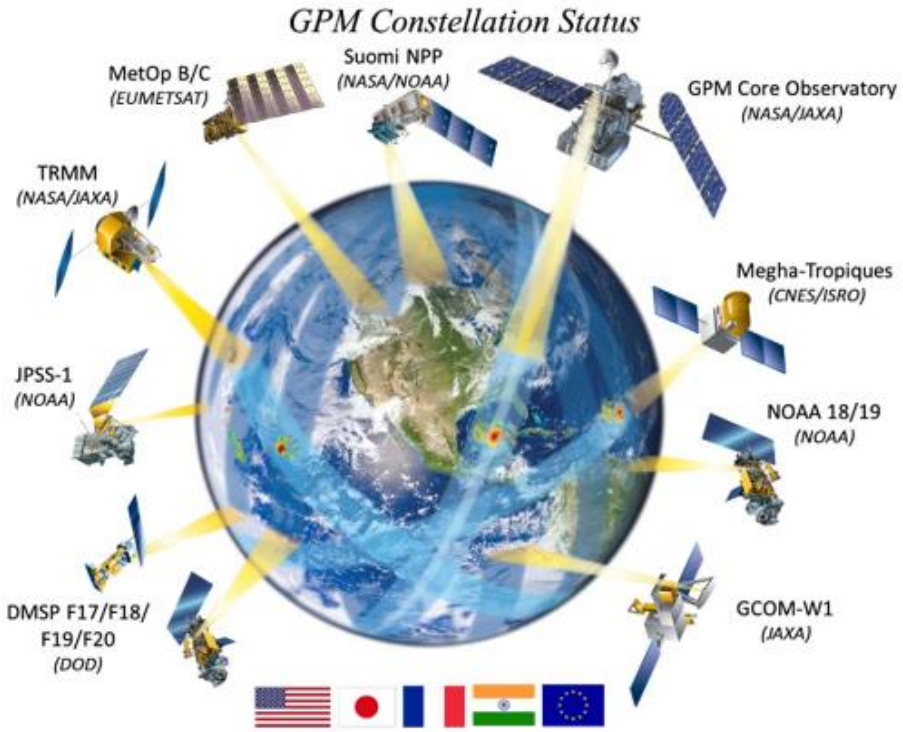
WORKING TOGETHER

Joint session of the two meetings

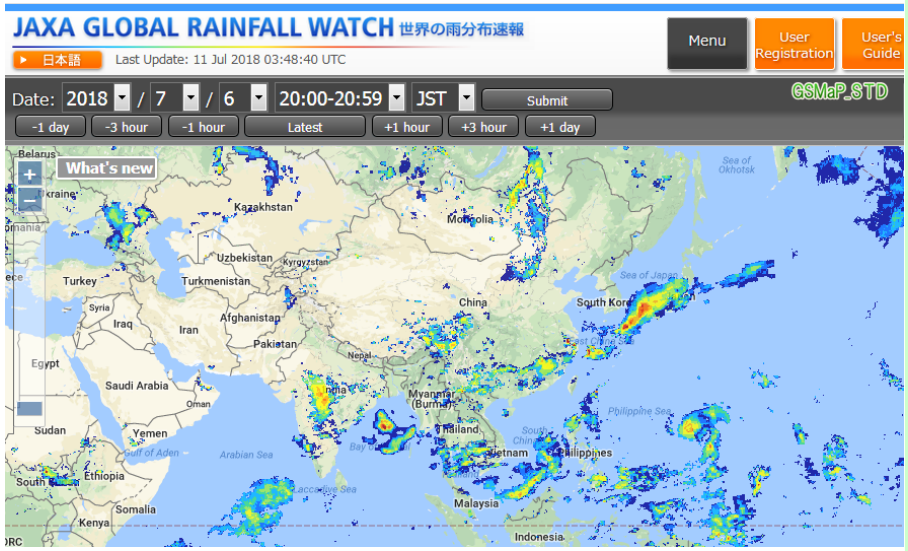


to discuss the potential for combined use of weather radar and satellite data to create more effective products in the future.

WORKING TOGETHER



Joint session of the two meetings



https://www.eorc.jaxa.jp/GPM/doc/data_utilization/GPM_data_util_handbook_V6_20181004_J.pdf
http://sharaku.eorc.jaxa.jp/GSMaP/index.htm

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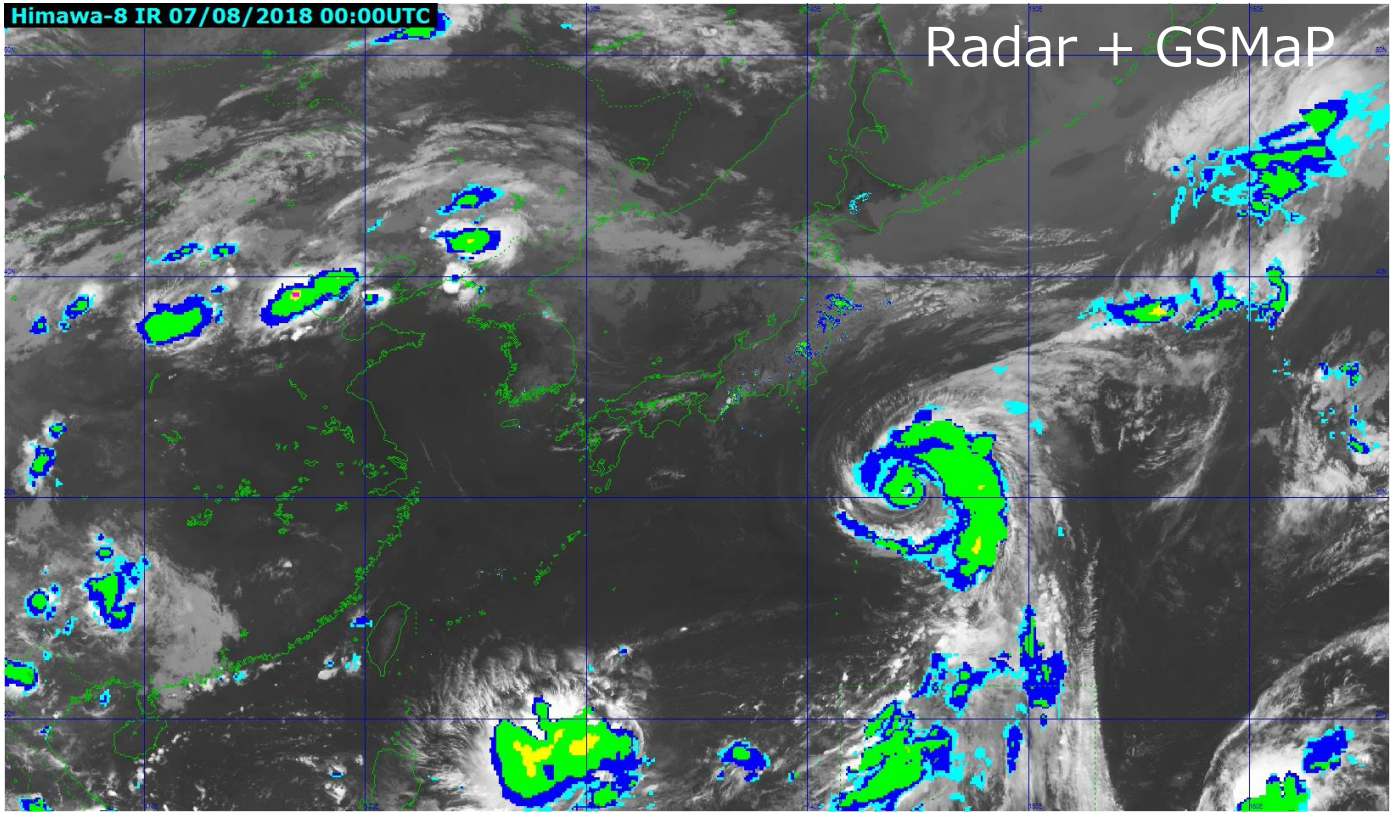
An invited expert from the Japan Aerospace Exploration Agency (JAXA) presented a multi-satellite rainfall product known as Global Satellite Mapping of Precipitation (GSMaP).

WORKING TOGETHER

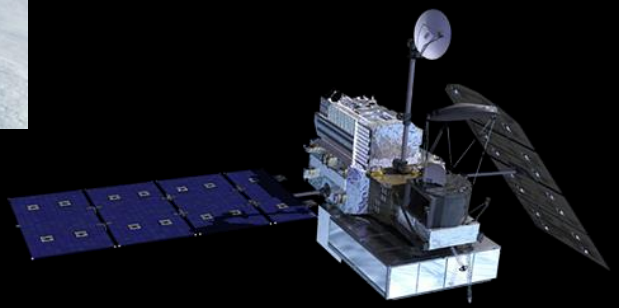


We recognized the benefits of combining weather radar and satellite observation.

Movie

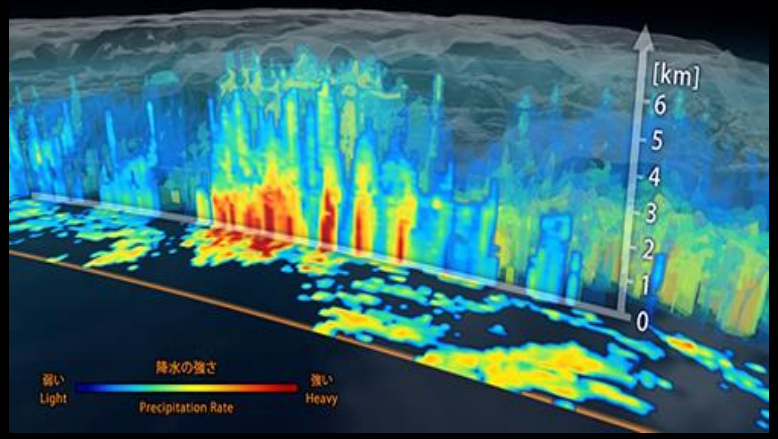
WORKING TOGETHER

TRMM(1997 - 2015)



GPM(2014-)

©NASA

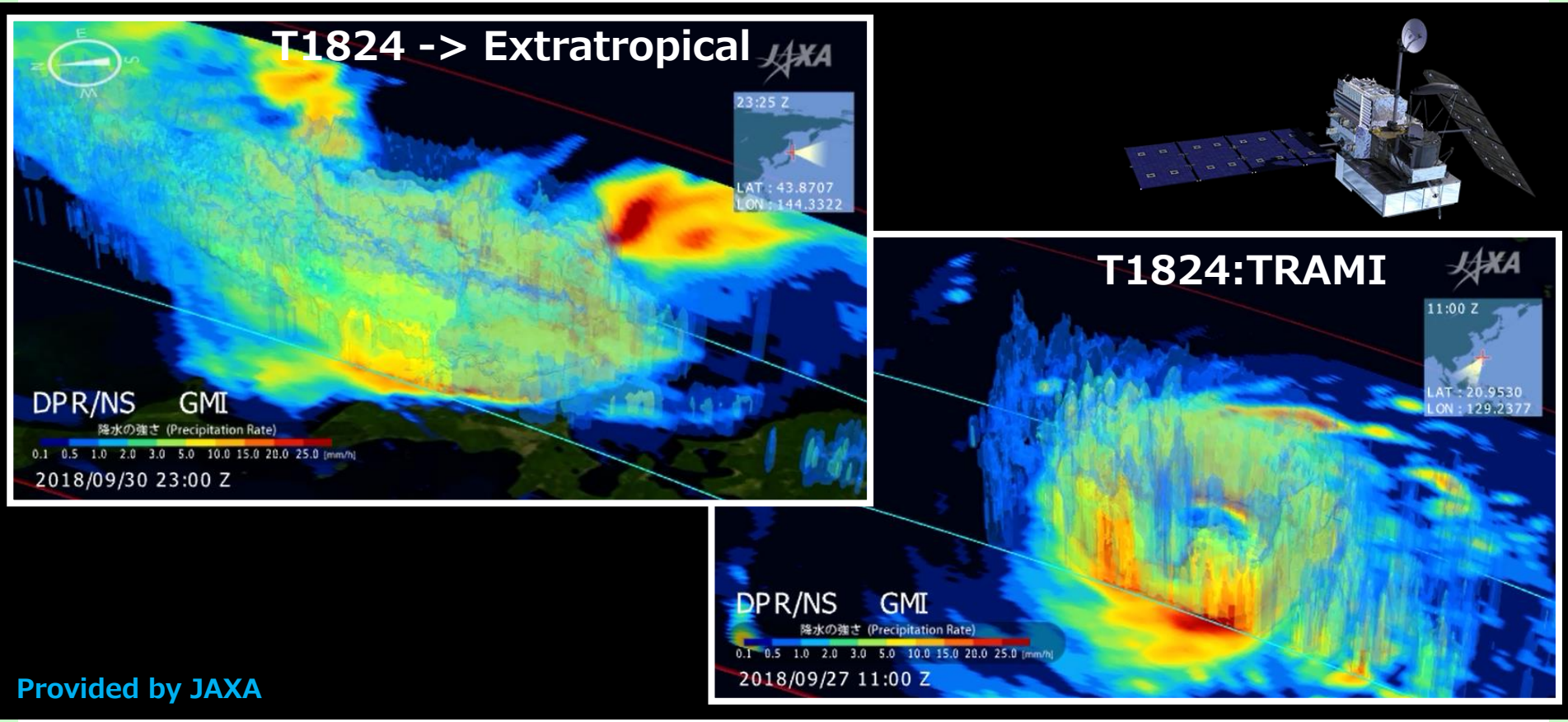


http://www.jaxa.jp/projects/sat/trmm/index_j.html

53

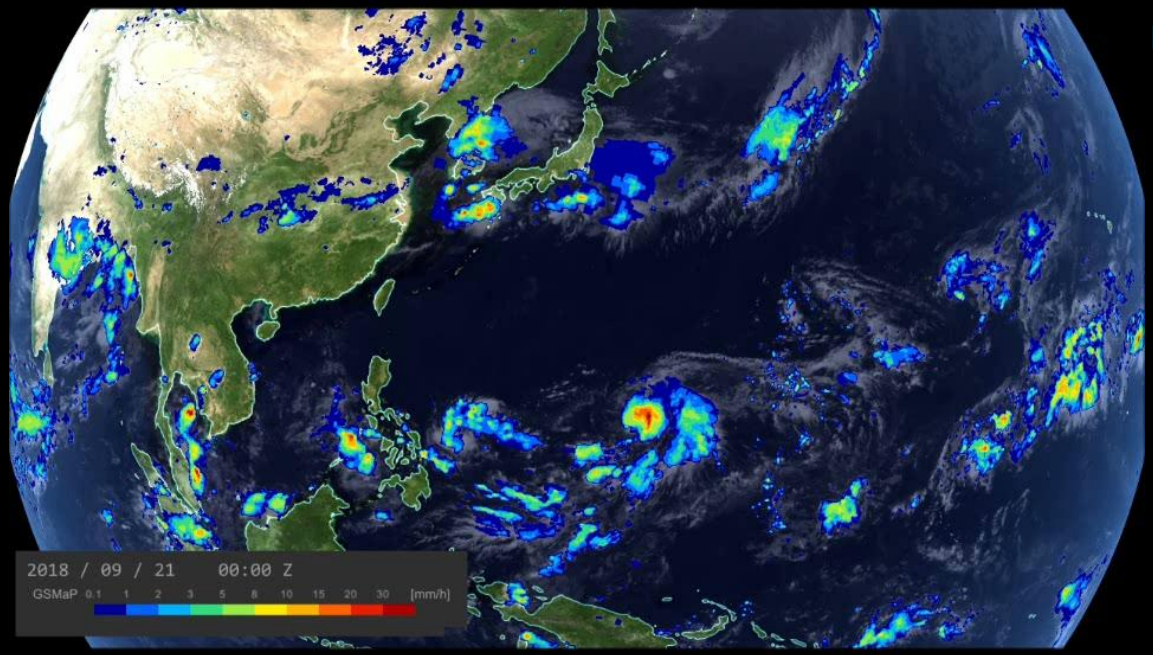
In addition to operational applications, R&D cooperation might be enhanced in the region. For example, …

WORKING TOGETHER



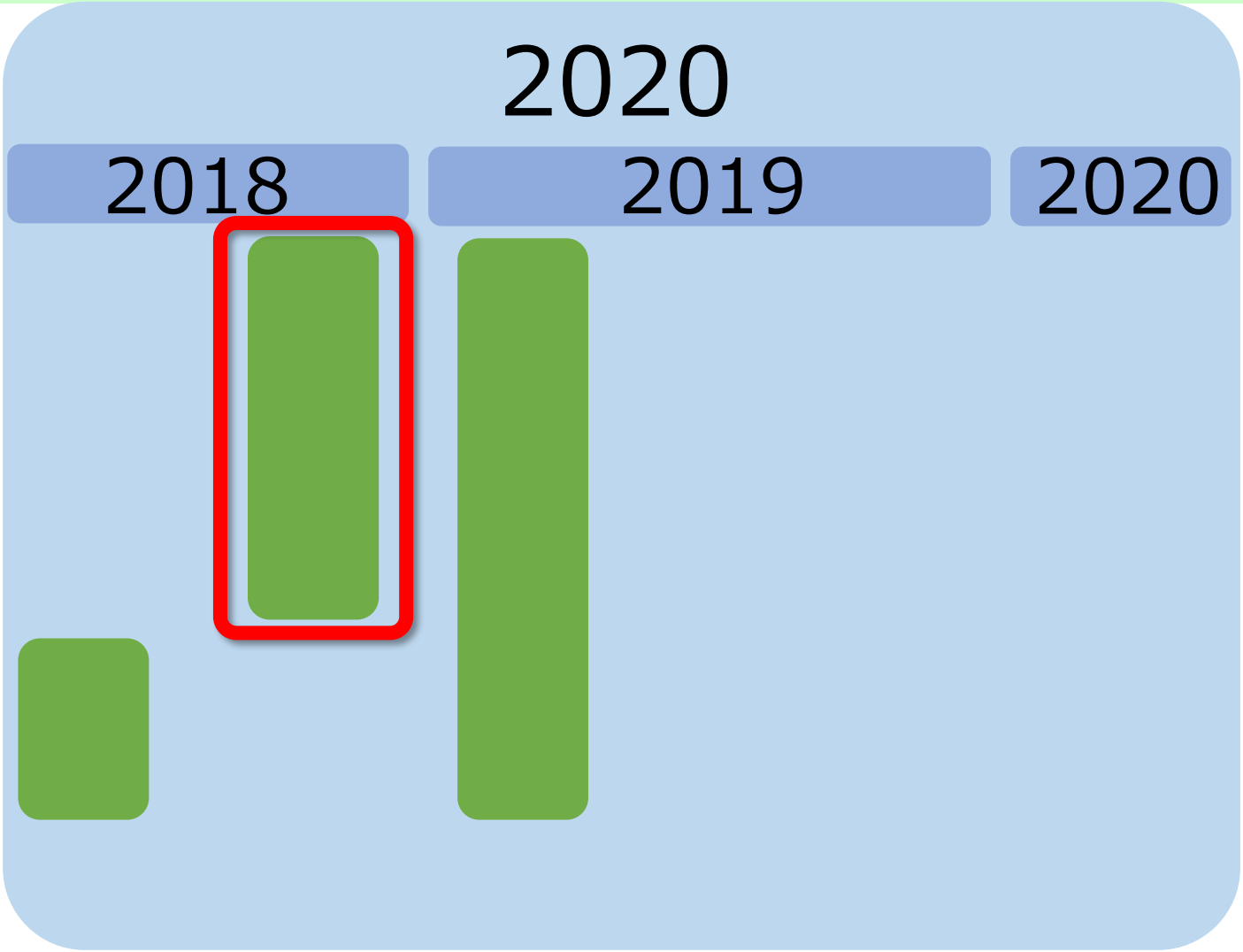
high-resolution three-dimensional observation data acquired from Low-Earth orbiting satellites contribute toward improving the operational products via the R&D cooperation.

WORKING TOGETHER



Provided by JAXA

As you know, both typhoon and cyclone have a significant impact on the region, so a seamless flow: research-development-installation-operation is important for us.

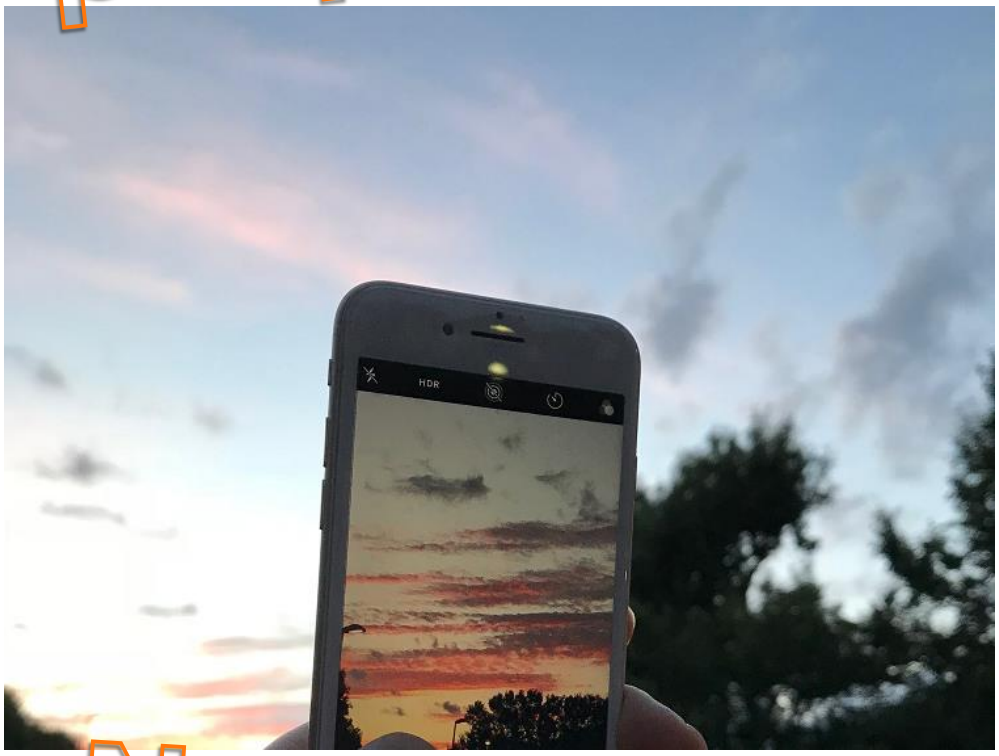


We were extremely busy in October 2018 because we had two technical meetings and …

we also joined the WMO/CIMO Technical Conference (TECO) held in Amsterdam.

Meteorological Technology World Expo conjoined with TECO. Productive presentations and discussions were conducted.

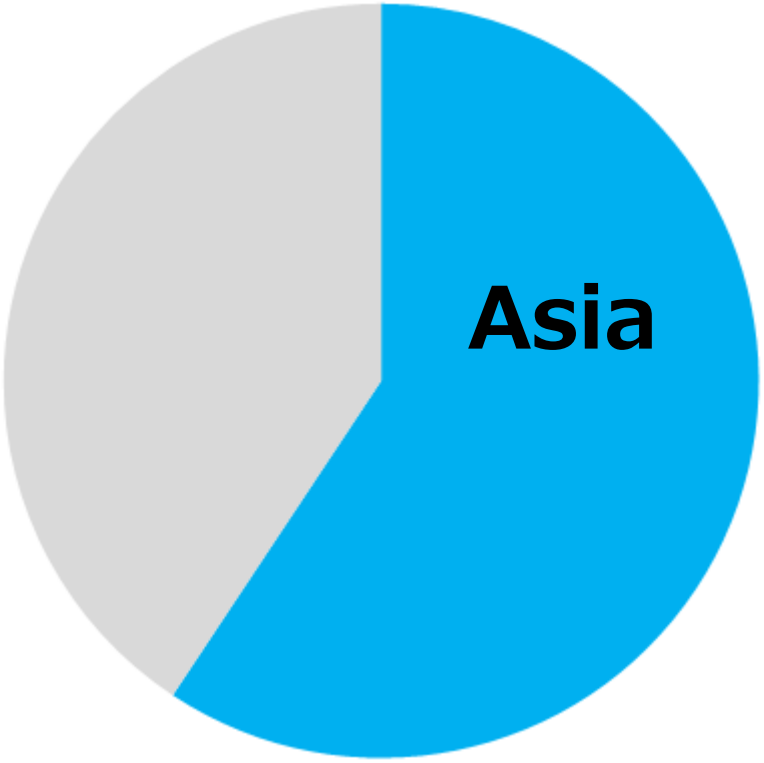
fit-for-purpose



New data source

Keywords: “fit-for-purpose” and “new data source” highlighted low-cost observation and the quality management of observation data.

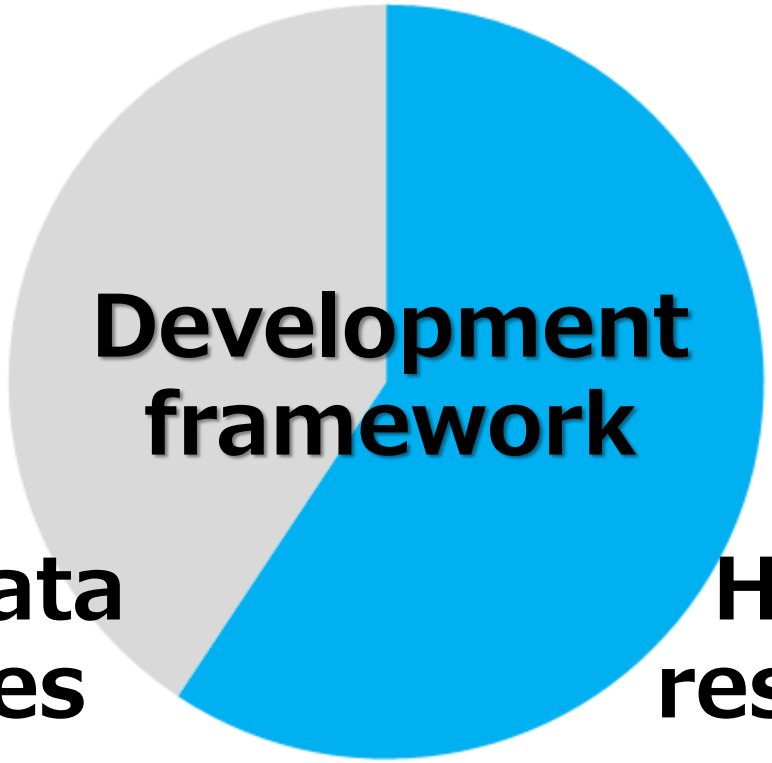
Population



Asia's new data sources

Let's remember this chart. The large population in Asia suggests potentiality to obtain a magical effect from new data sources; billions of mobile phones in the region!

Challenge



As a summary of this presentation, Asia's challenge, large-scale human resources and a magical effect from new data sources …

Development framework

When?

When should we discuss it?

We try to discuss such a development framework in this workshop.

Development framework

Who?

Who will discuss?

65

We have now high expectation of participation for discussion from workshop participants.

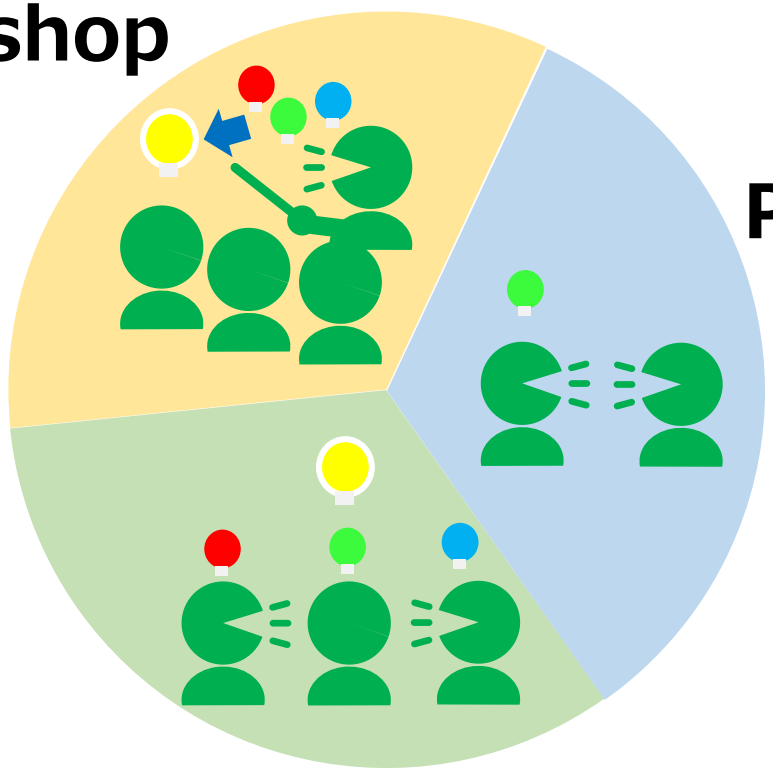
Development framework

How?

How do we discuss?

Post-workshop

Report
Practice



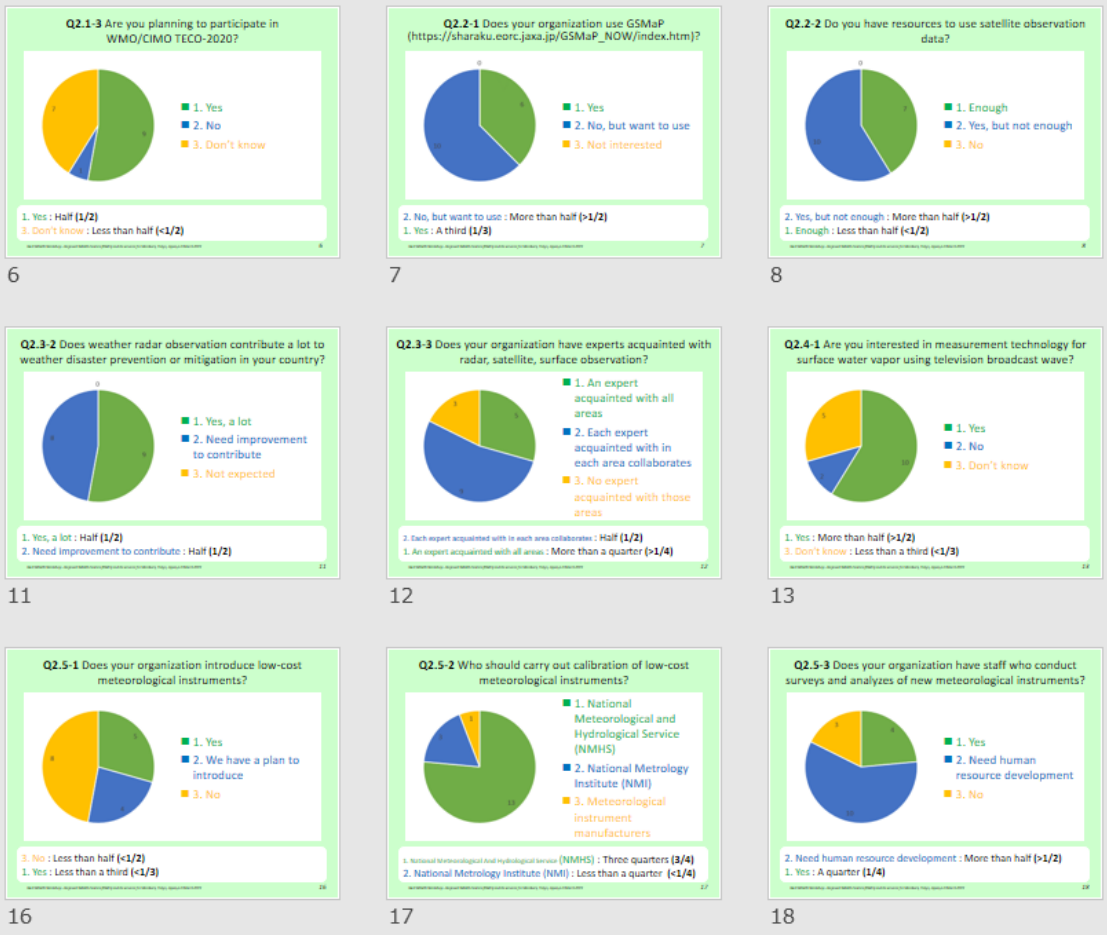
Pre-workshop

Survey
Study

Workshop

Discussion

Participants here already cooperated on pre-workshop survey. It is time for us to discuss based on pre-workshop survey and studies.

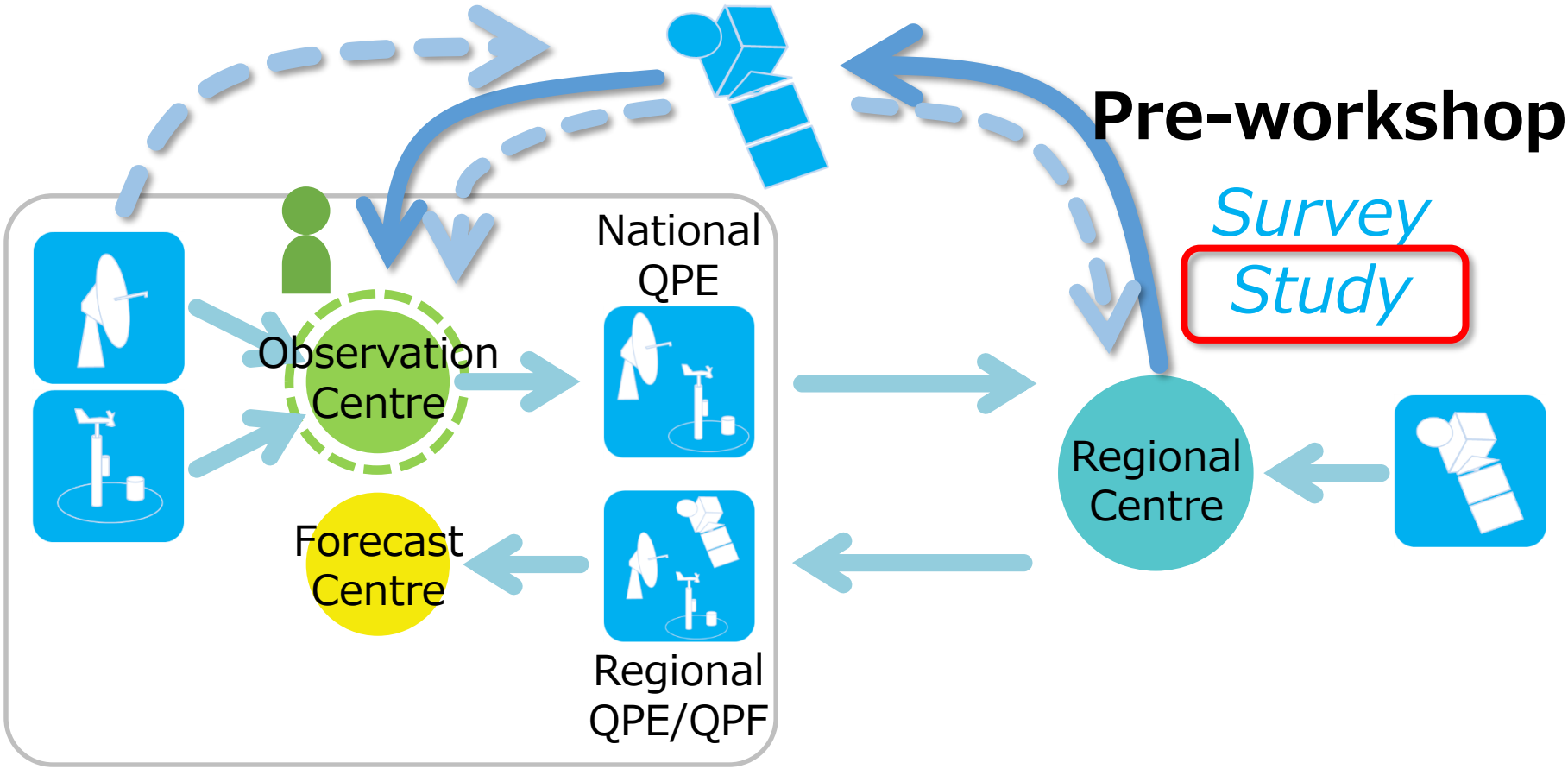


Pre-workshop

Survey Study

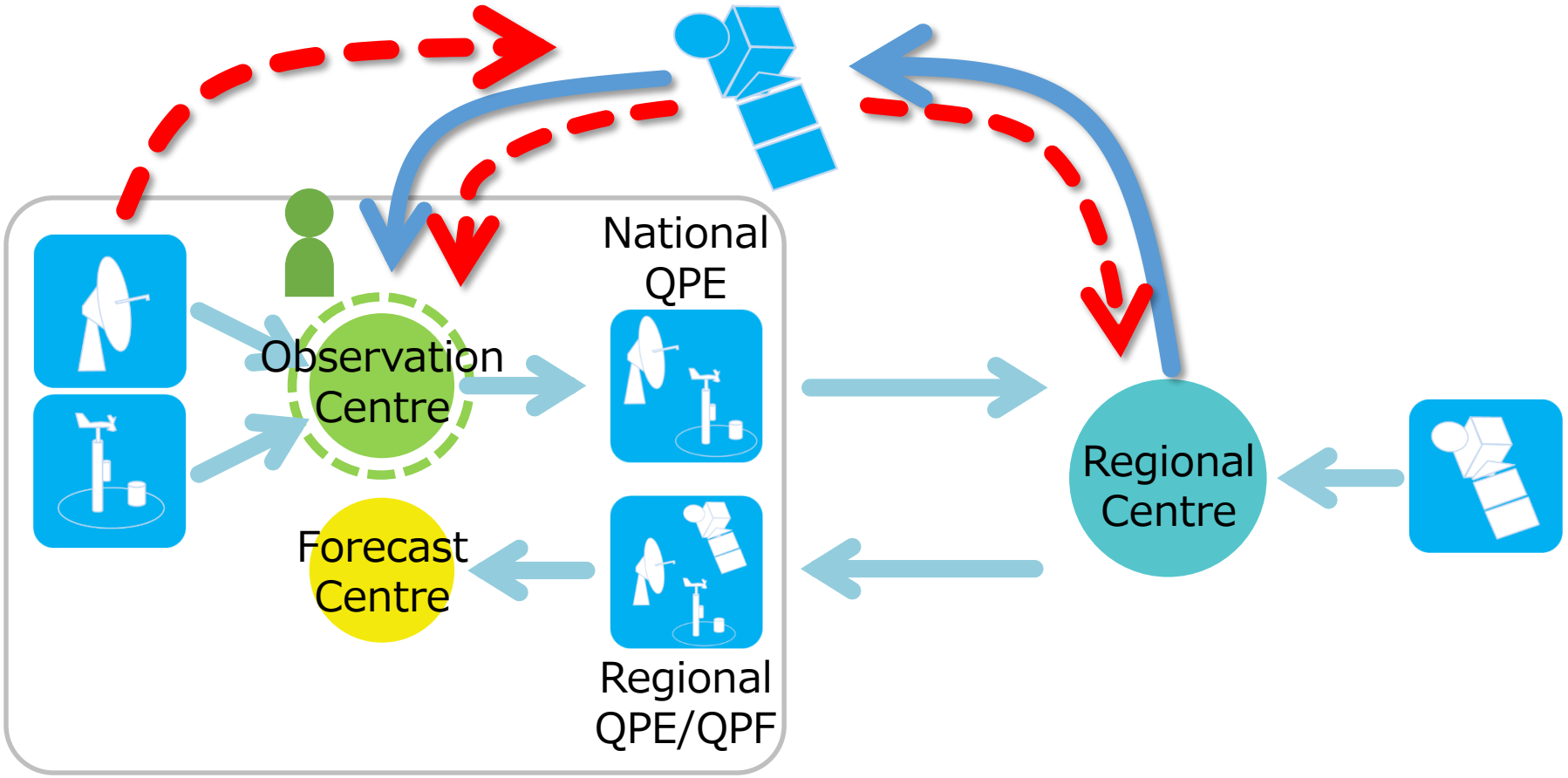
We will report the survey results.

Integrated QPE/QPF



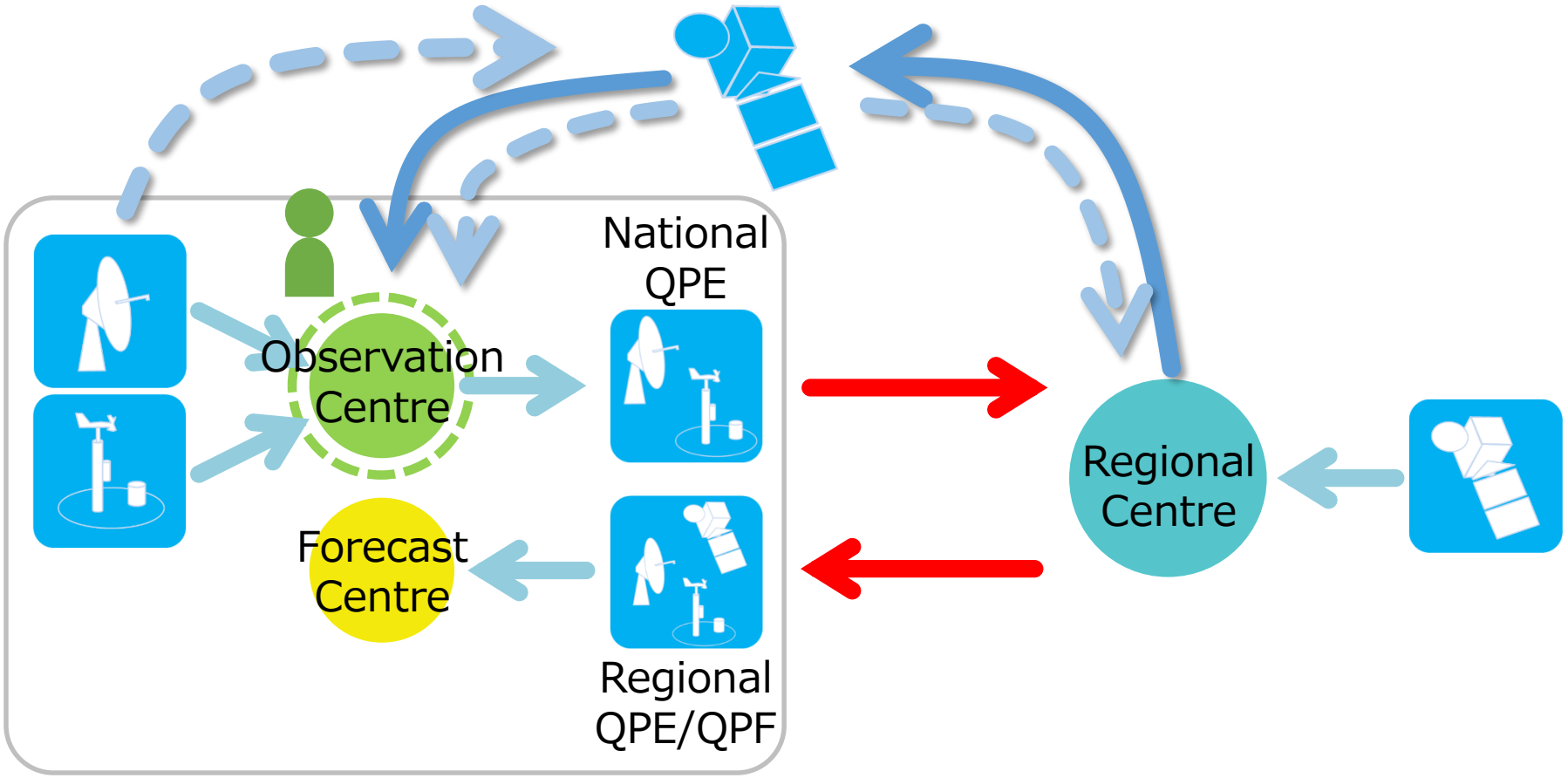
We also conducted pre-workshop studies. This chart shows proposed concept of integrated QPE/QPF. JMA discussed this concept with a few countries just before this workshop.

Integrated QPE/QPF



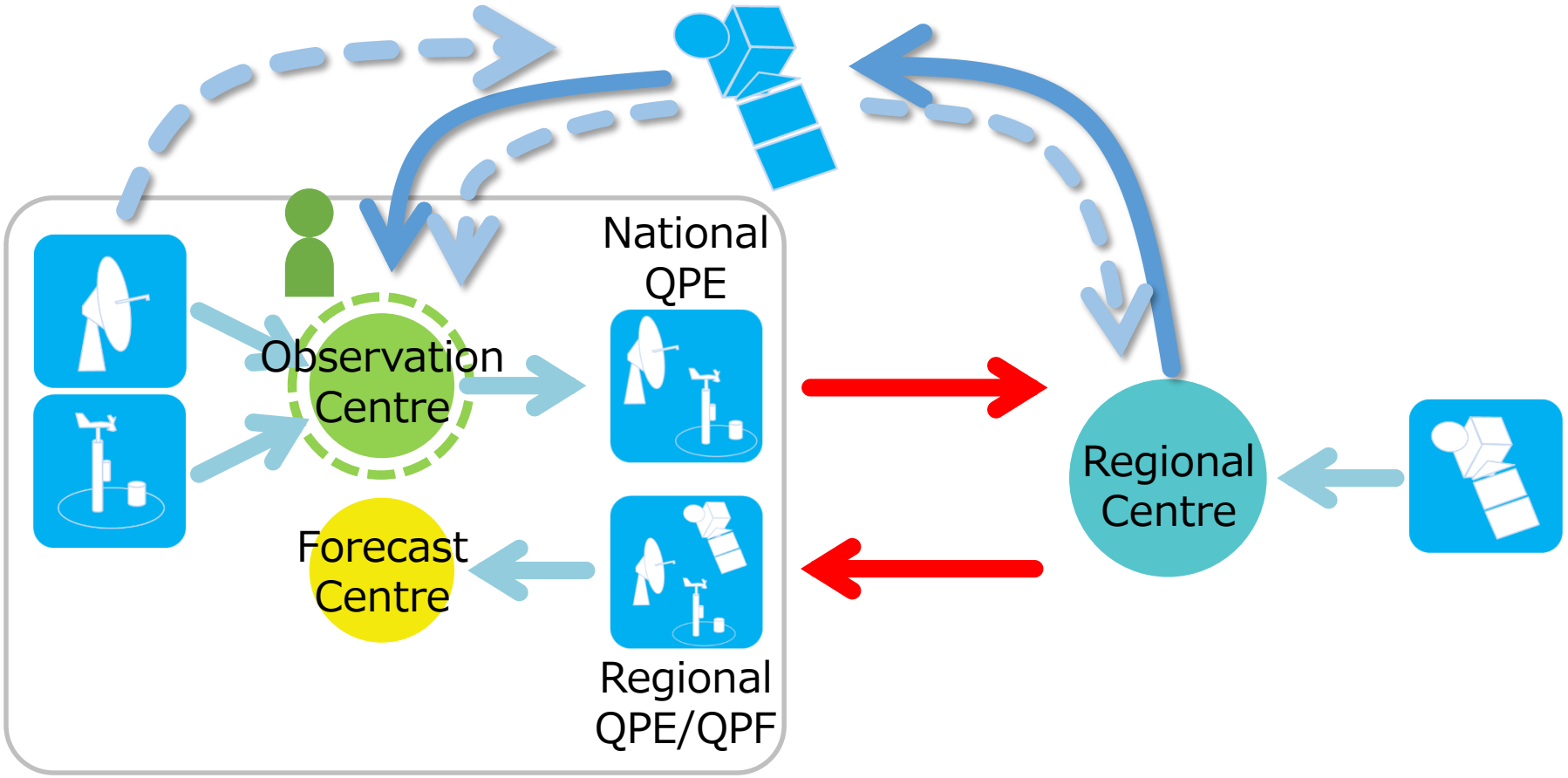
Lao PDR DMH suggested the effective use of satellite links.

Integrated QPE/QPF



Myanmar DMH and JMA discussed how to exchange data between national and regional centres.

Integrated QPE/QPF



I do think we could refine this concept because we are working together.

Thank you for your attention

It is time to design our collaboration and future.
Thank you for your kind attention.