Protocol for Himawari-8/9 Request-driven Rapid Scan in WMO RA II and RA V

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Japan Meteorological Agency

Change Record

Version	Date	Description
Initial draft	Mar 2017	Prepared by WMO Space Programme
Draft v0.1	May 2017	Reported at IPET-SUP-3
Draft v0.2	June 2017	Reported at CGMS-45
Draft v0.3	September 2017	To be reported at SCOPE-Nowcasting-EP

1 INTRODUCTION

1.1 Background

The Asia-Oceania region is prone to meteorological and other natural disasters such as tropical cyclones and volcanic eruptions. Most tropical cyclones are monitored from space, and satellite data play important roles both in determining their position/intensity and in forecasting their development. The region also sees significant volcanic activity, being part of the Pacific Ring of Fire, and satellite data are useful in determining the height and distribution of volcanic ash clouds.

The Japan Meteorological Agency (JMA) has continuously been operating the Himawari series of geostationary meteorological satellites and providing satellite imagery and products to protect people and their property from disaster not only in Japan but also in the Asia-Oceania region. Himawari-8 and -9, the latest satellites of the series, were launched in October 2014 and November 2016, respectively. Those two satellites, one of which is in operation and the other on orbit storage, compose a redundant satellite system until 2029. Himawari-8 and -9 carry the Advanced Himawari Imager (AHI). AHI is capable of Full Disk Observation every 10 minutes and shorter interval regional observation so-called Target Area Observation, which covers 1,000 km x 1,000 km over a selected area every 2.5 minutes. It is essentially focused on a tropical cyclone in the responsibility area of the RSMC Tokyo Typhoon Center or an area of active volcanoes in the domain of the Tokyo Volcanic Ash Advisory Center (Tokyo VAAC).

At the Joint RA II/RA V Workshop on WIGOS for Disaster Risk Reduction (October 2015), the Jakarta Declaration was adopted, noting the central role of National Meteorological and Hydrological Services (NMHSs) in the regions in Disaster Risk Reduction (DRR). In the statement, it was proposed to develop a protocol under which the NMHSs can request rapid-scan satellite data covering their national area of interest for DRR. Recognizing the essential role as a satellite operator in the regions, JMA willingly decided to develop such a protocol for the Target Area Observation with Himawari-8 and -9. Also, The RA II WIGOS Project to Develop Support for NMHSs in Satellite Data, Products and Training, which JMA serves as a co-coordinator, incorporates developing the protocol in its work plan 2017-2020.

1.2 Purpose and Scope

This document describes a protocol under which NMHSs of WMO RA II and RA V Members except for JMA (hereinafter referred to as the "Requesters") make requests for the Target Area Observation over selected areas provided by the operational satellite of Himawari-8 and -9. The protocol is expected to publicize the risk of severe phenomena to society and demonstrate the value of short interval regional observation.

2 Request Protocol

2.1 Basic Principle

(1) JMA may at any time prioritize Japan's national priorities or interests for the Target Area Observation over those from the Requesters.

(2) JMA will consider requests from the Requesters on a best-effort basis in consideration of operational limitations, and it does not ensure its instantaneity, integrity and availability.

(3) Among requests from the Requesters, the highest priority will be given to the one for a tropical cyclone or for a volcanic eruption.

(4) Observation duration by each request from the Requesters shall not exceed 48 hours, and any extension requires a further request.

2.2 Request Managemant

JMA and the Australian Bureau of Meteorology (AuBoM) successfully conducted a feasibility study on the request-driven Target Area Observation by Himawari-8 in 2016. The feasibility study indicated that it would be advantageous for requests from RA V to be managed by AuBoM as a broker in order to reduce the number of requests that JMA may potentially be faced with in the case of an extreme event.

Based on this result, the Requesters in RA V shall submit their requests to AuBoM. When receiving multiple requests from different countries for the same time slot, AuBoM shall assign priority to one of the requests based on the Basic Principle (3). If the Principle (3) cannot be applied, AuBoM may give priority depending on its own judgment. Finally, AuBoM shall inform JMA of one request for a certain time slot.

The Requesters in RA II shall submit their requests to JMA directly.

Procedure on making requests is described in Section 2.4.

2.3 Registration

The Requesters are required to be registered in advance by using the Registration From (Annex I). In the form, an e-mail address from which requests will be sent must be specified so that JMA and AuBoM can confirm its validity.

2.4 Request Procedure

The Requesters shall provide JMA with the Request Email (Annex II). The Request Email notifies JMA of request information including a center position and start/end times of observation, and it triggers subsequent procedure.

It is to be noted that request procedure is different between RA II and RA V.

2.4.1 Procedure for RA V Requesters

In the procedure for the Requesters in RA V, AuBoM plays a broker role forwarding the Request Email to JMA. The procedure includes the following steps.

1. Requester: Send the Request Email to AuBoM
2. AuBoM: (If necessary, assign priority to one of the requests,) Forward the Request Email to JMA
3. JMA: Reply to AuBoM by e-mail about whether it can be realized
4. JMA: Change relevant settings of the satellite system

Figure 1 shows the request procedure for the RA V Requesters.

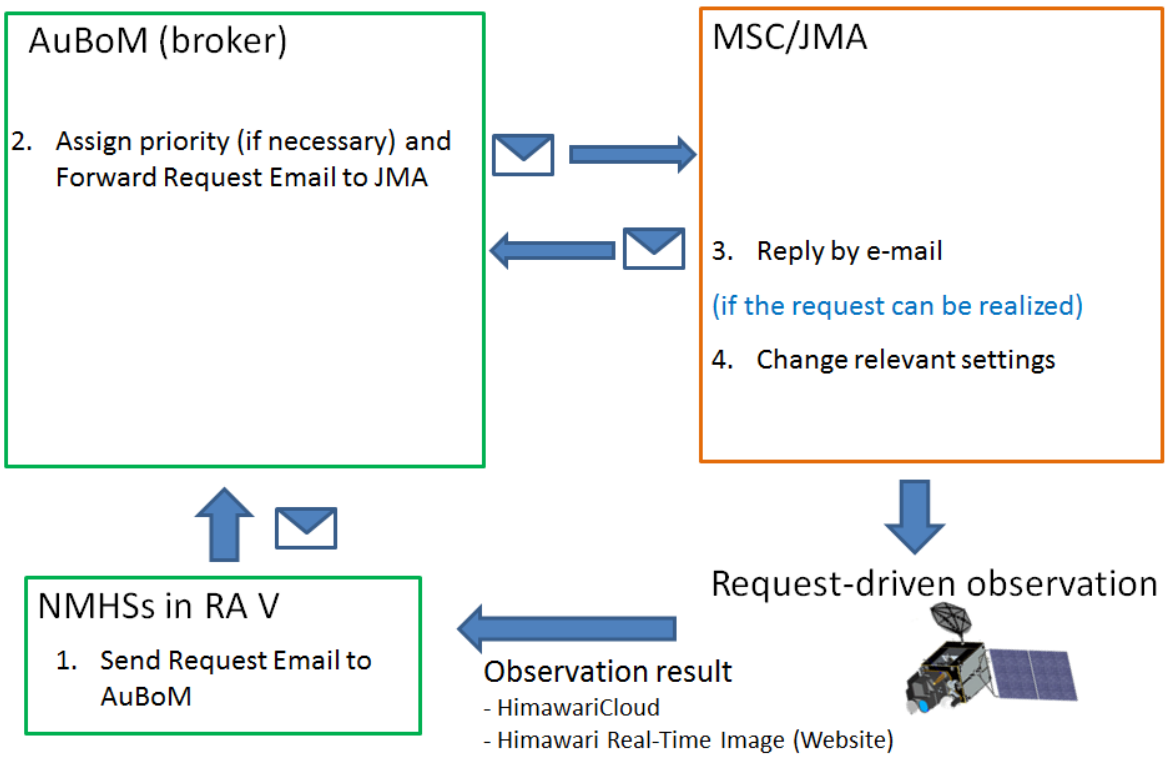

Figure 1: Request Procedure for the RA V Requesters

2.4.2 Procedure for RA II Requesters

In the procedure for the Requesters in RA II, the Requesters send their Request Email to JMA. The procedure includes the following steps.

1. Requester: Send the Request Email to JMA
2. JMA: Reply to the Requester by e-mail about whether it can be realized
3. JMA: Change relevant settings of the satellite system

Figure 2 shows the request procedure for the RA II Requesters.

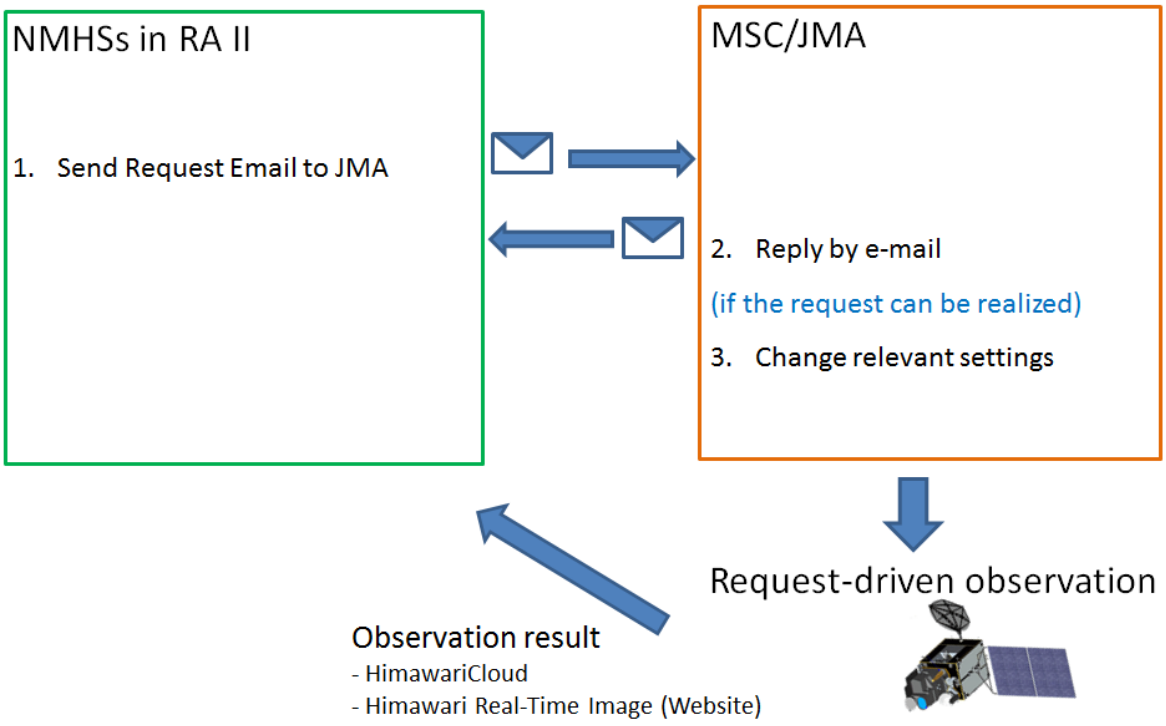

Figure 2: The same as Figure 1 but for the RA II Requesters

3 Data Access

The Target Area Observation data are disseminated via the HimawariCloud service. Related imagery is also available on the Himawari Real-time Image website at http://www.data.jma.go.jp/mscweb/data/himawari/sat_tga.php.

4 Feedback

After the requested observation, the Requesters shall provide JMA with feedback on how they utilize the observation data.