



# HimawariCast Newsletter

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Japan Meteorological Agency 

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## 10 March 2017 commencement of Himawari-9 commenced backup operation

Since its successful launch on 2 November 2016, Himawari-9 (the new-generation geostationary meteorological satellite of the Japan Meteorological Agency (JMA)) has achieved several milestones.

On 11 November 2016, the satellite entered geostationary orbit as planned after several injections of its apogee engine. Both Himawari-8 and Himawari-9 are settled at around 140.7 degrees east longitude as the sub-satellite point. Specifically, Himawari-8 is settled at 140.65 degrees and Himawari-9 is settled at 140.75 degrees.



Figure 1 First image from Himawari-9 (02:40 UTC, 24 January 2017)

At 02:40 UTC on 24 January 2017, Himawari-9 sent the first images captured by all 16 bands of its Advanced Himawari Imager (AHI) to the relevant ground stations. The striking initial image was processed at JMA's Meteorological Satellite Center (MSC) using the Center's own color correction algorithm along with an atmospheric correction (Rayleigh correction, Miller et al. 2016) algorithm developed by the Cooperative Institute for Research in the Atmosphere (CIRA).

After extensive in-orbit testing, Himawari-9 commenced backup operation at 00 UTC on 10 March 2017. The satellite will essentially serve as backup before taking over the operational role of Himawari-8 in 2022.

## Overview of BMKG's utilization of HimawariCast

Since Himawari-8 data have been used for operational purpose, Badan Meteorologi, Klimatologi, dan Geofisika (BMKG) makes weather analysis for Indonesia region based on the images interpretation. The JMA-WIS Portal was the first source where BMKG could download SATAID format data and produce Himawari-8 products. To gain Himawari-8 advantages, full resolution data are required to be used instead of analyzing the 4km resolution SATAID data from WIS Portal. In December 2015, BMKG as the official NMHS of Republic of Indonesia, started to retrieve Himawari-8 full resolution data by HimawariCloud service. It requires a stable and rapid connection of the Internet, but it can not guarantee that technical issues of networking and hardware are clear

anytime. For this reason, as a backup system of HimawariCloud, the HimawariCast system has been installed to receive Himawari-8 data which has better resolution and variation than those from JMA-WIS Portal.



Figure 2 Reception antenna (top) and computer clients (bottom) of HimawariCast installed in BMKG's college

The HimawariCast reception system has been installed in BMKG's college (around 20 km from BMKG Headquarters) in September 2016. It retrieves HRIT format data, observation and model data and automatically produces images for each band. The installed program also can convert HRIT format data to SATAID, NetCDF and GeoTIFF which are easier to explore in post processing step. All products and data are stored in local storage. Few cases of networking

failure in HimawariCloud forced HimawariCast data to be used to create Volcanic Ash RGB Image analysis, which requiring 8.6µm band and it is not available in JMA-WIS Portal. With a dedicated network, the forecasters in Headquarter can retrieve data and remotely monitor the HimawariCast status.

The other purpose for which we installed HimawariCast system in BMKG's college (STMKG) is improving student's capabilities in satellite image analysis and interpretation. Weather satellite is one of the most important tool to produce weather forecast and analysis. The students are introduced to use GMSLPD software and reproduce satellite image, thus when they work as forecaster in meteorological stations, it will be easier for them to monitor cloud development and make a forecast.

(Andersen Panjaitan: BMKG)

### JMA HimawariCast training in Mongolia, Papua New Guinea and Solomon Islands

From November through December of 2016, JMA held HimawariCast training in three countries as listed in Table 1 below. At these events, JMA experts outlined the basics of satellite observation, cloud image interpretation and use of the SATAID software. The experts were welcomed in each country and interacted with local NMHS staff. JMA sincerely appreciates the hospitality shown to its experts.

#### JMA expert impressions of Mongolia

The temperature in Ulaanbaatar was around -20°C when we arrived at the airport, which was around 30°C colder than Tokyo. However, the cold was mitigated by the very warm welcome we received.

Date	Country	JMA experts
8 November – 10 November	Mongolia	Shuji Nishimura, Junya Fukuda, Kenichi Nonaka
30 November – 2 December	Papua New Guinea	Kotaro Bessho, Masahiro Hayashi
5 December – 7 December	Solomon Islands	

Table 1 HimawariCast training sessions in November/December 2016

The HimawariCast receiving system was installed at the Aviation Meteorological Center (AMC) of the National Agency for Meteorology and Environmental Monitoring (NAMEM) in October 2016. Himawari-8 imagery received at AMC is continually transferred to NAMEM's Headquarters through its intranet, and is used for their operational weather forecasting. Against this background, around 20 staff from AMC and NAMEM Headquarters attended the training.

The attendees listened to presentations and eagerly engaged in related exercises. The results of satellite image analysis using SATAID were discussed with enthusiasm, and the presenters outlined High-resolution Cloud Analysis Information (HCAI – a derivative product made from Himawari-8 data). A requested presentation on the advanced features of the SATAID was also given as part a Q&A session on the final day. The presenters further delivered a cloud analysis exercise based on NAMEM Himawari-8 real-time imagery. The need for such on-the-job training and cloud analysis training in such exercises is recognized.

JMA's staffs very much appreciate the kind hospitality shown during their stay in Mongolia, and hope that the training provided will be useful in related operations.

(Shuji Nishimura, Junya Fukuda, Kenichi Nonaka)



Figure 3 Active and lively discussions at AMC, NAMEM

JMA expert impressions of Papua New Guinea and Solomon Islands

Papua New Guinea (PNG) National Weather Service (NWS) staff reported that they had enjoyed the

training and learned a lot about Himawari-8 and how different bands were used to identify severe weather systems (e.g., fog, Tropical Storm and heavy rain) and hazards (e.g., volcanic ash and forest fires) that may impact air navigation. Attendees also mentioned a desire for further training, stating that a period of three days may be insufficient for a full understanding of the theory and the materials presented. JMA welcomed the feedback and plans to update its HimawariCast training in response.

The three days of training at the Solomon Islands Meteorological Services (SIMS) were conducted smoothly with a friendly atmosphere thanks to the dedication and passion of SIMS staff. The wall-mounted RGB recipes among the Third Country Training Program materials for Nadi, Fiji (see HimawariCast Newsletter No. 2), in the SIMS operations area were particularly notable. The sharing of JMA's expertise based on Himawari data is expected to support severe weather analysis and other operational processes. (Kotaro Bessho, Masahiro Hayashi)



Figure 4 Wall-hanging RGB recipes



Figure 5 PNG NWS staff with certifications



Figure 6 Seminar at SIMS



## Introduction of useful SATAID functions

Two useful functions of the SATAID software are outlined below. One of these was added to the latest version (ver. 3.1.0.7) in response to requests from HimawariCast users. The latest version is available at [http://www.data.jma.go.jp/mscweb/en/himawari89/himawari\\_cast/transition.html#software](http://www.data.jma.go.jp/mscweb/en/himawari89/himawari_cast/transition.html#software)

### 1. Fixing animation speed discontinuity (version 3.1.0.7 or later)

SATAID enables future visualization of NWP animation for satellite images. In the earlier version, due to the time interval difference between NWP and satellite images (i.e., normally one hour<sup>1</sup> and ten minutes), some users may experience an animation speed difference between NWP (with satellite imagery) and NWP (without satellite imagery). The latest version allows adjustment for constant animation speed.

For animation speed adjustment (Figure 7):

- 1) Click “Option” on the menu bar and “Data list...” while pressing the Ctrl key.
- 2) Activate the “Variable” checkbox in the “Setup of animation” window.
- 3) Click the “OK” button.

### 2. Saving zoom settings (not required with the latest version)

SATAID can be used to zoom in/out of satellite images and change the target display area. To save/restore the area, follow the steps outlined below.

To save zoom settings (Figure 8):

- 1) Zoom in/out of the satellite image.
- 2) Click “Normal” on the menu bar with the **Ctrl and Shift keys pressed**.
- 3) Click the “Get” button to deploy the current zoom setting.
- 4) Click the “OK” button.

To restore the saved zoom setting:

- 1) Click the “Zoom (Normal)” button with the **Ctrl key pressed**.

To keep the settings after closing SATAID, click “Option” on the menu bar and “Save value” with the Ctrl key pressed regardless of the version of SATAID.

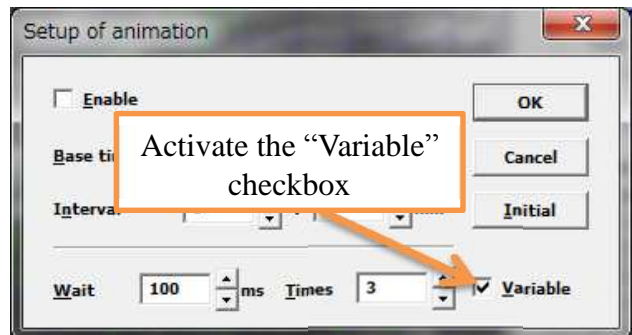
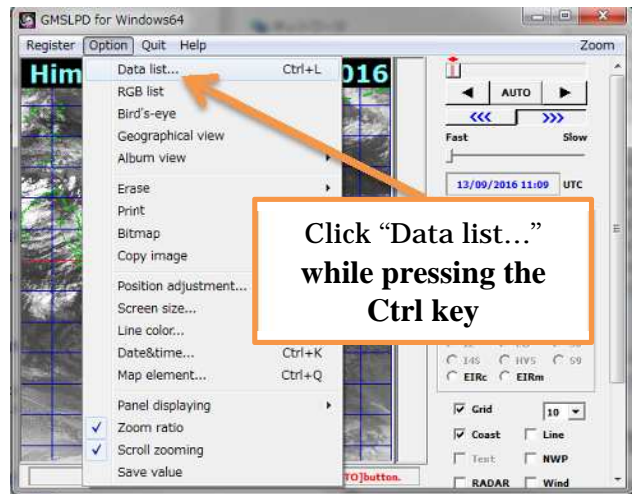


Figure 7 Animation speed adjustment

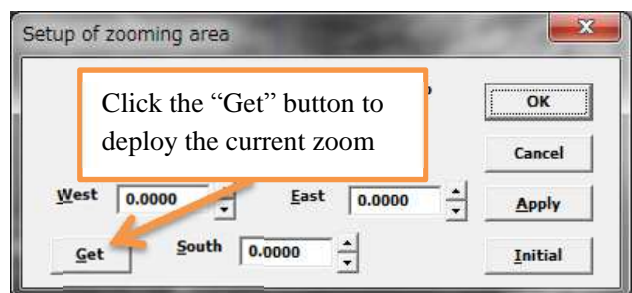
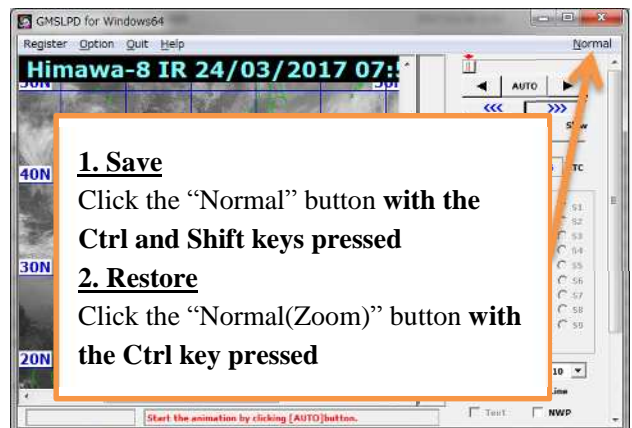


Figure 8 Zoom setting saving

<sup>1</sup> Original NWP (JMA GSM) is 6-hourly data, but SATAID creates hourly data by interpolation.

## Feedback

JMA welcomes feedback from users on HimawariCast data usage, and particularly invites articles to be posted in this newsletter. Such input will help other users consider new ideas for their services.

The Agency also invites questions on HimawariCast services. These may relate to the functions of the SATAID program, JMA's interpretation/analysis of

multi-band imagery or other areas of interest. Feel free to send queries to be answered in this newsletter.

All articles and questions are welcomed. Your contributions are greatly appreciated.

### **Editorials and Inquiries**

Any comments or inquiries on this newsletter and/or the HimawariCast Web Page are much appreciated!

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