

CONTRIBUTIONS TO THE WMO CBS SEVERE WEATHER FORECASTING DEMONSTRATION PROJECT (SWFDP)

This document summarizes JMA's contributions to the WMO CBS Severe Weather Forecasting Demonstration Project (SWFDP) in RA-II and the Severe Weather Forecasting and Disaster Risk Reduction Demonstration Project (SWFDDP) in RA-V in relation to Recommendation 38.02 from CGMS-38.

JMA's Meteorological Satellite Center (MSC/JMA) provides real-time MTSAT imagery for various areas of RA-II and RA-V via the MSC website. This allows individuals and national weather service providers in these regions to see satellite images of clouds directly on the Internet without the need for a particular image-viewing system.

In addition to this image service, MSC began posting a new satellite product called Imagery with Heavy Rainfall Potential Areas on its website in March 2011 to support the SWFDDP. The product shows areas analyzed to be raining heavily from MTSAT images.

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1 INTRODUCTION

The Japan Meteorological Agency (JMA) has operated geostationary meteorological satellites for more than 30 years to provide cloud images of the East Asia and West Pacific regions in Regional Association II (RA-II) and Regional Association V (RA-V). The Agency currently operates the Multi-functional Transport Satellite-2 (MTSAT-2) as a primary unit, and MTSAT-1R as its back-up.

There are two regional projects over the MTSAT observation area: the WMO CBS Severe Weather Forecasting Demonstration Project (SWFDP) in RA-II, and the Severe Weather Forecasting and Disaster Risk Reduction Demonstration Project (SWFDDP) in RA-V.

As support for the two projects, JMA's Meteorological Satellite Center (MSC/JMA) provides real-time MTSAT images clipped for various areas of RA-II and RA-V on its website. MSC/JMA also generates a satellite image product called Imagery with Heavy Rainfall Potential Areas based on MTSAT images, and posts it on the website to support the SWFDDP.

2 REAL-TIME MTSAT IMAGERY

MSC operates a web page at http://mscweb.kishou.go.jp/sat_dat/img/reg/sat_img.htm showing real-time MTSAT imagery for various specified areas in RA-II and RA-V, as shown in Figure 1. Through this page, individuals and national weather service providers in RA-II and RA-V can easily see satellite images of clouds directly on the Internet without the need for a particular image-viewing system. Currently, imagery from the 15 areas listed in Table 1 is provided. The web page shows the latest 24 hourly images, which can be played as an animation. Viewers can select images from four MTSAT channels: the visible band (0.73 μm), the infrared band in the atmospheric window (11 μm), the water vapor absorption band (6.7 μm) and the near-infrared band (3.8 μm). MSC can also provide additional image sectors in line with user requirements.

Table 1 List of imagery areas

Name of area	Upper left long. lat.	Lower right long. lat.
Australia	110°E, 10°S	155°E, 45°S
Central Asia	70°E, 55°N	120°E, 25°N
New Zealand	155°E, 25°S	170°W, 60°S
Pacific Islands 1	130°E, 25°N	165°E, 5°S
Pacific Islands 2	155°E, 20°N	175°W, 5°S
Pacific Islands 3	140°E, 0	160°W, 25°S
Pacific Islands 4	172°E, 9°S	167°W, 26°S
Pacific Islands 5	156°E, 9°S	178°E, 26°S
Pacific Islands 6	149°E, 1°S	178°E, 26°S
Southeast Asia 1	80°E, 30°N	115°E, 0
Southeast Asia 2	105°E, 30°N	140°E, 0
Southeast Asia 3	90°E, 10°N	145°E, 15°S
High-Resolution Asia 1	99°E, 16°N	110°E, 8°N
High-Resolution Asia 2	80°E, 32°N	92°E, 24°N
High-Resolution Asia 3	84°E, 27°N	95°E, 19°E

3

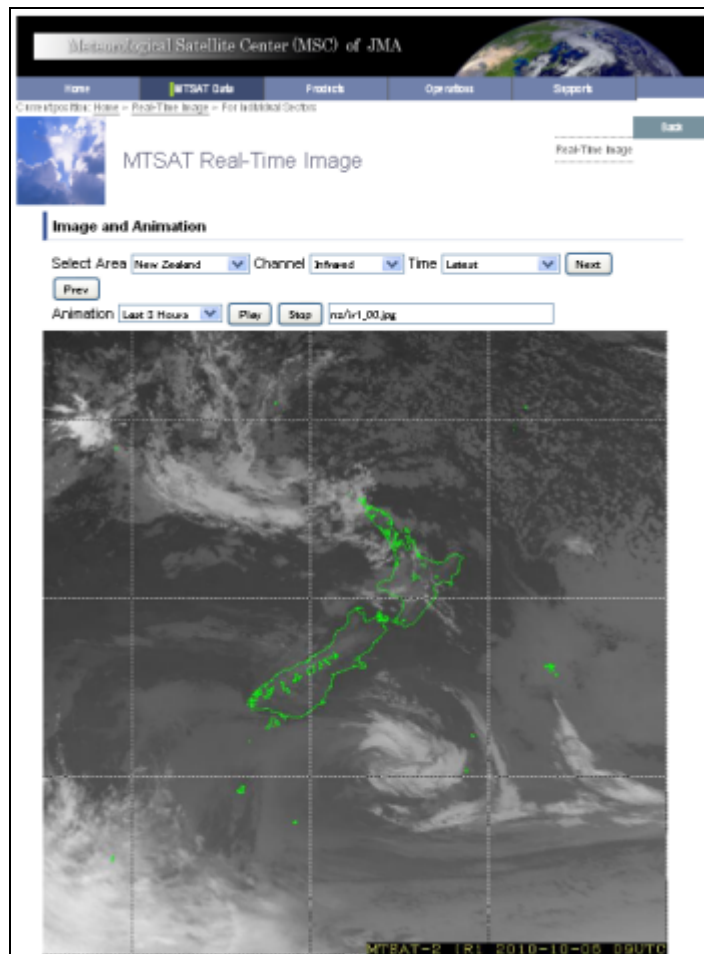


Figure 1 Real-time MTSAT imagery on the MSC website (http://mscweb.kishou.go.jp/sat_dat/img/reg/sat_img.htm)

IMAGE PRODUCT SHOWING HEAVY RAINFALL POTENTIAL AREAS

As a contribution to the SWFDDP, MSC has developed a new satellite product called Imagery with Heavy Rainfall Potential Areas (Figure 2) for the area over RA-V, where only a very limited number of rain radars are operated.

The new product provides information on areas of rain, and is based on statistical analysis of rainfall associated with deep convective clouds identified from MTSAT images. As MTSAT cannot measure rainfall itself, the areas represent potentially heavy rain. Comparison with Global Satellite Mapping of Precipitation (GSMaP) shows that the areas of this product cover about 79% of the GSMaP analyzed areas with rain intensities of more than 20 mm/h.

The product complies with the specifications of the JPEG format, and covers the area from 10°N to 35°S and from 140°E to 145°W. The spatial resolution of each pixel is 0.05 degrees in both latitude and longitude. The background cloud image of the product is the observation of the MTSAT infrared window channel (10.8 μm). The areas shaded in magenta indicate analyzed ones raining heavily.

Provision of the product via the MSC website at http://mscweb.kishou.go.jp/RA-V/sat_img.htm was started in March 2011.

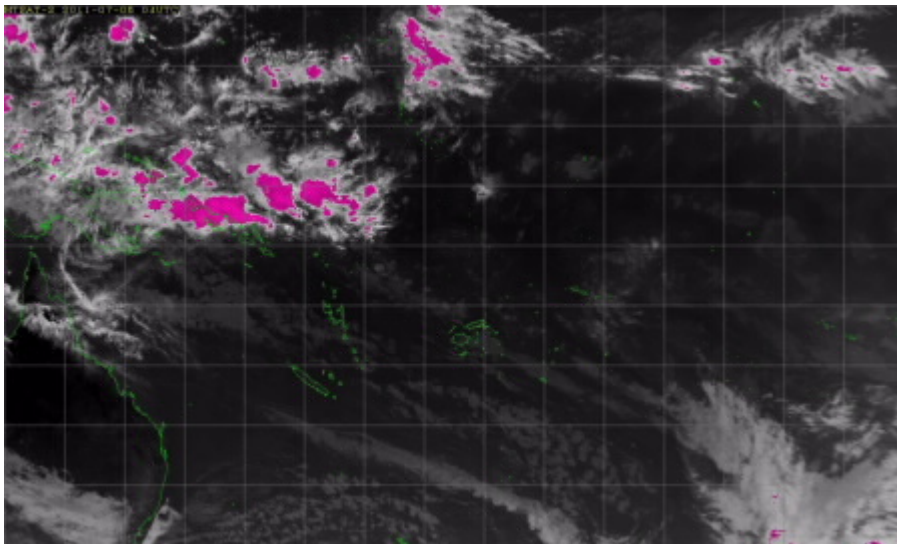


Figure 2 Sample of Imagery with Heavy Rainfall Potential Areas