

COMMISSION FOR BASIC SYSTEMS
OPEN PROGRAMME AREA GROUP ON INTEGRATED OBSERVING SYSTEMS

EXPERT TEAM ON SATELLITE UTILIZATION AND PRODUCTS

ITEM: 10

EIGHTH SESSION

GENEVA, SWITZERLAND, 14-17 APRIL 2014

Original: ENGLISH

Preparation for Himawari-8

(Submitted by JMA)

Summary and Purpose of Document

1. JMA has provided the data format and its samples of AHI on the Meteorological Satellite Center's website.
 2. Using AHI data, JMA plans to improve current satellite products, and new products will also be developed.
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ACTION PROPOSED

The eighth session is invited to:

- (a) Note the current status of Himawari-8 preparation; and
 - (b) Provide comments, suggestions and recommendations for JMA;
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DISCUSSION

Introduction

The Japan Meteorological Agency (JMA) plans to launch the world's first next-generation geostationary satellite, Himawari-8, in 2014 and to start its operation in 2015 as a replacement for MTSAT-2 (also called Himawari-7). Himawari-9 will also be launched in 2016 as a backup and successor satellite. Both satellites will be located at around 140 degrees east, and will observe the East Asia and Western Pacific regions for a period of 15 years.

Himawari-8/9 will have 16 bands, which is more than three times the 5 bands of the current MTSAT series. Three of these will be visible bands corresponding to red, green and blue to enable the creation of true-color images. Observation frequency will also be enhanced, with full-disk imagery obtained every 10 minutes. In addition, rapid scanning will be conducted in several regions, one of which will be for targeted observation of tropical cyclones.

Himawari-8/9 data format and its samples

The AHI (Advanced Himawari Imager) data derived from the satellites is processed into "Himawari Standard Data" in "Himawari Standard Format": the master data for all the products related to the data of Himawari-8 and -9. The format is described in the document:

http://mscweb.kishou.go.jp/himawari89/space_segment/hsd_sample/HS_D_users_guide_en.pdf

To support research and development for Himawari-8 products, NWP based proxy data have been created using radiative transfer model. For this purpose, a radiative transfer model RSTAR (Nakajima and Tanaka 1986) is used. For the radiative transfer computation, the provisional response functions are used.

Samples of AHI data from the NWP based proxy data are available from the MSC (Meteorological Satellite Center) website:

http://mscweb.kishou.go.jp/himawari89/space_segment/spsg_sample.html

- "Himawari Standard Data" (Full Disk, Japan Area and Target Area)
- HRIT data (Full Disk)
- NetCDF data (Japan Area and Target Area)
- Colour Image Data (Full Disk, Japan Area and Target Area).

Product development

Himawari-8 and -9 will offer high observation potential, which will enable users to improve and develop a wide range of products. Using AHI data, JMA plans to improve current satellite products such as Atmospheric Motion Vector (AMV), cloud grid information (CGI), and clear sky radiance (CSR). New products related to volcanic ash and dust will also be developed.

For the AMV product, significant improvement of them is foreseen. Higher image resolutions and more frequent observations are expected to provide better target tracking accuracy, and the increased number of imaging bands will enhance AMV height assignment.

CGI will consist of three products such as cloud mask, cloud type and cloud top height. The algorithms of them are based on those of EUMETSAT, and some parts of them will be introduced from those of NOAA/NESDIS.

As new products for Himawari-8 and 9, JMA is developing two aerosol outputs relating to volcanic ash and dust:

Volcanic ash directly affects airplane flight plans, and is monitored by Tokyo Volcanic Ash Advisory Center (VAAC) of JMA. From Himawari-8/9 observations, quantitative data such as ash density and height are expected. JMA has started a pre-operational generation of volcanic ash product in

collaboration with EUMETSAT. The algorithm developed for the MTSAT will be extended towards Himawari-8/9. JMA is also planning to introduce NOAA/NESDIS volcanic ash algorithm. JMA will operate these two algorithms with the data from Himawari-8/9.

Dust product will be developed for the purpose of monitoring Asian dust. Two different approaches will be taken for this product. One will use visible and near-infrared data, and the other will use infrared data. Algorithm for the dust product retrieved from visible and near-infrared data has been developed based on NOAA/NESDIS aerosol algorithm.
