

PLANS FOR THE FOLLOW-ON SATELLITE TO MTSAT

This paper reports on the preparatory activities for the follow-on satellite to MTSAT-2. JMA plans to launch the follow-on satellite to MTSAT-2 by 2015, when MTSAT-2 is scheduled to complete its operation.

JMA conducted a survey on the user requirements for imager and sounder of the follow-on satellite, and followed by the feasibility study of imager and sounder which will meet the user requirements.

JMA will define the specification of the follow-on satellite based on the user requirements and the result of feasibility study, taking into account the recommendation by CGMS.

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1 INTRODUCTION

The Japan Meteorological Agency (JMA) has been operating the GMS series and MTSAT series covering East Asia and the Western Pacific since 1977 and contributing to the World Weather Watch (WWW) Programme of WMO. Currently, MTSAT-1R is operational, while MTSAT-2 is on standby in orbit. MTSAT-2, which will take over the meteorological mission of MTSAT-1R in 2010, is scheduled to complete its operation around 2015 (see JMA-WP-02 about the status of MTSAT-1R and -2).

JMA plans to launch the follow-on satellite to MTSAT-2 (hereinafter referred to as the "Follow-on") by 2015 at the latest, preferably in 2013. As the initial step of preparatory activities for the Follow-on, JMA conducted a survey on the user requirements in JMA. Following the survey, JMA conducted a feasibility study focusing on imager and sounder to meet the user requirements.

2 STATUS OF THE PREPARATORY ACTIVITIES FOR THE FOLLOW-ON

2.1 User Requirements Survey

JMA conducted a survey to gather requirements from users in JMA for imager and sounder of the Follow-on. The survey shows that users in the area of weather forecast and numerical prediction need rapid scanning of mesoscale region of specified size and location. In addition, the survey reveals the users' strong demands for the observation with vertical resolution accurate enough such as to extract the information of boundary layers and to improve the height assignment of atmospheric motion vectors. Main features of the user requirements are summarized as follows.

Imager:

- Spatial resolution should be as fine as 0.5km for visible (VIS), 2km for infrared (IR).
- Imager should observe the Full Disk (FD) within 10 minutes.
- Spectral channels should cover the near infrared bands, thermal infrared, ozone band, and CO₂ bands, in addition to current MTSAT channels.

Sounder:

- Vertical resolution should be as fine as 1 km.
- Sounder should observe FD within 60 minutes.

The result of the survey indicates that multi-channel imager such as SEVIRI should be necessary and that hyperspectral instrument such as Fourier Transform Spectrometer should be necessary instead of conventional discrete-channel sounder.

2.2 Feasibility Study

Following the survey, JMA examined the feasibility of imager and sounder which will meet the user requirements in 2013-2015 timeframe. The result is summarized as follows:

- Multi-channel imager is feasible without significant modification to the user requirements.
- Sounder is feasible with constraints against the user requirements, such as 2-3km vertical resolution instead of 1km.

3 FUTURE ACTIVITIES FOR THE FOLLOW-ON

JMA will define the mission specifications of the Follow-on based on the user requirements and the result of feasibility study considering the availability and cost-effectiveness as well as the CGMS recommendation for the imagers and sounders onboard geostationary satellites by the timeframe of 2015. In particular, JMA will examine the validity of the data with 2-3km vertical resolution in order to consider whether the Follow-on should carry a sounder.