

静止気象衛星ひまわり観測データの地球物理研究への活用について On the application of observational data of Geostationary Meteorological Satellite 'Himawari' for geophysical researches

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On October 07, 2014 Himawari-8 was successfully lofted via an H2-A carrier rocket from Tanegashima Space Centre in Japan and put in geostationary orbit on Oct. 16. The imager on board is in good condition and almost ready to disseminate high quality data for 16 channels with high time sampling and upgraded resolution. JMA will commence its operation in the middle of 2015, when MTSAT-2 is scheduled to complete its period of operation. JMA also plans to launch Himawari-9 in 2016. The PSR of the AHI for Himawari-9 is also scheduled to take place in a few months.

Since the observational capability of Himawari-8 increases very much compared to those of MTSAT-1R/-2, various routine services will be improved and some new products will be developed. Algorithms of routine products such as atmospheric motion vectors are being revised to prepare for the start of Himawari-8 operation. Besides these, it is expected that scientific researches will be possible taking advantage of improved measurements. For example, mechanisms of high-impact weather will be investigated using high time resolution imager data and new monitoring method of volcanic activity will be developed on the basis of increased number of channels.

We hope that new researches and/or findings will be possibly appeared in unexpected fields in geosciences using Himawari-8 data. Some of the important developments of routine operational monitoring and/or forecast have been developed introducing observations and/or techniques in different fields. One of the most successful achievements by such an introduction is the application of GPS network data to meteorology. GEONET in Japan designed to monitor crustal movements were utilized to derive Precipitable Water Vapor (PWV) with the density of 20 km spacing; the dense PWV data, providing moisture information, are now indispensable for meso-scale models for numerical weather prediction and contributes to the better forecast of severe weather. Another is the introduction of 4D-var technique to the improvement of earthquake early warning service by Japan meteorological Agency (JMA). These applications of existing observations and/or techniques to other subjects of new academic investigation. Now, we are planning to introduce a new method to monitor volcanic activity by Himawari-8 data. New satellite observation from space is thought to be one of the powerful tools or platforms providing chances for developments of geoscience.

Himawari series are operational satellites aimed for routine works of JMA, but there may be chances to load some other instruments in future. Speculations on some candidates for future instruments will be introduced.

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