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The utilization of satellite data in the TMD

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The Thai Meteorological Department (TMD) receives Himawari satellite data and distributes it on the official TMD website in the form of cloud images and digital data from VIS and IR channels. Satellite enhancement forms and quantitative precipitation estimation (QPE) analysis techniques are also provided.

For both nowcasting and short-term weather forecasting applications, Himawari8/9 satellite data is very useful for weather forecasting and hydrological early warning systems in Thailand. In particular, heavy to very heavy rainfall is caused by convective cloud formation or from low-pressure cells over vulnerable areas of the country. We take advantage of satellite data for severe weather monitoring starting from the formation stage, and the development trend accompanied by its movement in both the monsoon season and summer storms in the hot season. In addition, during the tropical cyclone period, Himawari 8/9 satellite data is also being used for monitoring and analyzing storm centers via the SATAID application.

To advance the utilization of the satellite data, the TMD applies the Himawari-8/9 detection data to the capture of cumulus cloud development through the "Products Rapidly Developing Cumulus Area (RDCA)" project. This is part of activities conducted under the ESCAP/WMO Typhoon Committee's Enhancing Utilization of Himawari 8/9 Products project.

In 2023, to promote the importance of satellite data and highlight their utility. TMD has been allocated a project budget of WRF Data Assimilation for the implementation of the satellite data and integrated as initial data for numerical weather model processing.

Moreover, in 2024 and 2025, the Weather Forecast Division under TMD proposed a project to utilize meteorological satellite data for applications of artificial intelligence or machine learning (AI/ML) methods for nowcasting to short-range prediction of severe weather.