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MGI37-10 Room:203 Time:May 28 09:00-09:15

Quasi real-time analysis of Solar radiation using 3rd generation HIMAWARI satellite with monitoring of Renewable Energy

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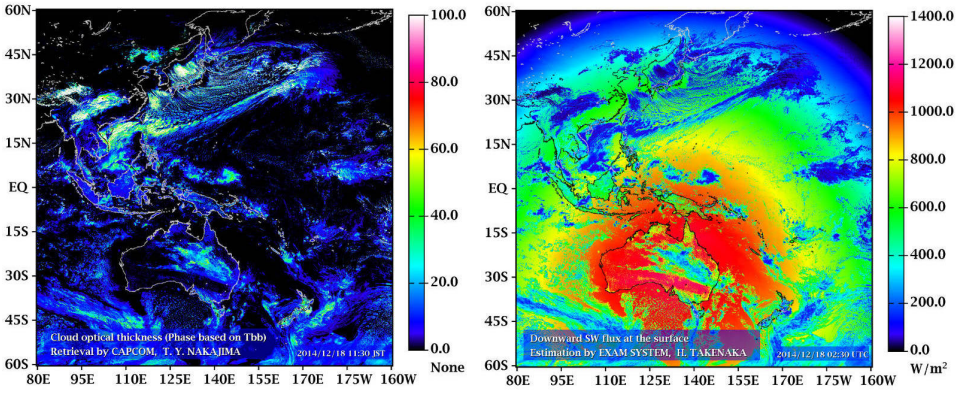
Clouds has strongly influence on the Earth's radiation budget and the climate. Clouds can cool the Earth by reflecting solar radiation but also maintain warmth by absorbing and emitting terrestrial radiation. Cloud activity is complex because its connect to water cycle, aerosols, and other climatic components with feedbacks. Therefor it is important to estimate the radiation budget and influence of cloud based on observations for better understanding of climate. Geostationary satellite is useful for estimate the radiation budget at the TOA and surface. It is suitable for observations of time dependent change of clouds and aerosols with high temporal resolution. Japanese geostationary satellite HIMAWARI-8 is launched on 2014 October 07. Advanced Himawari Imager (AHI) has sixteen channels that four visible channels, two near-infrared channels and ten thermal infrared channels. AHI will provides the detailed information of clouds and aerosols as the geostationary satellite observation of a new generation (10min wide area observation and 2.5min regional rapid scan).We develop high-speed algorithm for estimate the Solar radiation using HIMAWARI-8/AHI data. EXAM SYSTEM [Takenaka et. al.,2011] has been extended for HIMARARI-8/AHI. It will apply the detailed cloud optical properties by CAPCOM [Nakajima and Nakajima,1995; Kawamoto et. al.,2001]. High-speed algorithm allows a Quasi-real-time analysis of Solar radiation. Solar radiation is the only energy source on the earth's climate. As one of the basic parameters, it is widely used in many fields. Especially, the field of Renewable energy has a possibility of progress. We try to semi-real-time monitoring of Solar thermal and Photovoltaic power generation by Solar radiation analysis. It is new-innovative collaboration of Renewable energy and Climate study.

Keywords: HIMAWARI-8, Radiation budget, Quasi real-time analysis, Solar radiation, Photovoltaic power, Solar thermal



Sample products based on first light of HIMAWARI-8 (December,18)
Left: Cloud optical thickness, Right: Downward solar radiation at the surface