

4 大学連携 VL で作成・公開された静止気象衛星データの概要と全球の雲活動特性解析

Overview of geostationary satellites dataset by the VL project and characteristics of global cloud activities

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As one of the main targets of the ongoing project, "Formation of a virtual laboratory for diagnosing the earth's climate system", in the Center for Environmental Remote Sensing (CEReS), Chiba University, archiving, processing, and publishing geostationary meteorological satellites: GMS series and MTSAT by JMA, FY2 series by CMA, Meteosat and MSG series by the EUMETSAT, and GOES series by NOAA. Each raw data format is entirely different, and there are few sites to archive and provide all of the data in long term. CEReS processed re-sampled dataset in the geo-coordinates in recent 12 years in simple and almost the same file format. The spatial resolution of 0.04 degree for 2 or 3 IR channels and 0.01 degree for the VIS channel, in a latitude range of 60 degree in north and south hemispheres. All of the re-sampled data except Meteosat and MSG series because of their data policy is available via anonymous ftp sites. From this dataset, CEReS has been developing merging techniques among the satellites with well calibration, and algorithms to retrieve the earth's radiation budget and physical parameters such as cloud optical thickness, cloud liquid water, direct and diffuse radiation at the top of the atmosphere and the surface, and so on.

Recently several low orbit earth observing satellites carrying cloud / precipitation radar and microwave imager are available to investigate cloud / precipitation characteristics. Their sensors directly detects cloud / precipitation system compared with VIS and IR sensors, however, it is never free from sampling problems (i.e. sampling frequency with bias in local time). Although it is something classical technique, one of the best advantages of the earth observations by geostationary satellites is to obtain IR and VIS data with high resolution in both space and time. This dataset available in global regions, therefore, it would greatly contribute to study on global cloud characteristics. As one of the interested characteristics, global distributions of peak local time with amplitudes of the cloud activities derived from IR band are investigated. Time distributions are generally consistent with previous studies, but their amplitudes are more distinct.

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