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Validation of MODIS cloud products using SKYNET data

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AMSR2/GCOM-W, which runs along with MODIS/AQUA in A-train satellite constellation, is capable of observing various products related to water. The integrated cloud liquid water observed over global ocean is one of such products. Validation of such product using surface observation data is a challenge because of difficulty associated with deployment of instruments over the ocean for a long period. We attempt to validate liquid water path from AMSR2 through two steps: validation of MODIS/AQUA cloud products using SKYNET data and then use of MODIS/AQUA data to validate AMSR2/GCOM-W products. As the first part, we used several types of data related to cloud observed by SKYNET to validate MODIS cloud products. For example, we derived cloud optical thickness and effective radius from the sky radiometer and compared them with MODIS products. We further calculated down welling shortwave fluxes using MODIS data and compared them with directly observed data by instruments of different field of view. Data of the microwave radiometer were also analyzed. Our results suggest that MODIS based cloud optical thicknesses of both water and ice clouds are likely to be underestimated.

Keywords: SKYNET, Cloud, MODIS