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Development and validation of the cirrus cloud mask method by using near infrared band observed from geostationary satellite.

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Observation of cirrus clouds are important for clarifying the processes of climate system and its variability, since cirrus clouds affect not only the radiation budget but also the amount of water vapor entering the stratosphere. The 1.38㎛ band, which is a strong absorption band of water vapor, detect effectively the optically thinner cirrus clouds [Gao et al.,1993]. The Moderate Resolution Imaging Spectroradiometer (MODIS) have successfully detected the presence of cirrus clouds by applying the threshold method of 1.38㎛ band [Ackerman et al.,2010]. The optically thinner cirrus clouds have been also detected by geostationary satellites, Feng-Yun-4A (FY-4A), Geostationary Operational Environmental Satellite-16 (GOES-16), and GEO-KOMPSAT-2A (GK-2A), which are equipped with near-infrared 1.38 ㎛ band. In this study, we develop the detecting method of cirrus clouds by using Level 1B products of the geostationary observation satellites (mainly GK-2A) based on the threshold method using the MODIS product [Ackerman et al.,2010]. We validate the method for cloud mask products among the geostationary satellites (including Himawari-8) by comparing with the cloud information obtained from Cloud-Aerosol Lidar with Orthogonal Polarization (CALIPSO).