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Influence of Cloud Top Structure and Sun-Satellite Viewing Geometry on Optical Properties Data Derived from a Geostationary and a Polar-Orbiting Satellite

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The effects of finite cloud geometry from satellite observations are analyzed through data obtained at infrared wavelengths. Statistical comparison of 1 month observation data between a geostationary satellite (GMS-SVISSR) and a polar-orbiting satellite (Terra-MODIS) in the northern area of East China Sea, show not only a wide spatial inhomogeneity of the clouds but also relatively strong differences in cloud optical properties derived from both satellites, mainly in thick cloud regions. These differences are examined in terms of scanning time difference, as rapid cloud movements may be observed in the time lag between measurements of both satellites, and the sun-cloud viewing conditions (the solar zenith angle and satellite viewing geometry of the scattered radiation and, asymmetry effects deriving from cloud surface brightness intensity i.e. illumination of the slope tilted toward or away from the sun).