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Improved ice cloud phase function for passive remote sensing

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As part of the NWCSAF (Nowcasting Satellite Application Facility), the CNRM participates in the retrieval of cloud properties from geostationary satellite observations. These retrievals include the Cloud Mask and Cloud Types classification, thermodynamics properties at the macroscopic scales (Cloud Top Temperature and Height) as well as microphysical cloud properties (effective radius, optical thickness, liquid and ice water path). The cloud optical properties (including scattering, absorptions and emissions) are derived from cloud microphysical model in order to perform radiative transfer simulations. In this study, I combine cloud microphysical properties retrieved from DARDAR and in-situ observations with ERA-5 reanalysis to perform radiative transfer simulations with RTTOV. Hence, these simulation are compared with Meteosat Second Generation observations. Our goal is to identify the cloud properties that can affect the difference between observations and simulations in order to propose a new parameterization of the ice cloud scattering phase function in the radiative transfer model RTTOV (Radiative Transfer for TOVS).