SCIATRAN software package (V4.6):

update and further development of aerosol, clouds, surface reflectance databases and models

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Abstract

Since the initiation of the development at the Institute of Environmental Physics (IUP), University of Bremen in 1994, the radiative transfer model SCIATRAN (formerly GOMETRAN) has been continuously improved and new versions have been released. In the course of development, the SCIATRAN software package became capable to simulate radiative transfer processes through an atmosphere-ocean system with a variety of approaches to treat the sphericity of the atmosphere (plane-parallel, pseudo spherical, approximate spherical and full spherical solutions) in both scalar and vector modes. Supported by a variety of build-in databases and parameterizations, these capabilities made SCIATRAN widely used for various remote sensing applications related to the retrieval of atmospheric trace gases and characteristics of aerosols, clouds and surface. This talk presents an overview of the clouds, aerosol and surface (CAS) databases and models implemented in the SCIATRAN software package (V4.6) and provides some recommendations on their usage. The new implementations offer potential users flexible interface to perform radiative transfer simulations: 1) in the case of multi-layer liquid water, ice and mix-phase clouds; 2) employing typical aerosol type parameterizations (including vertical variability) used in satellite and model communities as well as updated databases; 3) including various surface BRDF and albedo models for land, vegetation, ocean, snow and melt ponds on sea ice.