

Monthly report / July 2009

WP 3100: Raman scattering

The cloud issue in connection with Raman scattering is still under investigation. Verification of the cloudless cases has started.

Status: ongoing

WP 3200: Polarization in 3D atmosphere

WP3220 – It was decided at PM5 that tools to generate data for aspherical particles should not be part of the libRadtran package. There should be pre-calculated data of optical properties in later libRadtran versions (not delivered within ESASLight study). It was suggested to generate some example input files for aspherical particles. This has been done for the aerosol model 1 of Kuik, 1992. Polarized radiances calculated using this aerosol model have been compared to benchmark results by Wauben et al., 1992 and an excellent agreement has been found. This shows that polarization is correctly implemented in MYSTIC, also for aspherical particles.

WP3230 – A new database of single scattering properties for liquid water clouds has been generated using the Mie tool for the visible/NIR wavelength region (250 – 2200 nm) for effective radii from 1 – 25 micrometers. The wavelength resolution is 10 nm and the effective radius resolution is 1 micrometer. Some testing is still required, i. e. whether the size distribution sampling in the Mie calculations is sufficiently accurate.

The database for the thermal region still needs to be calculated (this should be faster than the database calculation for the visible).

Status: ongoing

WP 3300: Extension of surface properties

WP 3300 is almost complete. The only open issue is to extend the Cox and Munk BRDF for water surfaces to include polarization if possible.

Status: ongoing

WP 3500: Further extensions

The GUI has been extended to include options relevant for satellite geometry. Furthermore, the plotting facility has been extended to allow visualization of radiances. Online help is now available in the GUI by moving the cursor over the wanted option. Finally, numerous other small changes have been made to make the GUI more user friendly.

DISORT has been modified so that it can use the scattering phase function instead of a huge number of

Legendre polynomials. The modification allows us to store cloud optical properties more precisely and at the same time less memory consuming. This is very important especially for ice clouds, where more than 10000 Legendre coefficients are required to describe the phase function accurately.

Status: ongoing

WP 4210: Verification

As mentioned before, another comparison to benchmark results (Wauben, 1992) has successfully been performed. The intercomparison study initiated by A. Kokhanowsky (University of Bremen) is still going on, currently 6 models are involved. MYSTIC agrees very well with most other codes. The calculations are for 1 layer including (1) molecules, (2) aerosol and (3) cloud.

Status: ongoing

WP 4220: Verification report

The verification report is currently being written.

Status: ongoing

WP 5100: Documentation

Writing of final ATBDs in progress.

Status: ongoing