Monthly report / Mai 2009

WP 3100: Raman scattering

As mentioned earlier there was a problem with Raman scattering and clouds. This was connected with the way the source function was approximated. A further refinement of this approximation has been introduced and the code now produce cloud effects of the right order and spectral shape. Still, further code cleaning and checking is needed and is underway.

Status: ongoing

WP 3200: Polarization in 3D atmosphere

WP3220 and WP3230 (generation of cloud optical properties data using Mie tool) has not yet been done. The DISORT modification, which should be completed before calculating the optical properties is almost finished.

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

Refraction has been included in the MYSTIC solver (1D spherical geometry). One of the most important applications is the calculation of direct transmissions in limb geometry (occultation). For this application MYSTIC works perfectly. For the calculation of diffuse radiances with refraction, an iterative approach has been implemented which works but is not very efficient. It will be checked whether there is a more efficient way to implement it.

Nine standard aerosol mixtures have been generated based on the mixtures proposed in the OPAC paper by Hess et al., 1998. These include for instance "continental clean", "continental average", "maritime polluted" etc. They can very simply be included in a libRadtran calculation (only one line in the input file).

Status: ongoing

<u>WP 4210: Verification</u>

The verification of polarization as proposed in the verification plan is complete.

Status: ongoing

<u>WP 4220: Verification report</u>

The verification report is currently being written.

Status: ongoing

<u>WP 5100: Documentation</u>

Writing of final ATBDs in progress.

A document describing the physics behind all libRadtran solvers is being prepared. This will be a self-contained document where specifically all the approximations and limitations of the various solvers within uvspec will be described and discussed.

Status: ongoing