

New datafile format and data base for water clouds

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Modification of Mie tool

- Mie tool modified to generate new format of optical properties
 - Format includes phase matrix and 128 Legendre coefficients, can be used with all solvers
 - Grid optimization routine for scattering angles
 - Convenient netcdf-Format
 - All wavelengths included in one file
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- new: water clouds with polarization
 - transformed to new format: OPAC aerosol optical properties, Baum parameterization for ice clouds

Database for Water Clouds

- Database for liquid water clouds including full phase matrices
- Wavelength range: 250–2500 nm, resolution: 10 nm, 196 grid points (15 before)
- Effective radius 1–25 μm , resolution 1 μm
- Datafile size 130 MBytes (!), may be reduced?
- Thermal region to be calculated

Database for Water Clouds

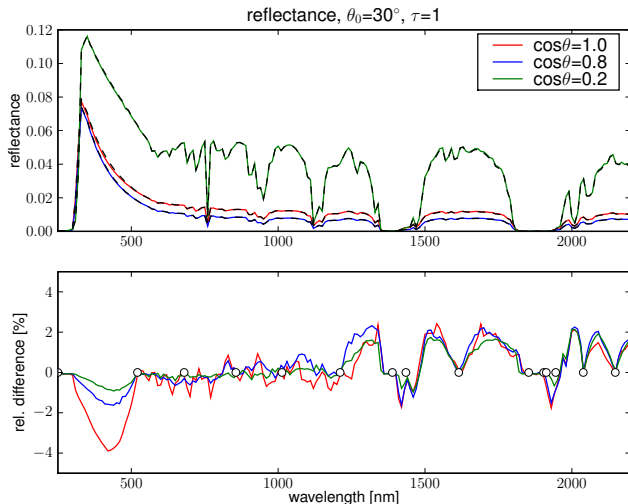


Figure: Comparison between old and new water cloud database, cloud optical thickness 1, effective radius $10\mu\text{m}$.

Database for Ice Clouds

- Ice optical properties data by Baum et al. 2005
- Data includes phase functions (no matrices)
- To represent in Legendre series, more than 10000 polynomials required
- Old database included up to 10000 polynomials (inaccuracies for shorter wavelengths)
- New database includes accurate phase functions
- Size of database: old: 101 MByte, new 12 MByte

Database for OPAC aerosols

- Recalculated using Mie-Tool
- Size for one aerosol type 23 MByte->9MByte
- 10 files (1 for each aerosol type) instead of 610 before