

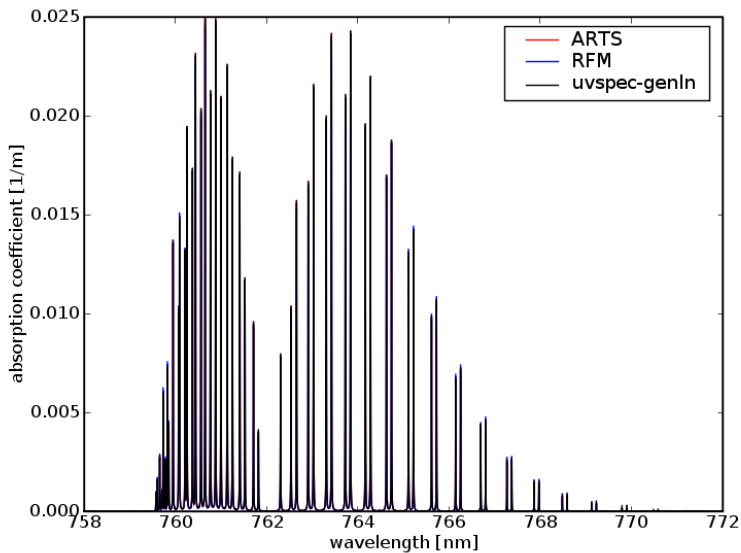
# Action items from negotiation meeting

- Ulrich Hamann will provide minutes of the negotiation meeting (closed)
- Claudia Emde will provide an updated proposal (closed)
- ESA will check the possibility to run the software under GNU public licence (closed)
- For the next progress meeting DLR will present a list showing which new options will be available for which RTE solvers (open)
- DLR contacts German IPC delegate to explain the situation (closed)

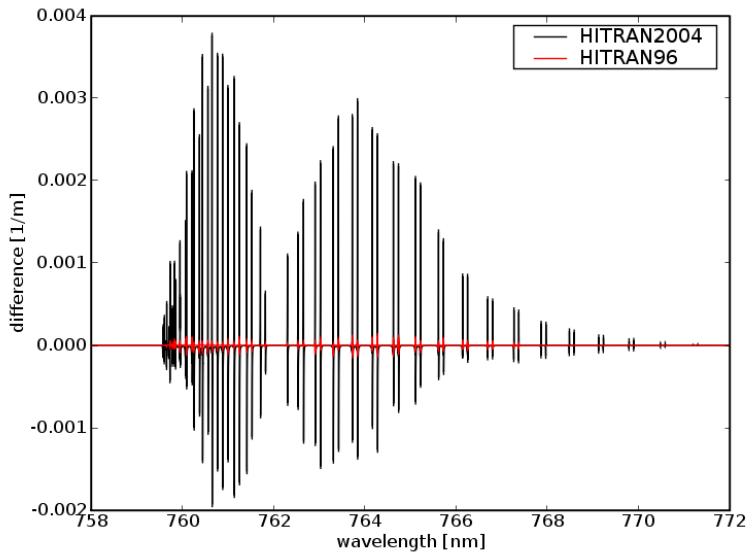
# List of new options in libRadtran

- Polarization:
  - ▶ polradtran: Implemented so far only for Rayleigh scattering; input database for aerosol and clouds (phase matrices) required; aerosol based on OPAC, water clouds based on Mie-Theory; ice clouds ???
  - ▶ MYSTIC: polarization will be implemented
- BRDF and spectral albedo maps
  - ▶ available for all solvers
- Raman scattering
  - ▶ new solver (successive order of scattering) in development
- Refraction
  - ▶ MYSTIC - refraction will be implemented in 1D spherical mode of MYSTIC for accurate limb sounding simulations
- Line-by-line interface
  - ▶ available for all solvers

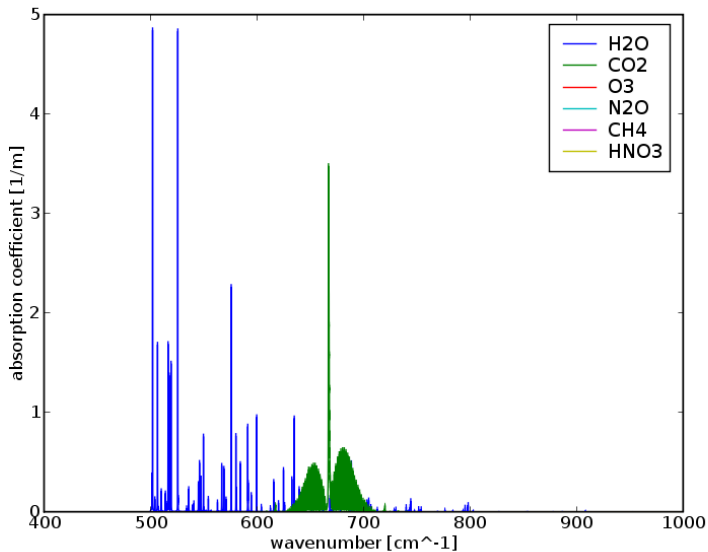
# Line-by-line calculation - Oxygen-A Band



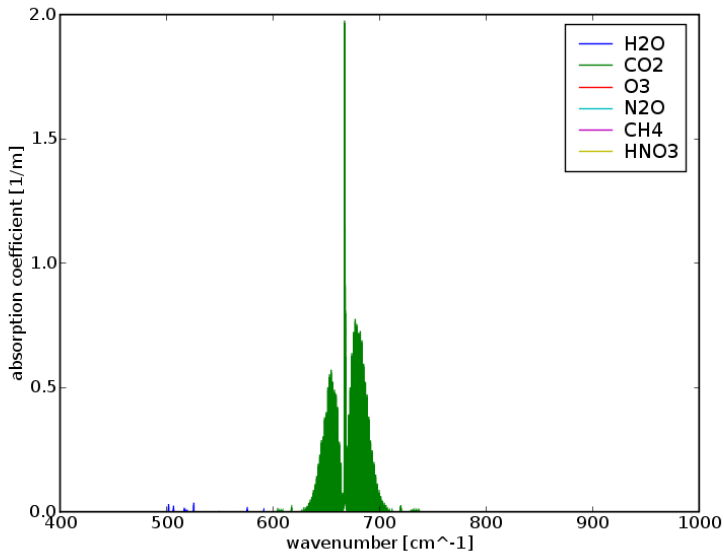
# Line-by-line calculation - Oxygen-A Band



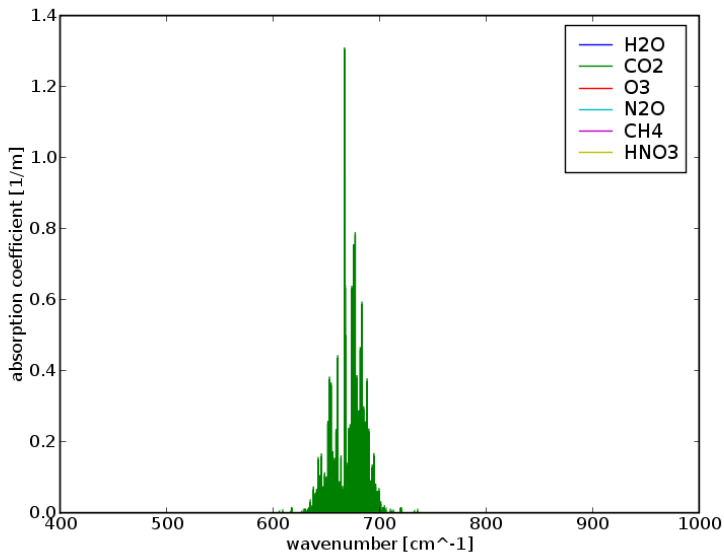
# Line-by-line calculation - 500–1000 $\text{cm}^{-1}$ , $z = 0 \text{ km}$



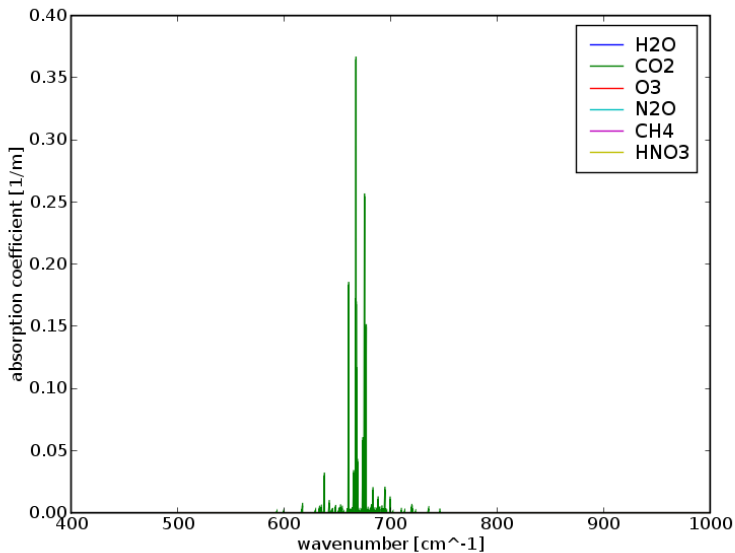
# Line-by-line calculation - 500–1000 $\text{cm}^{-1}$ , $z = 10 \text{ km}$



# Line-by-line calculation - 500–1000 $\text{cm}^{-1}$ , $z = 20 \text{ km}$

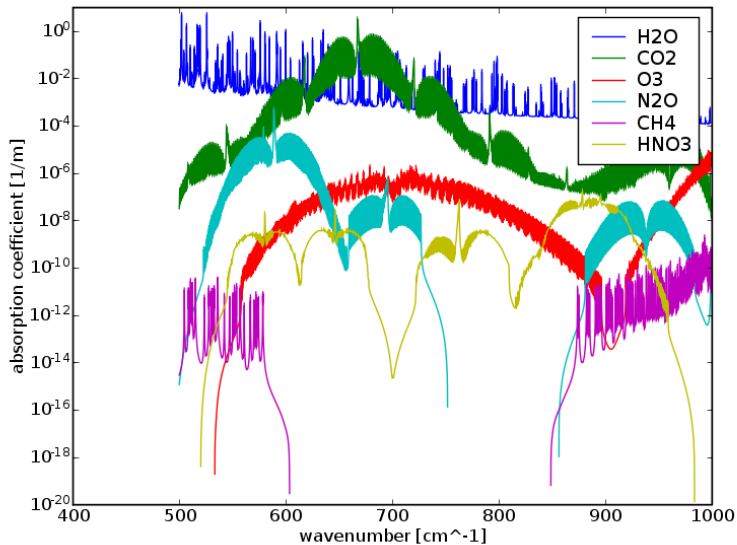


# Line-by-line calculation - 500–1000 $\text{cm}^{-1}$ , $z = 30 \text{ km}$

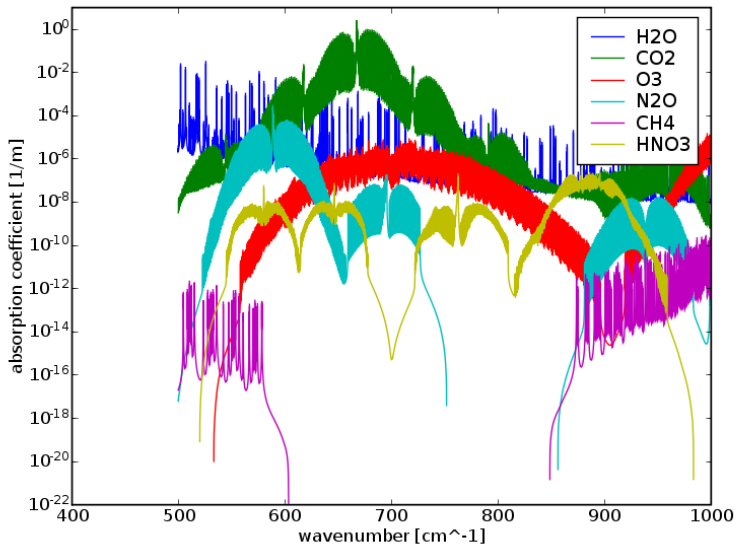




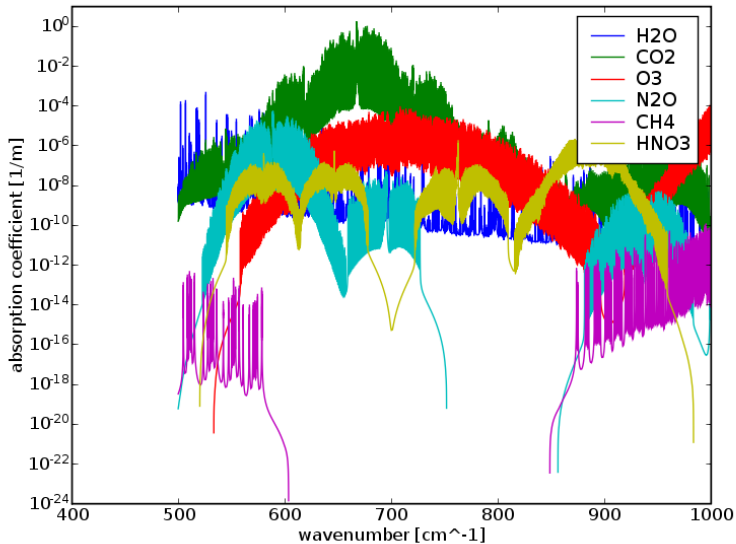
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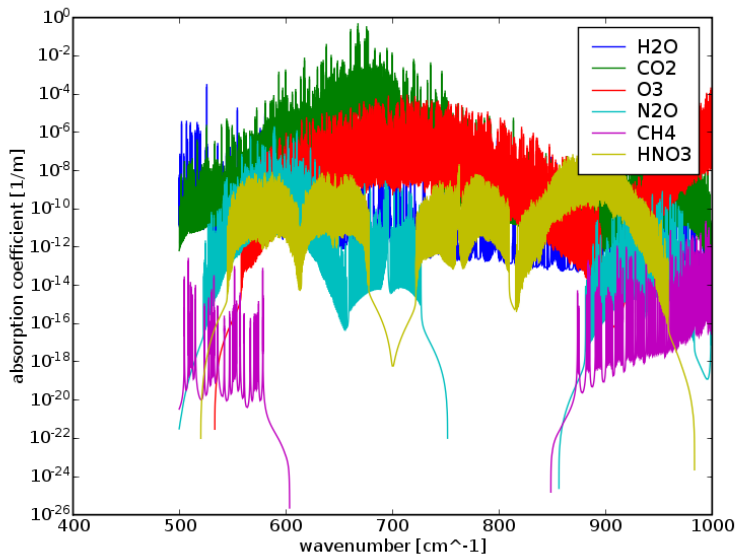
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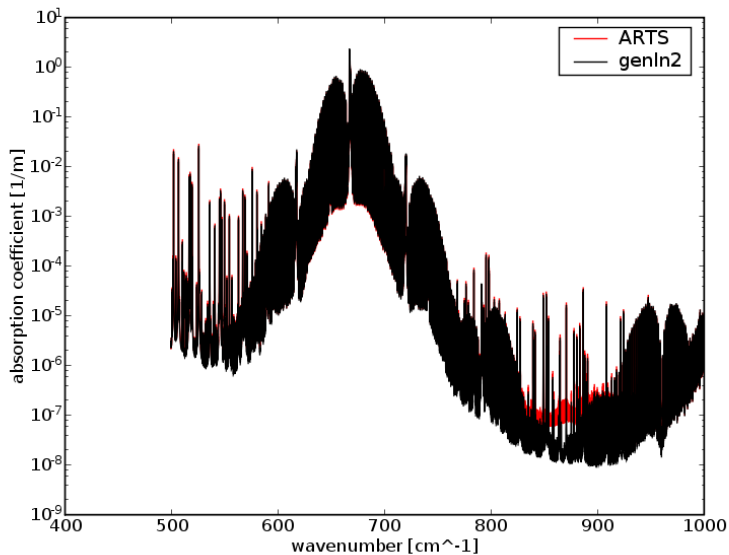
# Line-by-line calculation - 500–1000 $\text{cm}^{-1}$ , $z = 20 \text{ km}$



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# Line-by-line calculation - 500–1000 $\text{cm}^{-1}$ , $z = 10 \text{ km}$



# Line-by-line models

- Tested models
  - ▶ ARTS (Atmospheric Radiative Transfer Simulator, GPL)
  - ▶ RFM (Reference Forward Model, freely available upon request)
  - ▶ genIn-2 (Edwards, outdated)
- Other models to be considered
  - ▶ MIRART (developed at DLR, not free)
  - ▶ LBLRTM (public domain)