

## Intercomparison of radiative transfer models for atmospheric composition measurements

# Katsuyuki Noguchi[1]; Hiroo Hayashi[2]

[1] Nara Women's Univ.; [2] Fujitsu FIP

The radiative transfer model (RTM) is an essential tool in remote sensing simulation studies. They utilize RTMs to simulate the atmospheric radiance in the retrieval processes which obtain physical amounts (e.g. temperature) and chemical amounts (e.g. concentration). There are a number of RTMs developed for their own purposes, and intercomparison of results among those RTMs for a specific atmospheric and geometric scenario is useful to confirm whether the result from one RTM is correct or not.

We compare the atmospheric radiance from SCIATRAN with those from some other RTMs assuming geostationary measurements of air pollutants, nitrogen dioxide (NO<sub>2</sub>). A preliminary study using Pstar2 shows that under the simple scenario, where only Rayleigh scattering and NO<sub>2</sub> absorption are considered and nadir geometry is adopted, the difference of radiances between Pstar2 and SCIATRAN is about 0.1%. This is much less than the effect of NO<sub>2</sub> absorption (up to 0.7%). We also evaluate the effect of slant geometries and diurnal changes of the solar location (i.e., solar zenith and azimuth angles) on the difference between the two RTMs.

Acknowledgment: SCIATRAN is provided by the University of Bremen, Germany. We thank J. P. Burrows, A. Rozanov, V. Rozanov and A. Richter for their useful comments on SCIATRAN. We are grateful to OpenCLASTR project and package developers for using Pstar2 (Vector Radiative Transfer Model) package in this research.