

A Graphical User Interface for RTTOV

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The Radiative Transfer Model RTTOV has a graphical user interface. RTTOV GUI permits to handle elementary pieces of data needed to operate RTTOV and to visualise its results. The purpose is to allow RTTOV users to experiment and to discover the functionalities of this model. The user can edit and modify an atmospheric profile, change the values of the surface parameters and the viewing geometry, run the direct RTTOV model or the K RTTOV model and visualize the results: simulated radiances and brightness temperatures, simulated k-matrix and k-profiles. RTTOV_GUI is written in python and wxPython and uses numpy, h5py, matplotlib and wxmpl. The interface between RTTOV and RTTOV GUI is working with f2py and hdf 5 files.

Basic Usage

The main window: displays RTTOV logs and centralizes all the commands.

The Profile Editor window allows you to modify the atmospheric profile. You can click on the right panel in order to modify the curve, you can add or remove gases, aerosols or clouds.

With the surface window, you can modify the surface parameters and the viewing geometry. You can also load an emissivity and reflectance atlas. Or edit and modify by yourself the values of emissivity or reflectance. You can also let RTTOV compute these values.

The radiance window allows you to visualize the simulated radiances and brightness temperatures computed by RTTOV. In this example, the difference between two runs is shown. First run with aerosols taken into account, second run without the aerosols.

Visualize the K profile

Working with Hyperspectral Instruments

First run: Run RTTOV Direct with IASI.

Second run: Run RTTOV Direct PC with reconstructed radiances and brightness temperatures with 300 predictors. Visualize differences in BT between run 1 and 2.

Third run: Run RTTOV Direct PC with reconstructed radiances and brightness temperatures but with 600 predictors: Visualize differences in BT between run 3 and 2.

The PCSCORE window appears when RTTOV PC Direct is run.

Run 4: select "One Plot", run_04 - run_01, to visualize the impact of the addssolar option.

Run RTTOV K PC: the K PC matrix is shown as well as the K PC profiles: you can visualize for example the temperature profile for the first ten Principal Components.