

Assessment of Accuracy of Scaling Methods for the Computation of Satellite Spectral Radiances at Longwaves.

Authors: M. Martinazzo, W. Cossich, T. Maestri, C. Serio, G. Masiello, S. Venafrà.

Presenting Author : Michele Martinazzo

Clouds identification and their properties retrieval are essential elements in the description of the radiative balance within atmospheric layers. It is therefore crucial to have an effective characterization of the **clouds' impact** within the radiative transfer (RT) codes.

The solution of the full radiative transfer equation in a cloudy atmosphere is generally computationally expensive due to the complex modelling of **multiple scattering effects**.

To avoid the direct computation of the multiple scattering, **scaling methods and analytical approximations** are commonly implemented in RT models.

How well these approximations work for the simulation of spectral radiances at longwaves?



Assessment of Accuracy of Scaling Methods for the Computation of Satellite Spectral Radiances at Longwaves.

This study is brought on within the initiatives supported by **ESA** and **ASI** (Agenzia Spaziale Italiana) for the preparatory studies of the ESA 9th Earth Explorer mission called **FORUM** (Far-infrared Outgoing Radiation Understanding and Monitoring).

The results obtained in this study are used to improve the radiance computation routine of a fast radiative transfer code called **σ -FORUM.**

It is a fast RT code developed and proposed from the **University of Basilicata** group in the context of the ASI FORUM-scienza project. It is an advanced version of the σ -IASI model (Amato et al., 2002) capable to compute spectral radiance and analytical Jacobian in the mid- and far-infrared regions in clear and cloud condition.

