



## **I3RC online calculator of 3D atmospheric radiative transfer**

S. Huang (1,2), T. Varnai (2,3), A. Marshak (2), R. Cahalan (2), and R. Pincus (4)

(1) Science Systems Applications, Greenbelt, USA, (2) NASA Goddard Space Flight Center, Greenbelt, USA, (3) University of Maryland, Baltimore County, JCET, Baltimore, USA (tamas.varnai@nasa.gov), (4) NOAA Earth System Research Laboratory, Boulder, USA

This poster describes the first publicly available online simulator of three-dimensional (3D) atmospheric radiative processes. The purpose of this simulator is to give the public a simple way to perform quick online simulations, for example to test concepts about 3D radiative processes. In addition to describing the capabilities of this calculator, the poster also illustrates the online user interface and shows sample results from several simulations.

The I3RC (Intercomparison of 3D Radiation Codes) online calculator is based on the I3RC community Monte Carlo model of 3D radiative transfer. It calculates the spatial distribution and scene average value of radiances, fluxes, and absorption at selected visible and near-infrared wavelengths. At present the calculator can consider only liquid phase clouds over Lambertian surfaces. To help better understand the 3D nature of radiative processes, users can run simulations in either 3D or 1D mode. 1D simulations use the Independent Column Approximation, which involves separate 1D calculations for each atmospheric column without considering any interaction between nearby columns. Due to computational considerations, the calculator currently allows up to 5 minute long simulations. Since, however, the calculator returns complete results even for simulations that reach this limit, the time constraint only affects the level of random simulation noise.

The online calculator can be accessed free of charge at <http://i3rc.gsfc.nasa.gov/i3rcmodel>. Users in need of enhanced simulation capabilities can also obtain at this address the freely distributed source code and executable files of the I3RC Monte Carlo model used by the online calculator.