Geophysical Research Abstracts,
Vol. 11, EGU2009-4292-2, 2009
EGU General Assembly 2009

COSP: a multi-instrument satellite simulator for model evaluation

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The simulation of clouds in General Circulation Models (GCMs) is a major source of spread in the climate projections of the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4). This highlights the need for developing new analysis techniques that improve our knowledge of the physical processes that cause these differences. The Cloud Feedback Model Intercomparison Project (CFMIP) Observational Simulator Package (COSP) has been developed to help address this issue. COSP is a flexible software tool that enables the simulation of data from several satellite-borne sensors from model variables. Especially, COSP will take advantage of the synergy provided by the active sensors on the A-Train, CloudSat and CALIPSO. It facilitates the use of satellite data to evaluate models in a process-oriented and consistent way. The flexibility of COSP makes it suitable to be used in any type of numerical model, from high-resolution cloud-resolving models to coarse-resolution models like the GCMs used in the IPCC, and the scales in between used in weather forecast models. This should help to evaluate clouds within a "seamless" context. We describe the capabilities of COSP by giving examples of applications to demonstrate its potential for model evaluation. COSP is a flexible tool that can be easily expanded to include more sensors, and work is currently in progress in this respect. We will describe the future plans for COSP.