

GCSS PACIFIC CROSS-SECTION INTERCOMPARISON PROJECT

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The GEWEX Cloud System Study (GCSS) Pacific Cross-Section Intercomparison (GPCI) Project is a model evaluation project to compare and evaluate the representation of clouds in climate and Numerical Weather Prediction (NWP) models, both global and regional, over the sub-tropical and tropical Pacific Ocean. The study consists of an analysis of two June/July/August periods (1998 and 2003) along an idealized cross section over the Pacific Ocean that encompasses both the ascending and descending branch of the Hadley Circulation. Three major cloud types, namely stratocumulus, shallow cumulus and deep convective cloud systems, all occur in a persistent and geographically separated way, along the chosen cross section. These cloud systems form a major focus of the process studies carried out in GCSS using single-column versions of the climate and NWP models, as well as cloud resolving models. GPCI will connect these process studies to the simulation of cloud systems in the full 3-dimensional models in a simplified and yet meaningful way.

The main focus of the study is on processes related to the hydrological cycle within the Hadley Circulation. A special focus area will be the evaluation of the vertical humidity structure in both the tropical and sub-tropical parts of the study area, using data that are becoming available from a new generation of satellite instruments, such as the Atmospheric Infrared Sounder (AIRS).

More details of the project, as well as instructions on how to carry out the simulations and data requirements can be found on the GCSS homepage (www.gewex.org/gcss.html). For questions and suggestions, please contact the lead scientist for the project, Dr. Joao Teixeira (teixeira@nrlmry.navy.mil). Results of an earlier version of the GPCI carried out as part of the European Cloud System Study (EUROCS) can be found in Siebesma et al. (2004).

Reference

Siebesma, A. P., C. Jakob, G. Lenderink, and co-authors, 2004. Cloud representation in General Circulation Models over the Northern Pacific Ocean: A EUROCS Intercomparison Study. *Quart. J. Roy. Meteorol. Soc.*, 130, 3245-3267.