

A regional climate model evaluation system based on satellite and other observations for application to CMIP-IPCC/AR downscaling

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Evaluation of both the global and regional climate models against observations is an essential part of assessing the impact of climate variations on regionally important sectors such as water resources, agroecosystems, and disease control, to name a few, as well as climate model improvements. Regional climate models are of a particular concern because they provide the means to obtain higher resolution climate data needed for the climate impact assessments by downscaling global climate model projections such as those contributing to the Coupled Model Intercomparison Projects (CMIPs) that form the basis of the IPCC Assessment Reports, in physically- and dynamically consistent ways. Evaluation of regional climate models against observations has been suffering from the lack of reliable fine-resolution observational data and formal tools. Recent satellite observations are particularly useful as they provide a wealth of information on many different aspects of the climate system, but due to their large volume and the difficulties associated with accessing and using the data, these datasets have been generally underutilized in model evaluation studies. Recognizing this problem, NASA JPL and UCLA have developed the Regional Climate Model Evaluation System (RCMES) to help make satellite observations, in conjunction with in-situ, assimilated, and reanalysis datasets, more readily accessible to the modeling community. The system includes a central database (Regional Climate Model Evaluation Database: RCMED) to store multiple datasets in a common format and codes for calculating predefined statistical metrics to assess model performance (Regional Climate Model Evaluation Tool: RCMET). This allows the time taken to compare model simulations with satellite observations to be reduced from weeks to days. Early results from the use this new model evaluation system for evaluating regional climate simulations over California/western US and Africa regions will be presented.