

Observations for Evaluating CMIP5/IPCC Simulations

Joao Teixeira (JPL), Duane Waliser (JPL), Jerry Potter (GSFC) and Stacey Boland (JPL)

Objective

Provide the community of researchers that will access and evaluate the CMIP5/IPCC climate model results access to analogous sets (in terms of variables, temporal and spatial frequency, and periods) of observational data. This activity will be carried out in close coordination with the corresponding CMIP5 modeling entities and activities and will directly engage the observational (e.g. mission and instrument) science teams to facilitate production of the corresponding data sets.

Background

Taylor et al (2008) have defined the protocol for the CMIP5 simulations that will be used for the next IPCC Assessment Report, AR5. The protocol defines the scope of simulations that will be undertaken by the participating modeling groups. For several of the prescribed retrospective simulations (e.g. decadal hindcasts, AMIP and 20th Century coupled simulations) observational data sets can be used to evaluate and diagnose the simulation outputs. However, to date, the pertinent observational data sets to perform these particular evaluations have not been optimally identified and coordinated to readily enable their use in the context of CMIP5.

Main Tasks

Given the importance of the observations to the assessment process, along with the range and complexity of the observational datasets needed for a robust assessment, we propose to develop a simple framework to identify, organize and disseminate them for CMIP5.

We will use the CMIP5 simulation protocol (Taylor et al. 2008) as the guideline for deciding which observations to stage in parallel to the model simulations – in particular: which variables, and for what periods, temporal frequencies, and spatial resolutions.

The main tasks will be:

- (i) To work with the modeling, observation and assessment communities to identify the needed data sets for evaluation and diagnostics analysis;
- (ii) To work with the observational teams to establish the necessary metadata information for the required observational datasets while documenting as best as possible the relative quality of the observations;
- (iii) To work with the observational science teams to facilitate production of the identified datasets, with the needed characteristics (variables, periods, resolutions) and formats;
- (iv) To organize these datasets and provide a strategy for accessing them that has close parallels to the model data archive.

Strategy

The most efficient way to achieve these goals is to directly involve the large variety of groups that are the originators of these observational datasets. This should be carried out through a request for participation of the different groups in this observational component of CMIP5. In conjunction with this, is the need to work with the group(s) developing the CMIP5 model data dissemination system to make the analogous system for observations as parallel as possible.

Taylor, K., and co-authors, 2008: A Summary of the CMIP5 Experiment Design, 30 pp.