Geophysical Research Abstracts
Vol. 17, EGU2015-8041, 2015
EGU General Assembly 2015

ISMIP6: Ice Sheet Model Intercomparison Project for CMIP6

Sophie Nowicki (1), Tony Payne (2), Eric Larour (3), Ayako Abe Ouchi (4), Heiko Goelzer (5), Jonathan Gregory (6), William Lipscomb (7), Helene Seroussi (8), and Andrew Shepherd (9)

(1) NASA GSFC, Cryospheric Sciences Branch, Greenbelt, USA (sophie.nowicki@nasa.gov), (2) University of Bristol, Bristol, UK (a.j.payne@bristol.ac.uk), (3) NASA Jet Propulsion Laboratory, Pasadena, USA (eric.larour@jpl.nasa.gov), (4) The University of Tokyo, Tokyo, JP (abeouchi@aori.u-tokyo.ac.jp), (5) Vrije Universiteit Brussel, Brussel, BE (heiko.goelzer@vub.ac.be), (6) University of Reading and Met Office Hadley Center, Reading, UK (j.m.gregory@reading.ac.uk) , (7) Los Alamos National Laboratory, Los Alamos, USA (lipscomb@lanl.gov), (8) NASA Jet Propulsion Laboratory, Pasadena, USA (Helene.Seroussi@jpl.nasa.gov), (9) University of Leeds, Leeds, UK (A.Shepherd@leeds.ac.uk)

The sea level projections made by the glaciological community as part of the Intergovernmental Panel on Climate Change (IPCC) process have often been out of phase with the projections considered by the wider Coupled Model Intercomparison Project (CMIP) community. For instance in AR5, the ice2sea and SeaRISE (Sea-level Response to Ice Sheet Evolution) ice sheet projects predominantly worked with AR4 scenarios, while the CMIP5 community used new future scenarios. As the next phase of CMIP is being designed (CMIP6), an effort for ice sheet models to be better integrated in the CMIP6 initiative has been proposed to the CMIP panel.

We present the framework for the new effort, ISMIP6, the Ice Sheet Model Intercomparison Project for CMIP6. The primary goal of ISMIP6 is to improve projections of sea level rise via improved projections of the evolution of the Greenland and Antarctic ice sheets under a changing climate, along with a quantification of associated uncertainties (including uncertainty in both climate forcing and ice-sheet response). This goal requires an evaluation of AOGCM climate over and surrounding the ice sheets; analysis of simulated ice-sheet response from standalone models forced “offline” with CMIP AOGCM outputs and, where possible, with coupled ice sheet-AOGCM models; and experiments with standalone ice sheet models targeted at exploring the uncertainty associated with ice sheets physics, dynamics and numerical implementation. A secondary goal is to investigate the role of feedbacks between ice sheets and climate in order to gain insight into the impact of increased mass loss from the ice sheets on regional and global sea level, and of the implied ocean freshening on the coupled ocean-atmosphere circulation. These goals map into both Cryosphere and Sea-Level Rise Grand Challenges relevant to Climate and Cryosphere (CliC) and the World Climate Research Program (WCRP).