

Reaching for the Grail: Predicting Sea-Level Contributions from Dynamic Ice Sheets for 2100 before 2100

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One outcome of the recent Los Alamos workshop on “Building a next-generation community ice sheet model” was a set of self-selected focus groups intended to help inform the central activity of an improved community ice-sheet model. Because the use of such an improved ice-sheet model in a coupled global climate model framework is expected to take a number of years, one of these focus groups is attempting to improve the quantification of this century’s ice-sheet contributions to sea level in anticipation of the next IPCC report. This group is rapidly coming to consensus on an overall strategy with a timetable that will meet the 2013 publication date of the next IPCC report. Presently, the strategy involves three basic types of models: whole ice sheet; ice-stream/ice-shelf; and ice-shelf/ocean. Multiple models of each type are available by the many participating investigators and the group is now determining a set of simple common experiments to run. More extreme scenarios, such as rapid removal of all ice shelves are taken as the starting point to help set the upper bound of possible behavior and ice mass loss by 2100. Model results will be compared to help separate real physical sensitivities of the modeled systems from model-dependent artifacts. Subsequent links between model types, i.e., runs that apply the insight of ice-shelf/ocean models to ice-stream/ice-shelf models, and of ice-stream/ice-shelf models to whole ice sheet models are hoped for before results must be published.