Geophysical Research Abstracts
Vol. 13, EGU2011-3136, 2011
EGU General Assembly 2011

The GlacMod2010-project: estimating the glacier contribution to sea-level change with dynamic glacier models

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The possible contribution of glaciers and ice caps to sea-level change is an important issue in the climate warming debate. Modeling of the glacier contribution is hampered by the fact that the geometric characteristics and climatic settings of individual glaciers differ enormously. Using quasi-statistical methods to deal with all glaciers can hardly be avoided, but this involves a few outstanding problems. First of all, there is the difficulty of defining an initial state for model integrations. It has been shown that a 'climatic imbalance' in the starting year of a model calculation can have a large effect on the final result. Secondly, quasi-statistical methods deal with dynamic (ice-mechanical) effects in a very schematic way, or not at all.
In view of this, it is useful to run climate change experiments with calibrated dynamic glacier models, and to make the results available for testing of more general schemes (the use of which cannot be avoided in the end to make predictions about sea-level change). Here 'calibrated' implies that historical information about glacier geometry and local climate change is taken into account when a model for an individual glacier is tested.
The GlacMod2010-project has been set up to stimulate researchers to carry out a set of prescribed climate change experiments with glacier models. The results will be combined into a dataset that will be become publicly available. GacMod2010 runs under the auspices of the Ice2Sea project.
In this contribution a first survey of results will be presented. It will be shown that the response of glaciers to warming depends first of all on geometric characteristics like altitudinal range and (a)symmetry in the area-elevation distribution. Such factors will therefore have to be taken into account in quasi-statistical methods.

Note: Since results are still being submitted at the time of abstract submission, a list of co-authors will be presented at the Assembly.