



Evaluation of forest snow processes models (SnowMIP2)

N. Rutter, R. Essery

Institute of Geography and Earth Sciences, University of Wales Aberystwyth, UK

Current land-surface models either neglect or use highly simplified representations of physical processes controlling the accumulation and melt of snow in forests. To improve these representations the Snow Model Inter-comparison Project 2 (SnowMIP2) has been designed to (1) quantify uncertainty in simulations of forest snow processes from current land-surface models and, (2) implement improvements suggested by these comparisons. SnowMIP2 will compare results of land-surface models, driven with measured meteorological data over a wide range of snow and forest canopy conditions, at the following five locations: Colorado (USA), Erlenhöhe (Switzerland), Hitsujigaoka (Japan), Hyytiälä (Finland) and Saskatchewan (Canada). Model accuracy and uncertainty will first be investigated by aggregating results from each model over all five measurement sites. Further analyses will include both between-site and intra-seasonal comparison (i.e. entire snow season, accumulation only and ablation only) of each model as a whole. However, as accumulation and ablation of snow in forests are determined by complex and interacting processes, isolation of individual processes represented within models, and comparison of process observations with these model algorithms, will be required. Also, as a complementary and alternative method of comparing process observations with model algorithms, a complete surface energy- and mass-balance model (EIRA) is under development that will allow adjustable and interchangeable process representations (e.g. the CHASM approach in PILPS inter-comparisons). This model will span the range used by models participating in SnowMIP2 to investigate the sensitivity of snowpack models to canopy processes. We are inviting modellers to participate in SnowMIP2; driving and initialisation data will be disseminated in the early summer of 2006. We welcome any parties interested in collaborating, and further information about SnowMIP2 can be found at <http://users.aber.ac.uk/rie/snowmip2.html> or via email to snowmip2@aber.ac.uk