SnowMIP2 Workshop Summary

We presented the first results from SnowMIP2 on 10 July 2007 at the IUGG conference in Perugia, Italy. This was followed by an hour long discussion between collaborators and any other interested parties; many thanks to those who were able to attend and provided insights and comments. The presentation focussed on summarising the ability of all models to estimate SWE:

1. Between 3 locations: Alptal, BERMS and Fraser (Hyytiälä and Hitsujigaoka were not discussed in the presentation due to time restrictions).
2. Between open and closed sites in the same year at each location.
3. Between years for open and closed sites at each location.

A copy of the presentation is attached to this email. If you have any questions or requests please feel free to get in touch.

The post-presentation discussion focussed on 'what do these results mean and where do we go from here?' Although full-time funding for Nick (from the UK research council NERC) has now run out, there is plenty more to do and, to that end, we have proposed to IACS that the SnowMIP2 working group should be extended (unfunded) for a further 2 years (until the summer of 2009). We will continue to work to publish results from this intercomparison and help coordinate further work.

The following is a best effort to summarise the SnowMIP2 discussion. If you have any comments or suggestions please lets us know:

<u>Papers</u>

We anticipate writing the following 3 papers by the end of 2007:

1. Overview paper describing the experiment– (Essery, Rutter and data providers) in journal such as BAMS.
2. Main data paper developing on results from IUGG presentation that focuses on the effect of canopy representation (Rutter, Essery and all modelling groups) in journal such as Journal of Geophysical Research.
3. Canopy radiation (c.f. RAMI4PILPS) paper – (Essery, Pomeroy, Rutter and participants) in journal such as Journal of Hydrometeorology.

Individual modelling groups that would like to publish results from analyses of their own model are encouraged (see data section below for details of data availability).

It was clear from the discussion that there needs to be a further stage of analysis to quantify issues of sensitivity, uncertainty and calibration. We are open to the idea of re-running a subset of the models to investigate each of these three issues. Ideas about how to structure such an analysis or interest in participating in such a comparative analysis are welcomed.

<u>Data</u>

1. Modelling groups will receive SWE evaluation data and the mean SWE modelled output (i.e. the mean of all 32 models) by request from September 2007 onwards. The evaluation data remains the property of the data providers, and their permission will be required for any publications making use of it.

2. If you would rather not have your modelled results circulated to other SnowMIP2 participants please inform us and we will withhold it. Otherwise all modelled outputs that are approved for circulation between SnowMIP2 participants will be released by January 2008.
3. We will maintain a database of driving, evaluation and model data for free access to future users. This would provide a valuable legacy data set to be used by the wider community, with the caveat that the simulation results only give a snapshot of model development. However, we would appreciate you comments as to whether or not you think this is appropriate and, if so, over what timescale these data should be embargoed for the sole use of SnowMIP2 participants. As ever, the wishes of each data provider and modelling group are paramount so if you do not wish to be included in this then please let us know.

Suggestions and comments from the floor (apologies for inaccurate reproductions):
Don Cline: Concentrate on finding out what to add to or subtract from a model to make it estimate a particular output well. Break up the participating models into those who have success in SWE, radiation, turbulence etc.

Don Cline: Work on bounding the uncertainties of the inputs at 1 or 2 sites by working closely with data providers and a small number of models.

John Pomeroy: Take important extreme events (e.g. large precipitation events, rain on snow events, large melt events) and focus in on why models work well or poorly during such events.

John Pomeroy: Take complex models, re-run the models for the same time periods whilst removing or simplifying the model physics of different process representations. How much can you remove before you loose the power to estimate outputs well?

Drew Slater: Have a clearer idea of the uncertainties in model inputs, then 1) try and hold uncertainties in model structure constant while varying model parameters, and 2) try and hold uncertainties in model parameters constant while varying model structure.

Raoul Granger: Don't worry too much about complexity, rather focus on how models handle intermediate process calculations (e.g. energetics, fate of the mass, use of canopy architecture).

Aaron Boone: Produce the main data papers as a special issue alongside papers from individual modelling groups.

Immediate future:
Both of us are changing jobs this summer, Richard is moving to the University of Edinburgh and Nick is moving to the University of Sheffield. As a consequence, contact may be patchy between July to September and there are a couple of practical changes that are enforced on us. After 1 August 2007 the snowmip2@aber.ac.uk email address will no longer work. Instead, after 1 August please contact us on **snowmip2@googlemail.com.** The ftp site should still be working until October, and we hope to replace it and inform you all well before then.

With the change of jobs comes a change in responsibilities, meaning that SnowMIP2 may not be our day-to-day priority. So, please bear with us if replies are not immediate, we are still as enthusiastic about this as ever! Any comments or suggestions are always welcome.

Nick Rutter and Richard Essery