Incorporation of snow parameterization in a melt pond evolution model: preliminary results

D. Flocco, D. L. Feltham

Centre for Polar Observation and Modelling - Pearson Building - UCL, Gower Street - London, WC1E 6BT - UK

Melt ponds cover up to half of the first year sea ice cover at the end of any melt season, and therefore play an important role in determining the albedo of Artic sea ice during the summer. The spectrally-averaged albedo of a surface partially covered in ponds reaches values as low as 0.4 compared to the 0.65 of bare sea ice (Perovich et al., 2002). Work has been carried out in order to simulate the formation and evolution of the melt pond coverage on a sea ice cover with a realistic ice thickness distriution. Enhanced melt rate in the presence of ponds has been taken into consideration. Previous results show that in the absence of snow the melt pond covered area reaches up to 60% of the total floe area. The aim of the present work is to introduce the presence of a snow layer and study the evolution of the ice topography, the melt pond covered area and the melt pond depth. The model we are developing will be suitable for inclusion into a large-scale climate model.