



Ice flow modelling in the area of Subglacial Lake Ellsworth.

Maxime Jay-Allemand (2), Fabien Gillet-Chaulet (1), and Richard C.A. Hindmarsh (1)

(2) University of Montpellier, (1) British Antarctic Survey, Physical Science Division, Cambridge, United Kingdom
(rcah@bas.ac.uk, +44 1223 221 226)

We use Elmer to model the 3D flow of ice in area with a simplified topography resembling Lake Ellsworth (Antarctica): a subglacial lake sitting in the bottom of a deep valley. Boundary conditions are periodic on the lateral sides. The upper surface is a free-surface with zero accumulation. On the bottom surface the lake is represented by an area with no basal drag. The results show that ice is drained toward the deep valley where high velocities are obtained. We observe a flattening of the free surface above the lake. Vertical velocity profiles are affected by the large variations in bed topography and slippiness and are very different from place to place showing the effects of longitudinal stress gradients in the area.