Geophysical Research Abstracts,
Vol. 11, EGU2009-7699, 2009
EGU General Assembly 2009

ElmerAPI - Application Interface for ice sheet simulations

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Modular approach to ice sheet models (ISM) may be a necessary feature in the future when these models shall be integrated into Earth system models. One aspect of modularity also is the easy inter-comparison between different numerical methods and approximations of the governing equations.
To that end, the British Antarctic Survey initiated the development of an Application Interface (API) to Elmer (ElmerAPI). Via the defined coupler structure (ISMMechCoupler), ElmerAPI gives access to the solution methods of the mechanical and thermodynamical evolution equations for ice as they are implemented in Elmer. As Elmer solves the full Stokes (FS) problem, ElmerAPI is a good tool to compare approximated solutions of other ISM to the solutions of the full order equations. This paper focuses on the basics of the API and the coupler and presents first results obtained for the ISMIP-HOM tests A and B.