Geophysical Research Abstracts,
Vol. 10, EGU2008-A-01221, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-01221
EGU General Assembly 2008

Calculation of a GCM sea ice rheology using ice tank experiments

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We describe a method of relating the rheology of sea ice suitable for use in a Global Circulation Model to ice tank measurements. We describe the objectives and methodology of this project, and explain how this extends previous work. We will perform ice tank measurements, which will focus on the in-plane frictional sliding between floating blocks representing sea ice floes. The stresses and strains between adjacent blocks and over several blocks will be measured and the experiments videoed. The experiments will be used to test a discrete element model of sea ice floe interaction. This model will be used to calculate the fraction of a given sea ice deformation that is accommodated through ridging, sliding between floes, and opening. These fractions will feed into an continuum model of sea ice rheology, written as a separate rheology module of the Los Alamos CICE model.