



Sea ice rheology and the sub-grid scale

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The sea ice component of global climate models (GCMs) must contain representations of sea ice stress appropriate to their spatial grid resolution. We explore the relationship between the sea ice stress and sub-grid scale floe and lead interaction using a clearly defined methodology. The calculation of GCM sea ice stress depends upon the assumed mechanical behaviour of sea ice, the geometry of floes and leads, and the manner in which a collection of floes and leads deform in response to large-scale atmospheric and oceanic forcing. We discuss the sensitivity of GCM sea ice stress to the sub-grid scale sea ice state, calculations using Radarsat SAR data coincident with the SHEBA site, and implications for sea ice modelling.