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Abstract

A Conceptual Model of Ice Shelf Sedimentation

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Modern glacimarine sedimentation can be thought of as a thermal spectrum characterized by two thermal end members: a cold ice (polar) end member typical of higher-latitude margins like Antarctica and Eastern Greenland, and a warm ice (temperate) end member representative of the more mild SE Alaskan and Patagonian systems. Areas with intermediate thermal regimes composed of different ratios of both warm and cold ice (polythermal) like Svalbard fall somewhere in the middle between these two end members. As one gets progressively colder along this spectrum, less meltwater is present in the system as increasingly less ice is below the pressure melting point. The strength of the ice also increases, eventually allowing the formation of a stable floating terminus under certain conditions, called an ice shelf.