

Session: OS-3 Sea ice extent, properties, volume & ice shelves: modern and paleo records

Polar program: None

**Title: Influence of continental ice on sea ice thickness distribution in SW Ross Sea**

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Text: Melting at the base of an ice shelf or a glacier tongue freshens and cools the fluid in the ice-ocean boundary layer, producing Ice Shelf Water (ISW), a water mass colder than the sea water surface freezing point. If ISW becomes *in situ* supercooled by pressure release, ice crystals can persist. These crystals add to the mass of the coastal sea ice cover, forming a porous, friable layer, called the sub-ice platelet layer, which can be several metres thick beneath the two-metres of sea ice. Consequently platelet ice formation not only causes sea ice to be thicker, but it also alters the hydrostatic relationship between sea ice elevation and thickness, influencing satellite altimeter determination of sea ice thickness. Here we report on the sea ice thickness distribution in the SW Ross Sea in spring, and describe how this distribution is influenced by interaction with the ice from the continent. The SW Ross Sea is fringed by a number of ice shelves (e.g. McMurdo, Hells Gate, Ross) and glacier tongues (e.g. Drygalski, Erebus), features that have the potential to form ISW. We have conducted airborne sea ice thickness surveys using electromagnetic (EM) induction sounding. These regional surveys have been supported over smaller geographic areas by detailed on-ice sea ice and snow thickness measurements, by on-ice EM induction transects of sea ice thickness, and by under-ice oceanographic observations that track the heat deficit and mixing in the upper ocean at selected sites.

Preferred Presentation  
Type: **Oral Presentation**