

## SESSION: OCEAN 1-SEA ICE

### MARS Themes:

Innovation and Development

### Title:

Investigating brine and air inclusions in sea ice from the Antarctic marginal ice zone

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### Abstract:

Sea ice plays a critical role in the global climate systems. The high albedo of sea ice reduces incoming solar radiation aiding in regulating temperatures. Sea ice is composed of a multiphase matrix of ice, liquid brine inclusions and air inclusions. These inclusions and their morphology impact other factors of the ice such as the mechanical and optical properties. The size and distribution of these inclusions are influenced by the physical properties of the ice such as temperature, salinity and ice texture. Brine inclusions are greatly influenced by fluctuations in temperature and, as such would be influenced by storage temperatures as sea ice samples are typically stored at lower than *in situ* temperatures ( $\sim -20^{\circ}\text{C}$ ). When these samples are to be tested, they have to be heated up to testing temperatures ( $\sim -10^{\circ}\text{C}$ ) to comply with the standard testing conditions. However, studies on the impacts of these low storage temperatures and heating on the porosity and morphology of inclusions are sparse and testing protocols and methodologies often lacking in accuracy. This project investigates the impacts of low storage temperatures and different heating methods on the distribution and the morphology of these inclusions to understanding the properties as close to *in situ* as possible.

### Format:

5 min oral

### Keywords: (add ; between keywords)

Sea ice, brine inclusions, air inclusions,