

SESSION: OCEAN 1-SEA ICE

MARS Themes:

Innovation and Development

Title:

Investigation of the Interactions Between Sea Ice Algae From the Marginal Ice Zone of Antarctica and Artificial Sea Ice

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Abstract:

Algae and sea ice are vital components of Earth's regulatory mechanisms. Understanding the intricate interplay between these two elements is essential for predicting ecological shifts and the impacts these shifts have on larger climate systems. Algae, a diverse group of photosynthetic microorganisms, constitute as the building block of the aquatic food web and play a pivotal role in the planet's carbon cycle. They absorb atmospheric carbon through photosynthesis, generating a significant portion of Earth's oxygen supply. However, the growth and survival of algae are sensitive to environmental factors like temperature, salinity, irradiance, and nutrient availability.

Extracellular polymeric substances (EPS) secreted by algae are crucial for their survival, forming protective layers and aiding in adhesion and nutrient retention. Temperature and salinity variations can significantly affect algae populations, with some species demonstrating greater adaptability than others. Irradiance, another vital factor, governs the growth and survival of sea ice algae, which rely on light for photosynthesis. Light availability in the polar regions varies seasonally and with ice structure, impacting algae communities differently throughout the year. Nutrient availability, including nitrogen, phosphorous, and trace metals, further shapes algae growth, ultimately supporting higher trophic levels.

This research aims to investigate the complex relationship between algae and sea ice using artificial sea ice experiments.

Format:

Poster

Keywords: (add ; between keywords)

Algae, Sea ice, EPS