

# Observations of sea ice and ice sheet interaction in Greenland and the Antarctic Peninsula

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Theoretical work and some observations, especially in Greenland, suggest that sea ice and ice mélange may play an important role in determining outlet glacier dynamics, particularly ice front position and calving. Research from both Greenland and Antarctica can inform a comprehensive understanding of the role of sea ice/mélange in influencing ice sheet flow. We examine sea ice/mélange and glacier interaction for systems at both poles. In northwest Greenland, we focus on 16 glaciers along the Melville Coast. We observe seasonal regulation of ice front position via sea ice/mélange and multiyear speedup potentially in response to sustained retreat from extended sea-ice free periods.

Since collapse of the Larsen B Ice Shelf in Antarctica, the embayment areas of the former ice shelves have experienced episodes of persistent fast ice occupying the entire embayment for as much as two to three years. This fast ice interacts with the ice fronts of Crane, Hektor, and Green Glaciers. We examine the evolution of this interface using MODIS timeseries and Landsat 7 and Landsat 8 data. We use the similarities and difference between the Greenland and Antarctic systems to shed light on the problem of ice-ocean interaction.

- Ice-ocean interaction: everywhere else (*Promised Land*)