

Observations on Shorefast Ice Dynamics in Arctic Alaska and Responses of the Iñupiat Hunting Community

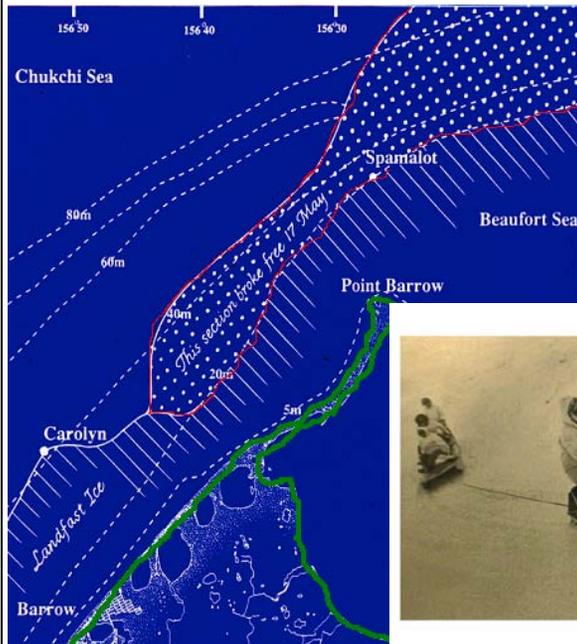
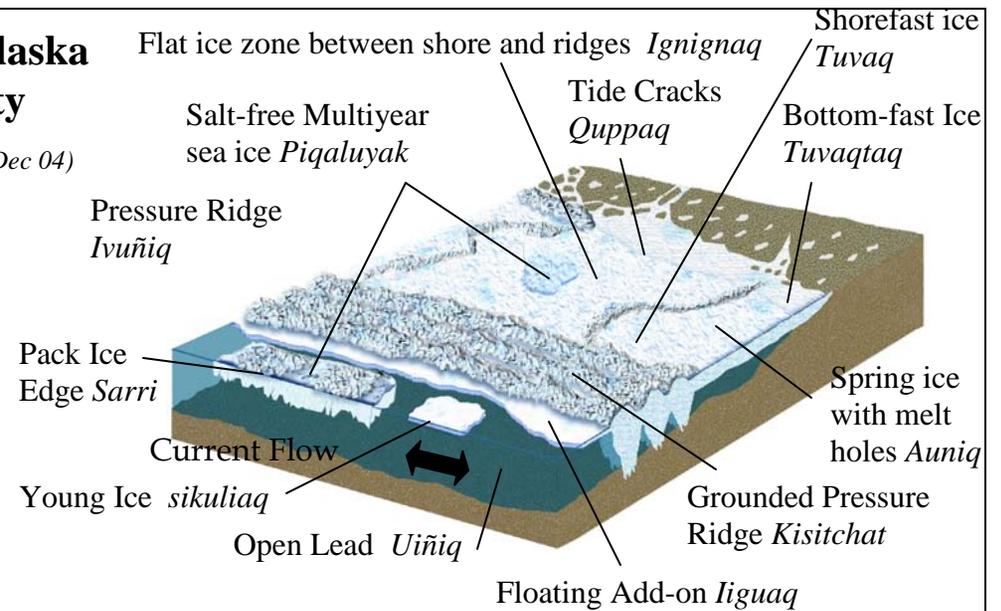
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Published in *Arctic* Vol. 57, No. 4 (Dec 04) pages 363-374

SUMMARY:

Shorefast sea ice forms a platform that facilitates travel, camping, and hunting by Iñupiat subsistence hunters and fishers in the western Arctic, however, this nearshore sea-ice zone is an unforgiving and dynamic environment. Traditional hunters constantly gain experience and hone site-specific skills with which to optimize the reward-to-risk ratio inherent in hunting from this coastal ice. Nearshore ice conditions can change suddenly. Our study focuses on the relationship of subsistence hunters to the ice, the environmental causes of ice failures, the evolving technology for predicting ice behavior, and the longer-term implications of global change for this system.

We examined two 20th-century events, 40 years apart, in which shorefast ice failed, threatening Iñupiat whale hunters with loss of confidence, livelihood, and life. In 1957, the shorefast ice was hit by moving ice floes and shattered all the way to shore. The whalers who had retreated behind a grounded pressure ridge on multiyear ice had to scramble for shore losing most of their gear. In 1997, a huge ice-calving event took 12 whaling camps (about 142 people) out to sea. Though there had been warning signs like increasing current strength and flooded tide cracks, these things had happened earlier with no ill effects. The break-off happened very quickly and while all survived, a lot of gear was lost. The complexity of the geophysical processes underlying coastal ice behavior makes ice failures unpredictable. Hunters must assume and manage risk. While increased technology has improved safety and rescue some suggest it has led to greater risk taking.



The changing climate, more dynamic shorefast ice, increased calving events (break offs) and shorter sea-ice seasons, has posed new challenges to hunters. Still, experience has developed an inherent flexibility in traditional subsistence hunters and fishers that has helped them adapt to new conditions and will continue to do so in the future.

Photos

Top: A representation of coastal sea ice along northern Chukchi Sea with English and Iñupiaq names for some ice structures.

Far left: Map showing a large shorefast ice calving event in 1993 (outlined in red).

Left: Whale hunting crew retreating across widening crack in 1988.

(Bill Hess photo)

Right: Ice ridging over a snow machine trail after impact event.

