

Spring Sea ice forecasts and Bering Sea Indigenous marine mammal harvests

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Abstract

Reliable, high-resolution sea ice forecasts may help contribute to safety of Indigenous marine mammal hunting and community travel in the Arctic. At the same time, sea ice forecasts could also be useful predictors of seasonal harvest success, including potential harvest shortfalls with impacts at the community level. However, large scale measures of sea ice concentration and ice extent are not sufficient indicators for predicting marine mammal harvest success in Bering Strait communities. Weekly sea ice and weather forecasts for Alaskan communities in the Bering Strait were analyzed from the Sea Ice for Walrus Outlook (SIWO) to identify sea ice and weather thresholds that greatly affected Indigenous marine mammal hunting activity and access to marine mammals during the spring harvest. The forecast of the timing for ice-free waters around a coastal community generally aligned with local observations. However some hunters continued to hunt by traveling longer distances from shore to reach marine mammals. This emphasizes the importance of maintaining coastal and marine forecasts even when coastal areas around communities appear ice-free. It was also apparent that while wind forecasts generally predicted the local wind conditions that were observed, the forecasts sometimes omitted important changes in wind direction, speed or ice movement, that occasionally resulted in ocean and ice conditions that required local search and rescue efforts or left hunters “stuck in the ice” overnight. The use of seasonal sea ice forecasts from models have not yet been explored with community partners as a potential tool to plan for upcoming subsistence hunting seasons, although the current use of SIWO is recognized as a tool to record hunter observations in “our words and descriptions” for current events and for future use and analysis. An evaluation of the Sea Ice for Walrus Outlook is being conducted, and the results of this new study will be useful to support future development of forecast information, and avenues for sharing of timely community observations.



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Sea ice forecasts and Bering Sea spring marine mammal subsistence hunting

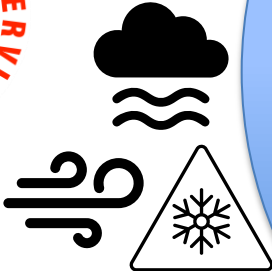
Olivia Lee

Lisa Sheffield Guy, Hajo Eicken, Matthew Druckenmiller,
Curtis Nayokpuk, Aqef Waghiyi, Clarence Irrigoo Jr, Marcus
Barr, Boogles Johnson, Robert Tokeinna Jr., Mary
Beth Schreck, Ed Plumb, Vera Metcalf, Nathan Kettle

Weekly forecasts in
spring to provide
practical, regional
information on
weather and sea ice
conditions
Since 2010



Forecasts



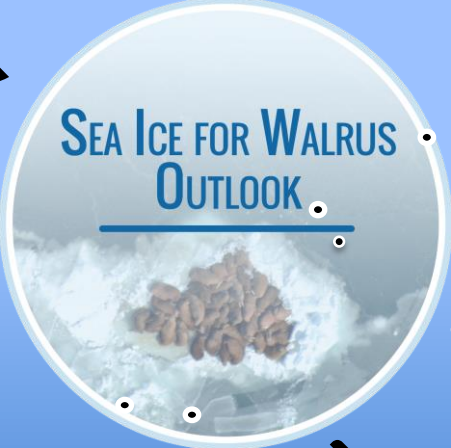
Eskimo Walrus Commission
"To protect the pacific walrus population."

Community
Observations

Bering Strait
Indigenous
sea ice
experts

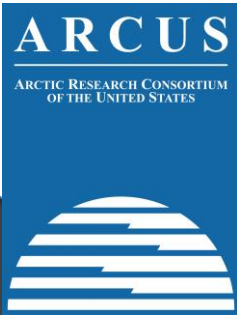


SEA ICE FOR WALRUS
OUTLOOK



Management

Funding

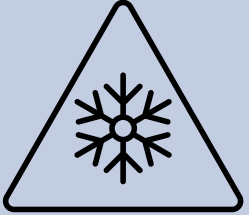


Research
partners



Bering Strait Change

SEA ICE FOR WALRUS
OUTLOOK



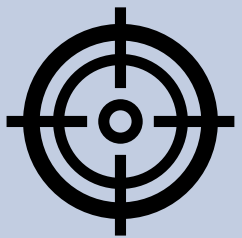
Sea Ice, weather

- Earlier forecast season (earlier ice retreat)
- Changing persistence of N winds (?)



Walrus

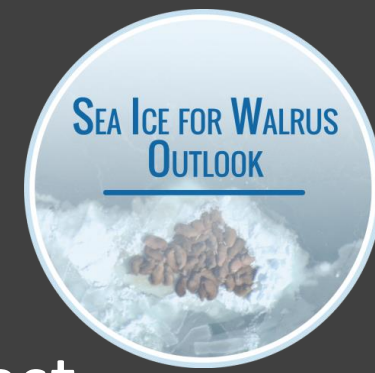
- Fewer observations in most communities
- Fewer late season observations
- Large herds not often seen



Dangerous hunting conditions

- Variable winds with low sea ice concentration
- Unstable shorefast ice
- Longer travel distances (>50 miles)

Implications and Next Steps



- Not all dangerous hunting conditions can be forecast
 - Thin ice, potential for getting trapped in ice
- Avenues to explore impacts of long-term changes in winds and sea ice on marine mammal migrations & subsistence activity
- Study to evaluate SIWO products and communications

Website: <https://www.arcus.org/siwo/>

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