

# Collaborating with Yupik and Inupiaq sea-ice experts to observe the annual sea-ice cycle

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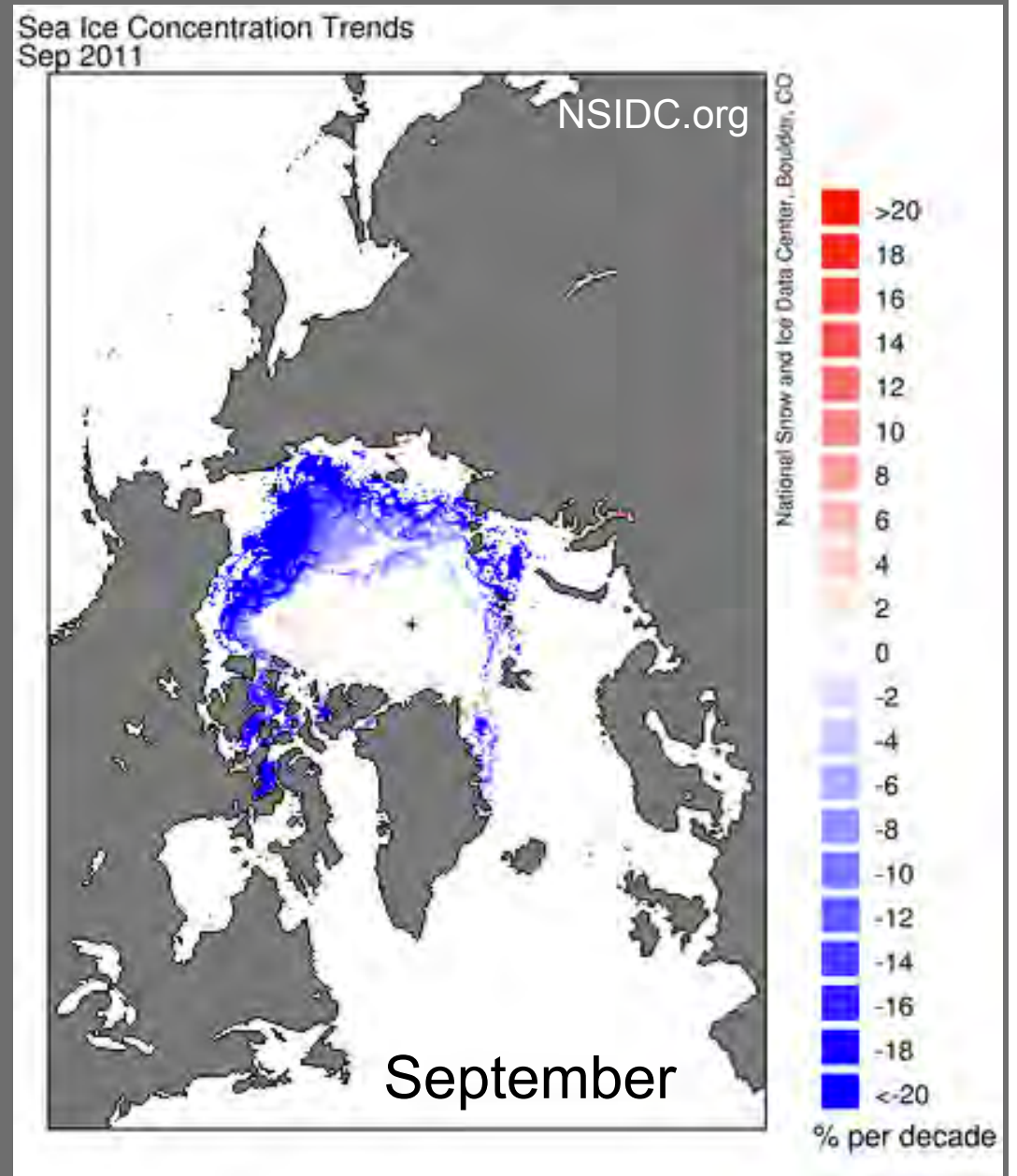
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- Sea ice changes around Alaska
- Community-based ice observations
- Possible collaboration fall 2012



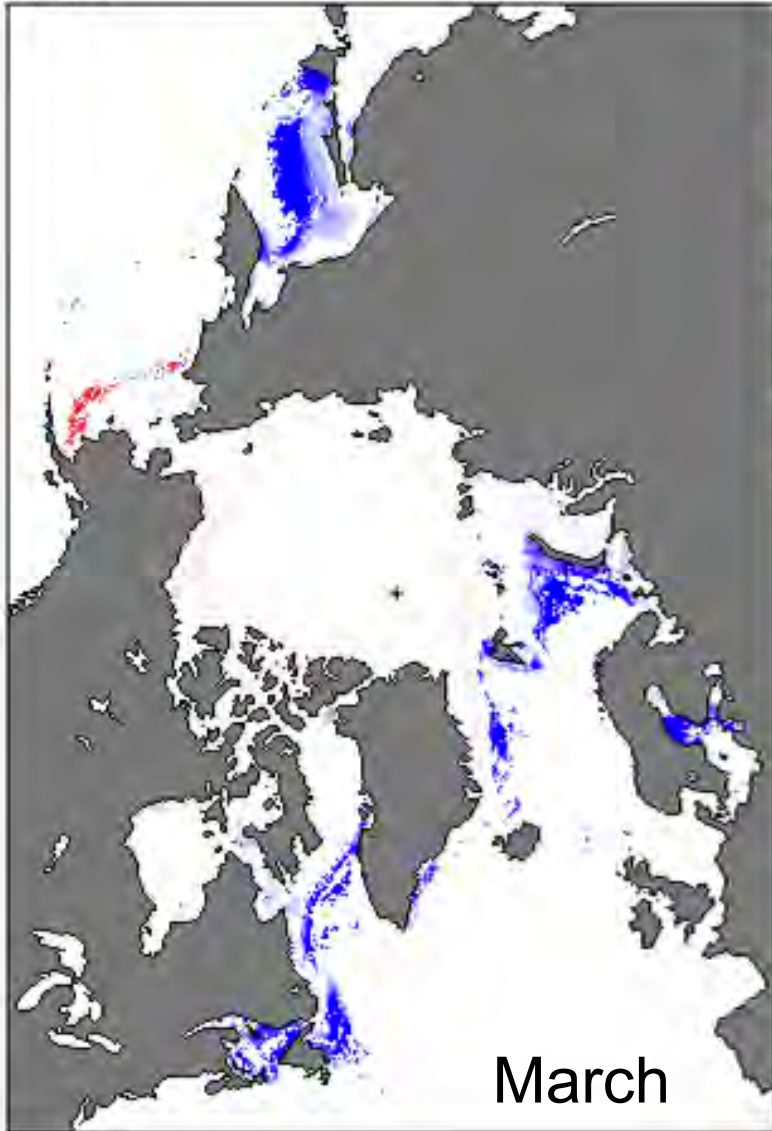
# Alaska: Large reductions in summer ice extent

- Seas north of Alaska & Eastern Siberia have seen greatest change anywhere in Arctic
- Summer ice less extensive
- Ice is younger and thinner



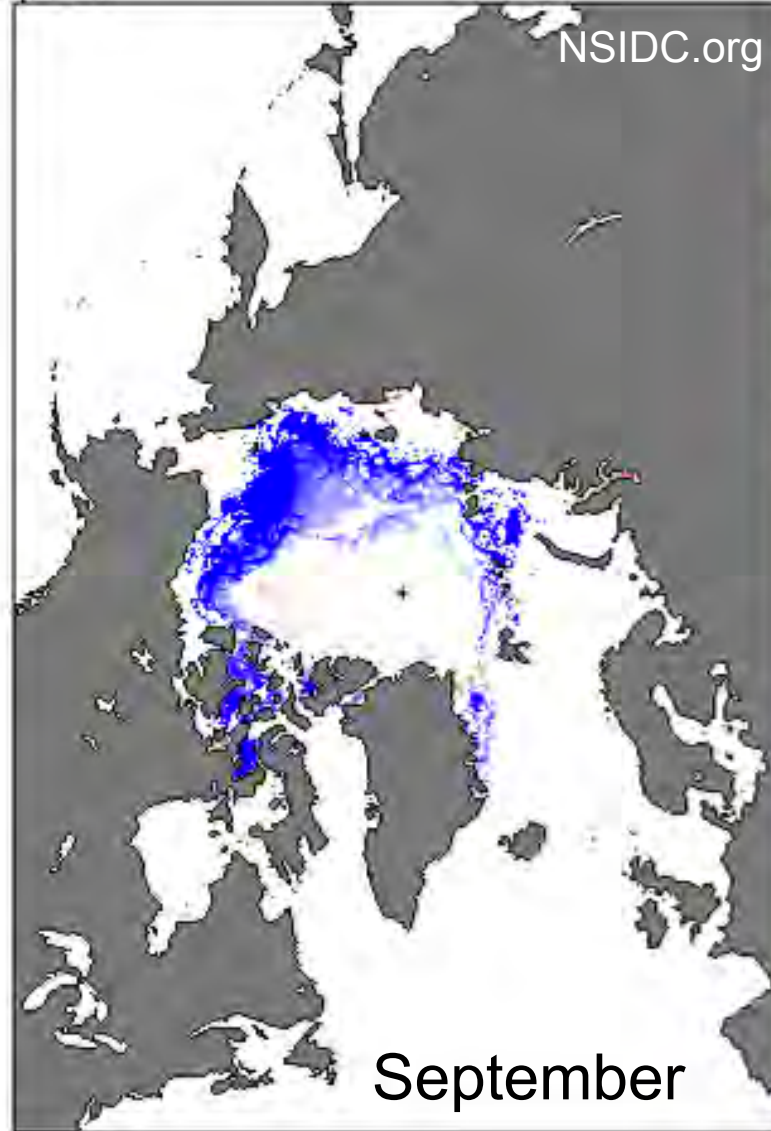
# Alaska: Large reductions in summer ice extent

Sea Ice Concentration Trends  
Mar 2011



National Snow and Ice Data Center, Boulder, CO

Sea Ice Concentration Trends  
Sep 2011

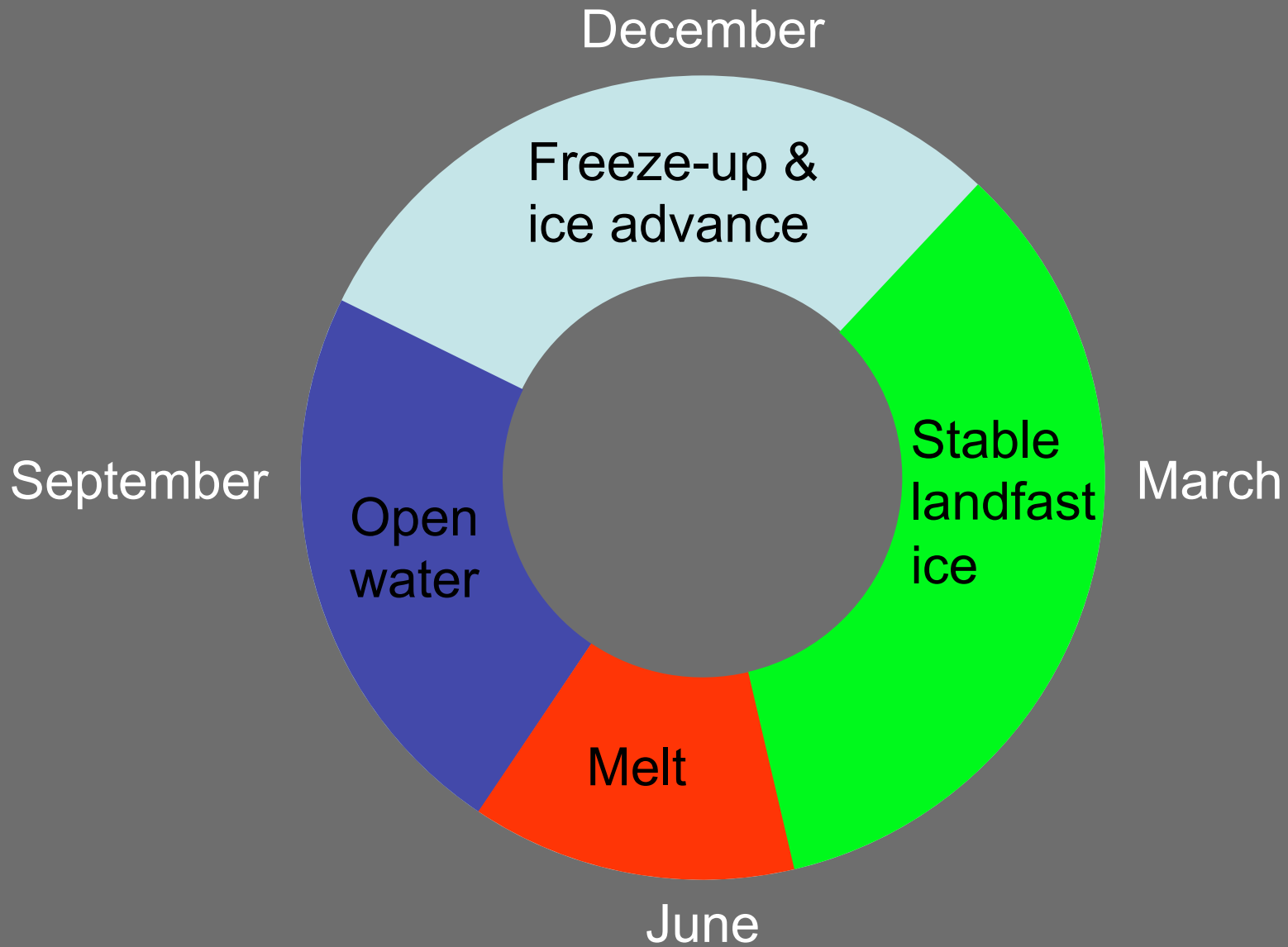


NSIDC.org

National Snow and Ice Data Center, Boulder, CO



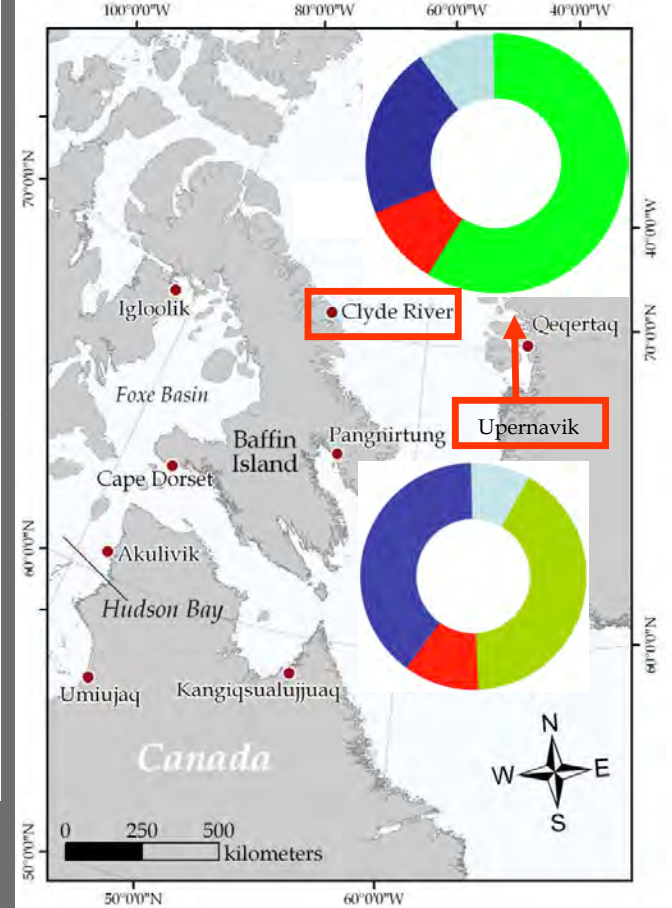
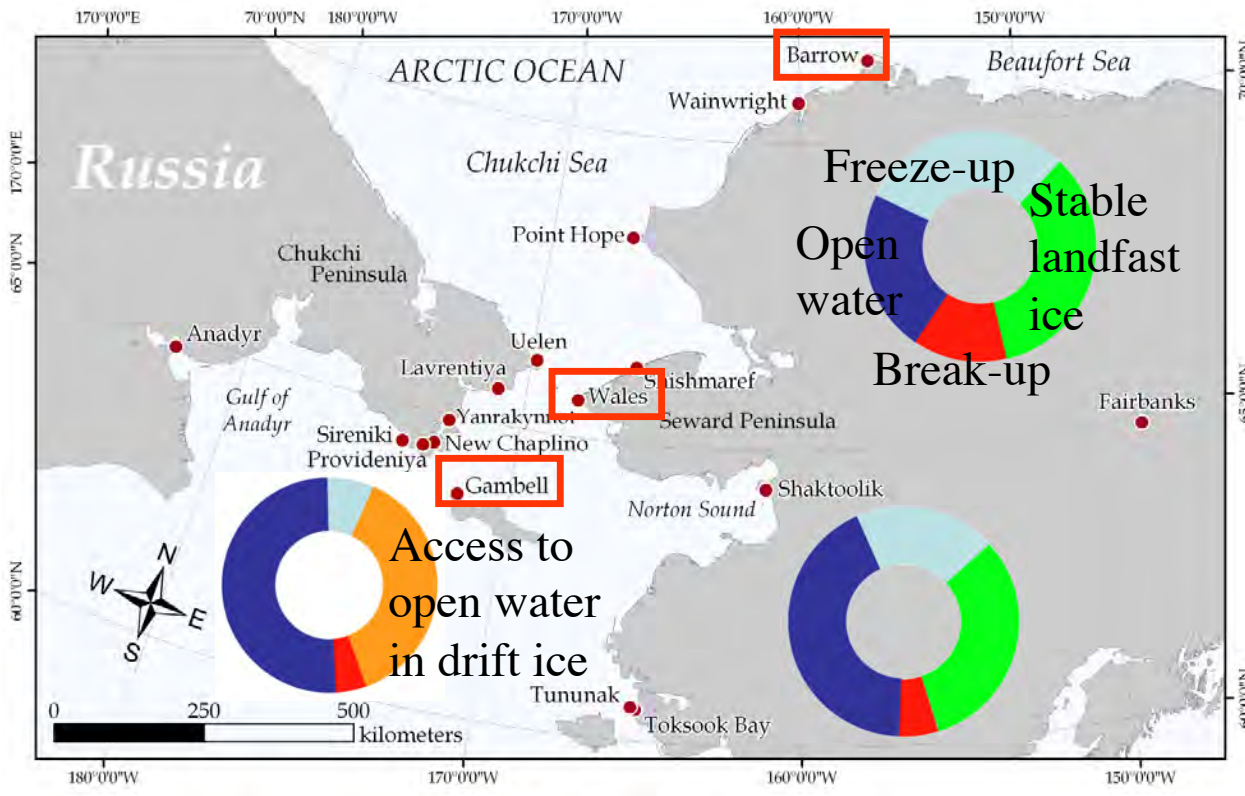
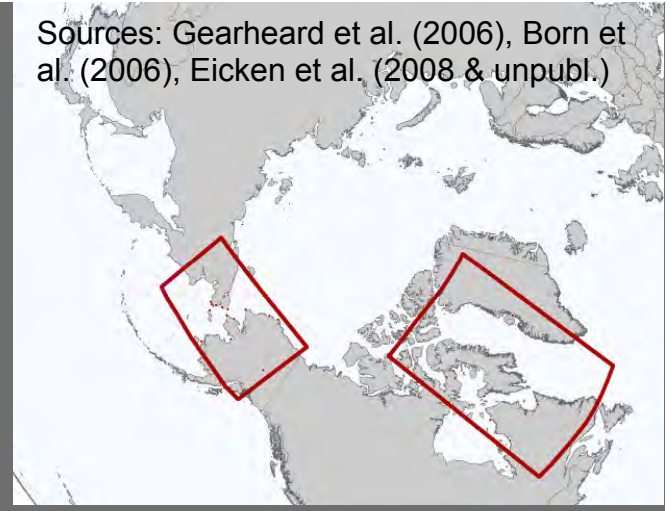
# Annual sea-ice cycle



# Sea-ice Knowledge & Use (SIKU) IPY-4 Project

- 60 researchers & 30 Arctic communities
- Ice use studied in more than a dozen villages (community-based observations, dictionaries)
- Krupnik, Gearheard, Aporta, Laidler and others

Sources: Gearheard et al. (2006), Born et al. (2006), Eicken et al. (2008 & unpubl.)



# Key collaborating Iñupiaq & Yupik sea-ice experts



- Winton Weyapuk Jr. (Wales)
- Joe Leavitt (Barrow)
- Leonard Apangalook Sr. & Paul Apangalook (Gambell)

# Observations of freeze-up

## W. Weyapuk Ice Log

8 Nov 2007

...There is a **slush berm** about 3 to 4 feet high right along the tide line. Light slush in front of the village 1/4 to 1/2 mile wide.

## Local observations in Wales, Shishmaref and Shaktoolik:

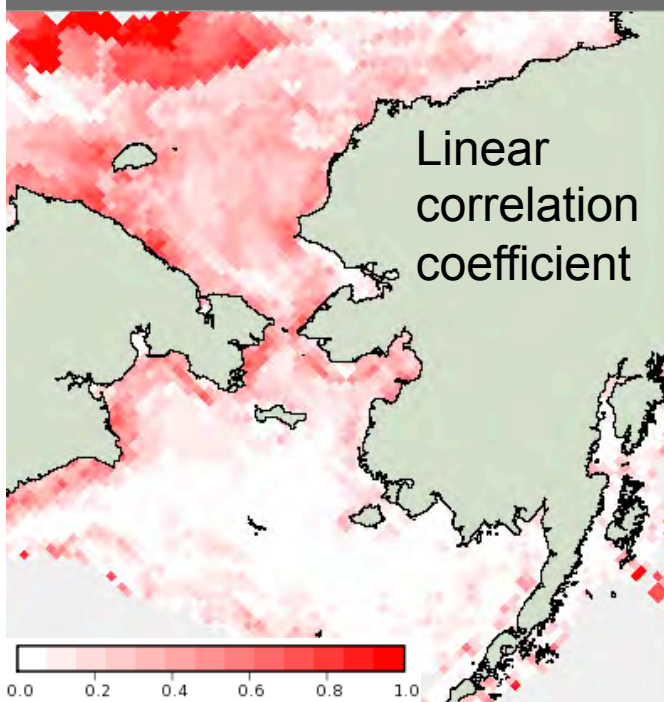
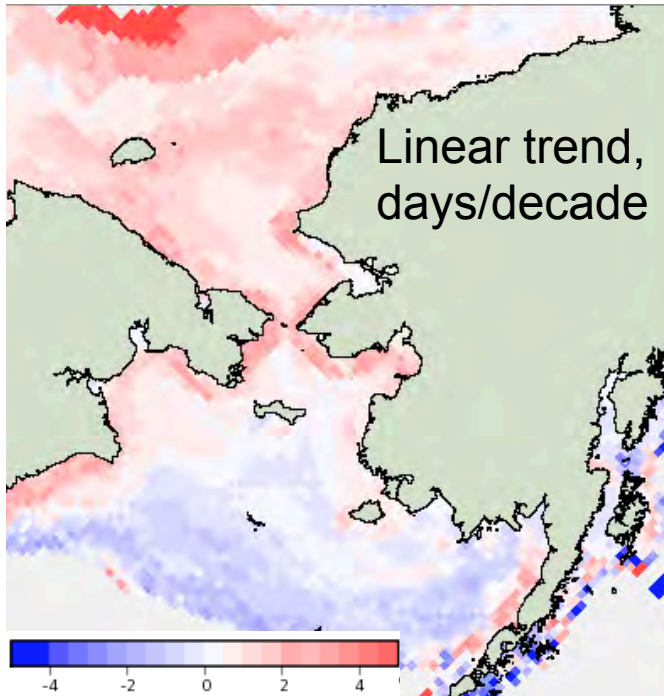
- Slush ice berms protect coast from fall storms



Photo: Winton Weyapuk Jr.

# Onset of freeze-up: Maps from satellites

- Building on local observations we can create maps of changes in freeze-up between 1979 and today
- Freeze-up delayed by up to 2-3 days per decade
- Norton Sound, Bering Straits region, southern Chukchi Sea coasts





# Developing a database for community-based ice observations



**Local Observations**  
Seasonal Ice Zone Observing  
Network (SIZONet)

**Exchange for Local Observations and  
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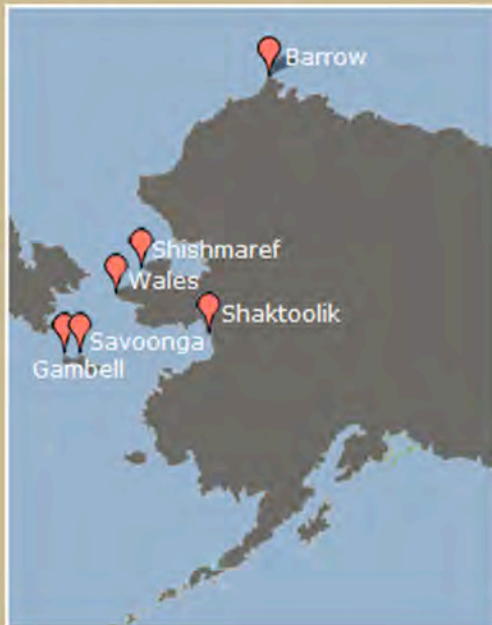
[Add observation](#)

[Contacts](#)

Logged in as Joe Leavitt

[Log out](#)

## Search or browse the observations catalog:



Search:

AND:

AND:

*The SIZONet Observation Database is a collaborative between [SIZONet](#) and [ELOKA](#). This Web site is hosted by the [National Snow and Ice Data Center](#).*

# Developing a database for community-based ice observations



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the Arctic 

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**CURRENT SEARCH**  
**Keyword(s):**  
**Date(s):**  
**Village(s):** All  
**Observer(s):** All

NEW SEARCH ▶

## Search Results

Showing observations 1 - 20 of 2385

Sort by:

First Previous Next Last

Date	Observer	Village	Additional elements noted (legend)		
2012-02-29	Joe Leavitt	Barrow		Transcript All details	Edit
2010-12-04	Paul Apangalook	Gambell		Transcript All details	Edit
2010-12-03	Joe Leavitt	Barrow		Transcript All details	Edit
2010-06-30	Joe Leavitt	Barrow		Transcript All details	Edit
2010-06-30	Winton Weyapuk Jr.	Wales		Transcript All details	Edit
2010-06-29	Winton Weyapuk Jr.	Wales		Transcript All details	Edit
2010-06-29	Joe Leavitt	Barrow		Transcript All details	Edit
2010-06-27	Joe Leavitt	Barrow		Transcript All details	Edit
2010-06-26	Joe Leavitt	Barrow		Transcript All details	Edit
2010-06-25	Joe Leavitt	Barrow		Transcript All details	Edit
2010-06-24	Joe Leavitt	Barrow		Transcript All details	Edit

# Developing a database for community-based ice observations



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Home About Research Methods Public Information Data Add observation Contacts Logged in as Joe Leavitt Log out

General observation information

Weather detail

Ice detail

Wildlife

Activity detail

Photos/Video

Observation ID: BARLE120301

Recorder: Joe Leavitt

Observer: Leavitt, Joe

Observation Location: Barrow

If known, enter location in decimal degrees:

Lat: (Between 45 and 90)

Lon: (Between -180 and -125)

Observation date

2012-03-01

(yyyy-mm-dd)

Observation time

(hh:mm)

Conditions: Storm/blizzard

Precipitation:

Skies: Cloudy

Wind speed: Strong

Visibility: Limited

Change wind dir:

Wind direction: ENE

Ice fog:

Air temperature is approximately °C

Wind speed is approximately m/sec

Visibility is approximately km

Update observation

The SIZONet Observation Database is a collaborative between [SIZONet](#) and [ELOKA](#). This Web site is hosted by the [National Snow and Ice Data Center](#).

# Next steps & potential collaboration with LEO

- Project supported by Landscape Conservation Cooperative Western Alaska (USFWS)
- Sea ice and coastal erosion and flooding during fall freeze-up
- How does ice help protect or harm the coast or beach?
- Fall 2012: Collect coastal observations of fall freeze-up (logs, photos, weather records)
- Evaluate combined impact of weather and ice conditions on coast (in particular formation of ice berms and related features)
- Develop protocol for standard observations



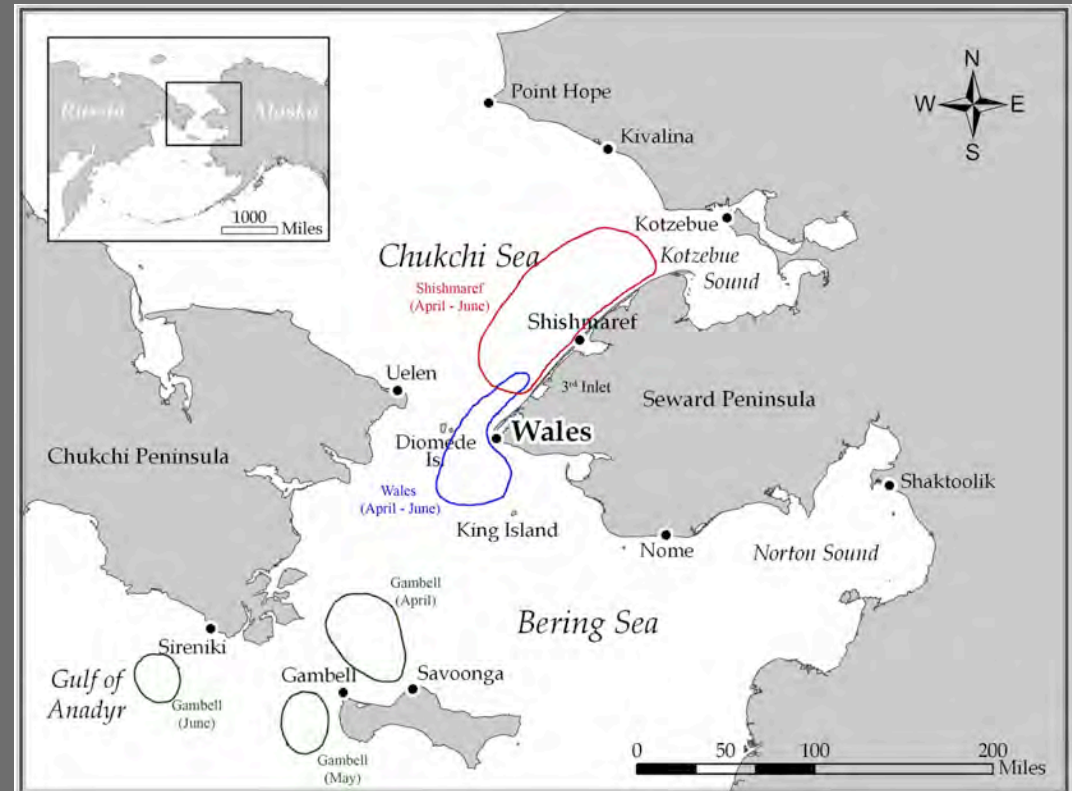
- Use of sea ice as platform by marine mammals (walrus, seals)
- Use of sea ice for access to walrus and ice seals by Bering Straits hunters

Photos: Winton Weyapuk Jr.

# Sea Ice for Walrus Outlook (SIWO)



- Dedicated 10-day forecast for N Bering, S Chukchi Seas (NWS)
- High-res satellite images
- Analysis of weather & ice patterns (NWS, NOAA, UAF)
- Observations from local experts
- [www.arcus.org/search/siwo](http://www.arcus.org/search/siwo)



- Ad-hoc input from scientists, indigenous experts & others

- Sea Ice for Walrus Outlook (SIWO): [www.arcus.org/search/siwo](http://www.arcus.org/search/siwo)



- SEARCH Science
  - Science News
  - Science Questions
  - Data
  - Related Links
- Sea Ice Outlook
  - Background
  - Media Coverage
  - Meetings
  - 2008 Outlook Archive
  - Related Websites
  - Sea Ice for Walrus Outlook
- SEARCH Projects
  - Observing/AON
- SEARCH Structure
  - Development of SEARCH
  - Steering Committee
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## Sea Ice for Walrus Outlook (SIWO)

[Printer Friendly/Low-Bandwidth Version](#)

### Past SIWO Reports

Friday, 30 April 2010 - Sea Ice for Walrus Outlook

**Latest News:** The latest weekly SIWO report (23 April 2010) is now available - see below!

### Overview

The Sea Ice for Walrus Outlook (SIWO), an activity of the SEARCH Sea Ice Outlook, is a resource for Alaska Native subsistence hunters, coastal communities, and others interested in sea ice and walrus.

The SIWO is updated weekly with information on sea ice conditions relevant to walrus in the Northern Bering Sea and southern Chukchi Sea regions of Alaska. SIWO updates will be released every Friday through late June.

The SIWO webpage includes: (1) An assessment of current ice conditions relevant to distribution and access of walrus, (2) a 10-day outlook of wind conditions, (3) up-to-date satellite imagery for the Bering Strait and St. Lawrence Island, which are two regions of interest to coastal communities engaging in the walrus hunt, (4) written observations of ice development from Alaska Native hunters, sea-ice experts, or NOAA or university researchers, (5) additional data and resources on ice conditions, and (6) additional comments provided by local experts and other contributors.

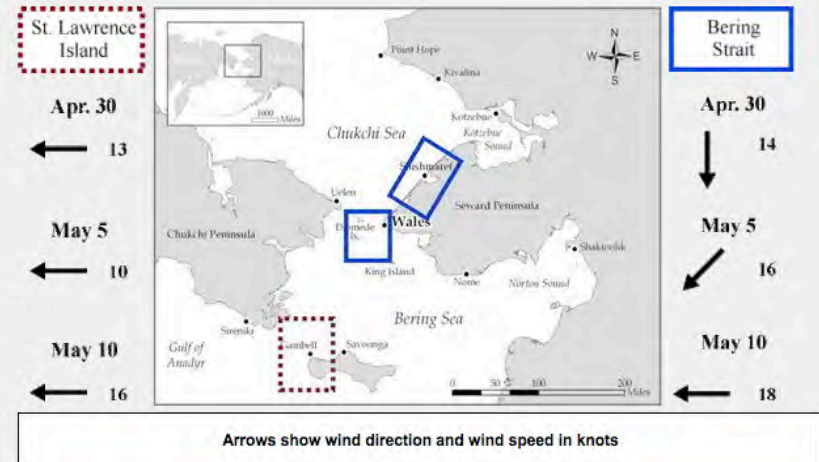
If you are a local hunter, expert, or a scientist with observations on either the development of sea ice or any other aspect of walrus and sea ice, please send your comments to Helen Wiggins at the Sea Ice Outlook Central Office at ARCUS; your comments will be posted to this page.

This collaboration includes weather and ice forecasters, climate scientists and sea-ice researchers at NOAA, the National Weather Service, and the University of Alaska who are teaming up with Alaska Native sea-ice experts and the Eskimo Walrus Commission. Key contacts are:

- Kristina Creek, Ronnie Owens, Helen Wiggins - Sea Ice Outlook Central Office, ARCUS
- Vera Kingeekuk Metcalf - Eskimo Walrus Commission
- Hajo Eicken - University of Alaska Fairbanks
- Gary Hufford, Don Moore - National Weather Service
- Jim Overland, Nancy Soreide, Tracey Nakamura, Nick Bond - National Oceanic and Atmospheric Administration



Photo by Maggie Prevenas - PolarTREC/ARCUS

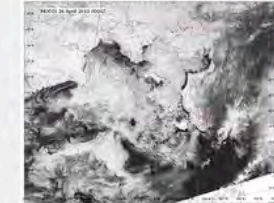


### Remote Sensing Data

#### St. Lawrence Island/Bering Strait:



#### Bering Sea/Southern Chukchi Sea:



### Archive of Recent Satellite Images Showing More Detail

- [St. Lawrence Island](#)
- [Bering Strait](#)

The links above take you to a user-friendly archive, through the Geographic Information Network of Alaska (GINA) website, which contains all the available high resolution satellite images for the two regions.

### Additional Information on Ice Conditions

- [FZAK80 Sea Ice Advisory](#)
- [Sea Ice Analysis](#)
- [Five Day Sea Ice Forecast](#)
- [Sea Surface Temperatures Analysis](#)
- [East Bering Sea \(NIC\)](#)