

*Science, Service, Stewardship*



# Marine Fisheries and Research Review

## 2010 Spring Yukon Panel Meeting

April 2, 2010

**NOAA  
FISHERIES  
SERVICE**

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# 2010 Marine Fisheries and Research

## **2010 BSAI/GOA Salmon Bycatch Update**

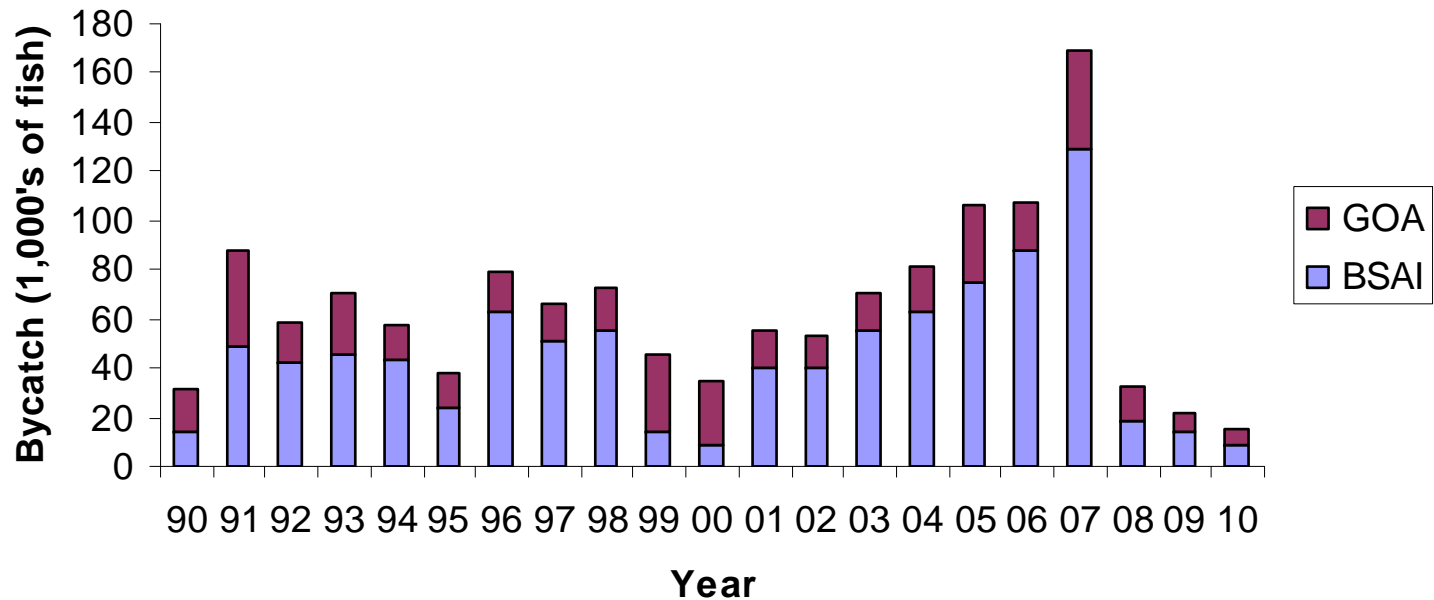
### **Marine Salmon Research Highlights**

### **Status of the Bering Sea**



## BSAI/GOA Chinook salmon bycatch

**Chinook Bycatch in Bering Sea Aleutian Islands (BSAI) and  
Gulf of Alaska (GOA) Groundfish Fisheries**  
(updated on Mar 13, 2010)



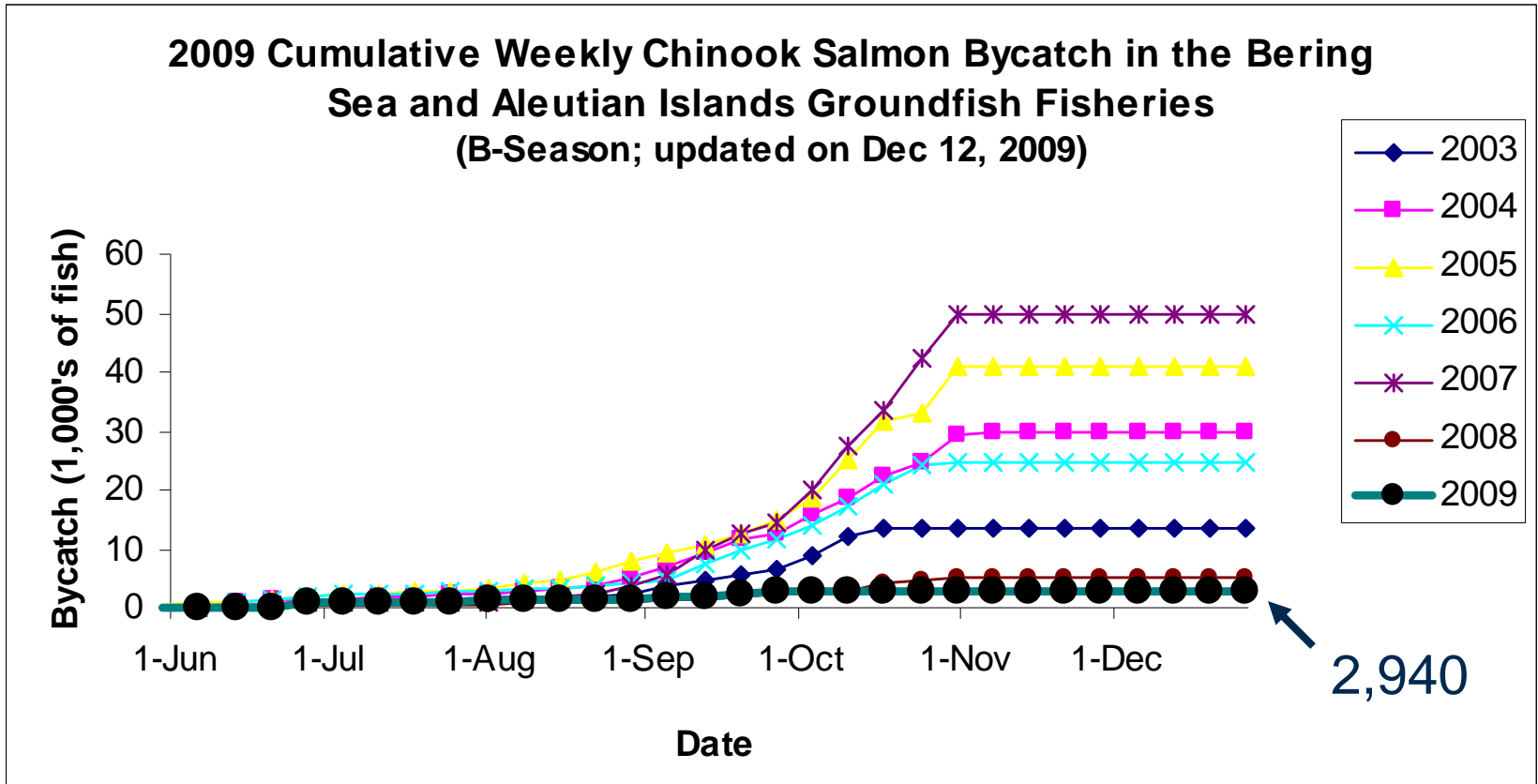
Source:

2009 [http://alaskafisheries.noaa.gov/2009/car260\\_psc\\_salmon.csv](http://alaskafisheries.noaa.gov/2009/car260_psc_salmon.csv)

2010 [http://alaskafisheries.noaa.gov/2010/car260\\_psc\\_salmon.csv](http://alaskafisheries.noaa.gov/2010/car260_psc_salmon.csv)



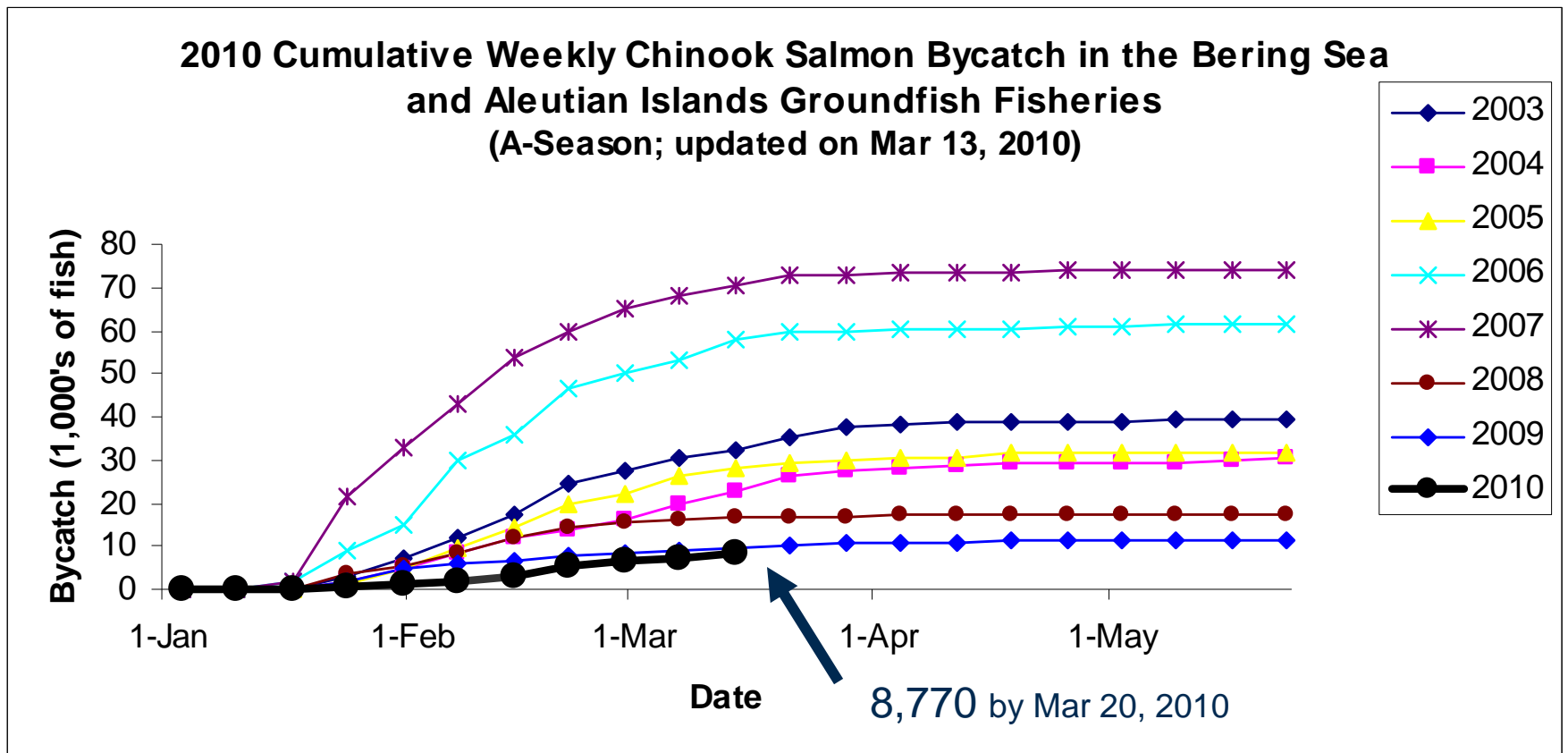
# BSAI Chinook salmon bycatch 2009 B- Season



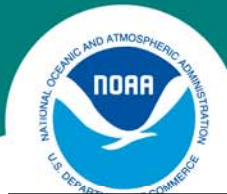
Source:



# BSAI Chinook salmon bycatch A- Season (January 20 to June 10)

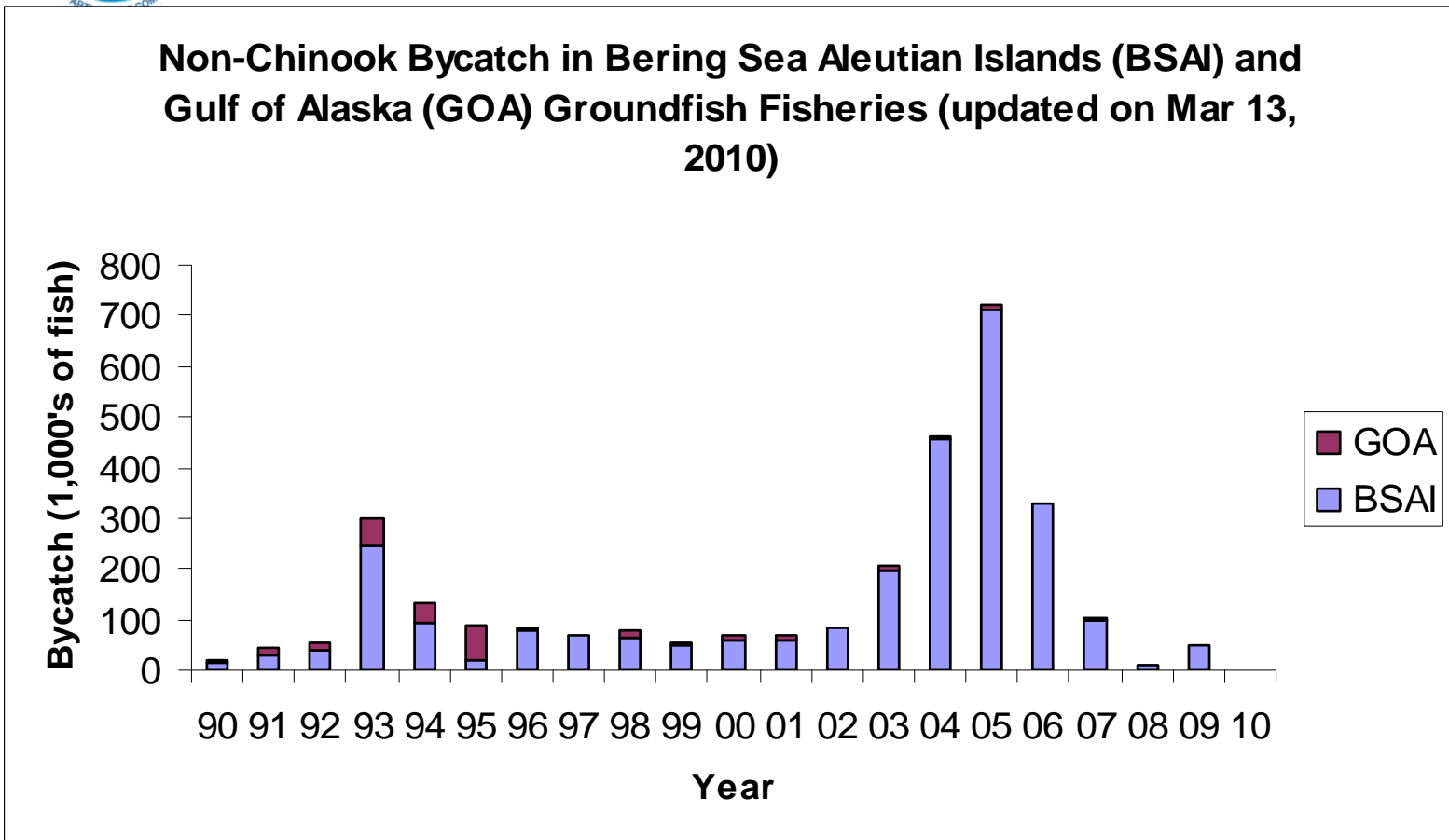


Source: 2009 [http://alaskafisheries.noaa.gov/2009/car260\\_psc\\_salmon.csv](http://alaskafisheries.noaa.gov/2009/car260_psc_salmon.csv)  
 2010 [http://alaskafisheries.noaa.gov/2010/car260\\_psc\\_salmon.csv](http://alaskafisheries.noaa.gov/2010/car260_psc_salmon.csv)



# BSAI/GOA non-Chinook salmon bycatch

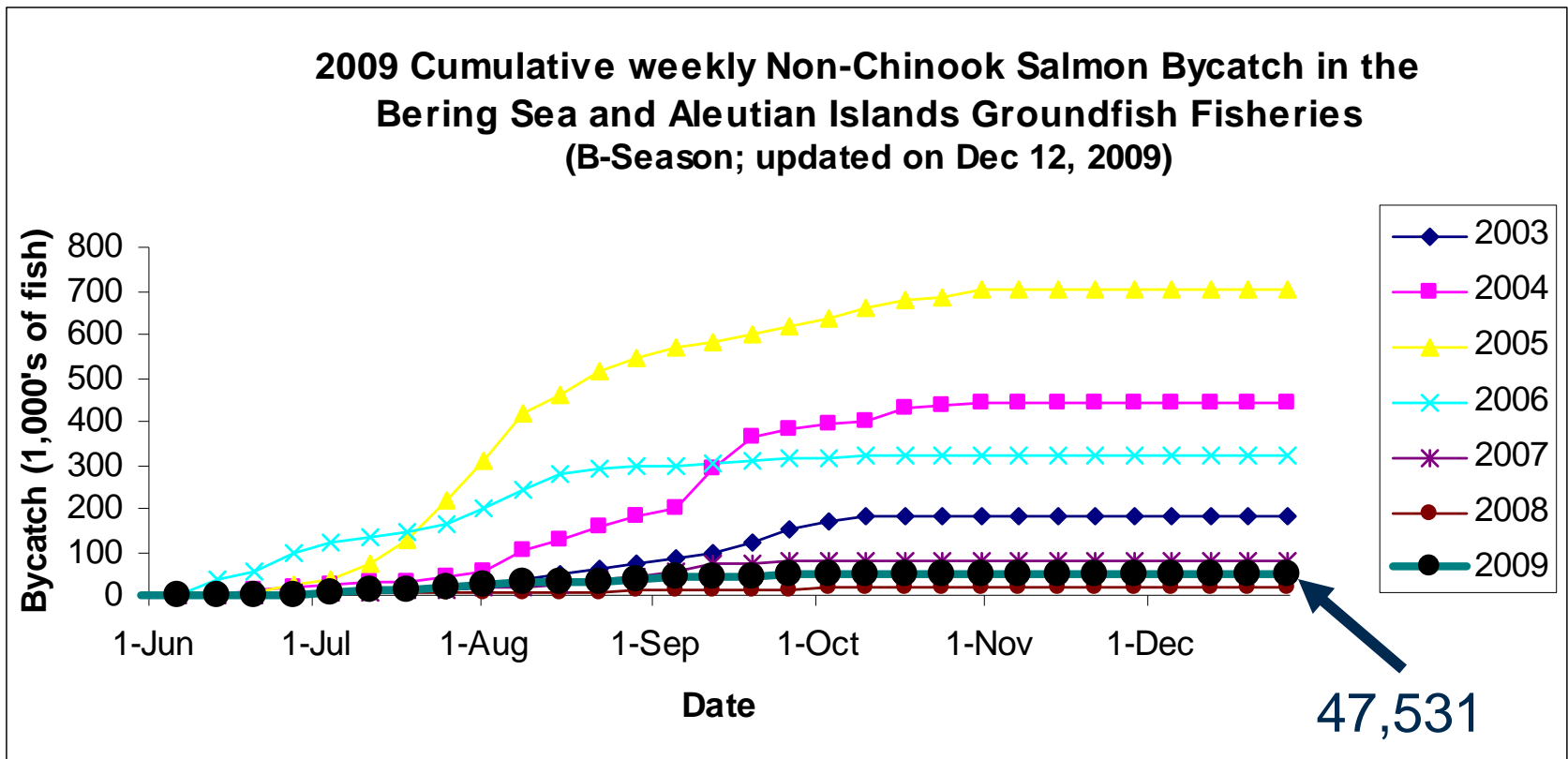
**Non-Chinook Bycatch in Bering Sea Aleutian Islands (BSAI) and Gulf of Alaska (GOA) Groundfish Fisheries (updated on Mar 13, 2010)**



Source: 2009 [http://alaskafisheries.noaa.gov/2009/car260\\_psc\\_salmon.csv](http://alaskafisheries.noaa.gov/2009/car260_psc_salmon.csv)  
 2010 [http://alaskafisheries.noaa.gov/2010/car260\\_psc\\_salmon.csv](http://alaskafisheries.noaa.gov/2010/car260_psc_salmon.csv)



## BSAI non-Chinook salmon bycatch 2009 B-season (June 10 to November 1)



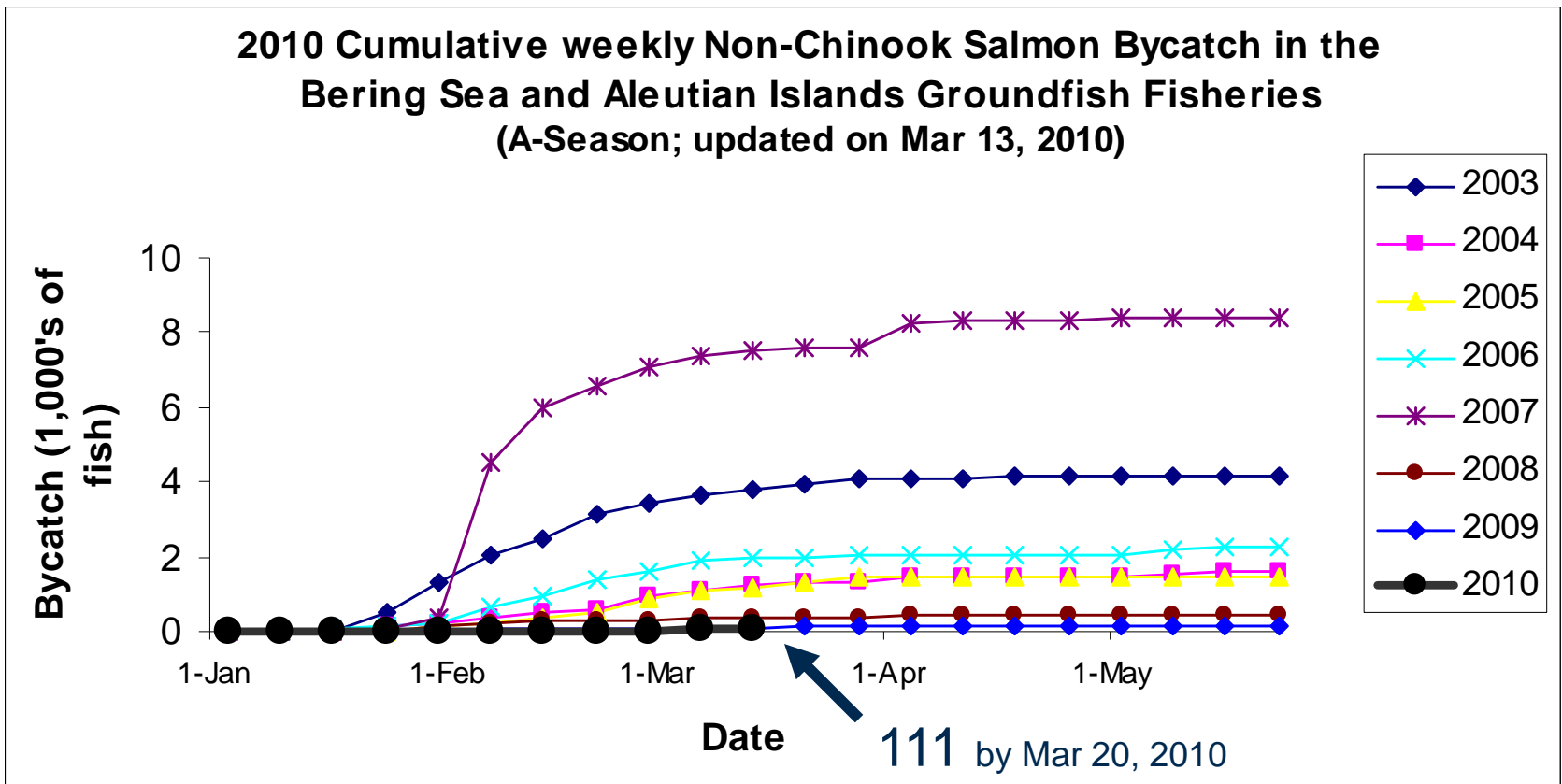
Source:

1990 – 2008 [http://www.npafc.org/new/publications/Documents/PDF%202008/1104\(USA\).pdf](http://www.npafc.org/new/publications/Documents/PDF%202008/1104(USA).pdf)

2009 [http://alaskafisheries.noaa.gov/2009/car260\\_psc\\_salmon.csv](http://alaskafisheries.noaa.gov/2009/car260_psc_salmon.csv)



## BSAI non-Chinook salmon bycatch A-season (January 20 to June 10)



Source:

2009 [http://alaskafisheries.noaa.gov/2009/car260\\_psc\\_salmon.csv](http://alaskafisheries.noaa.gov/2009/car260_psc_salmon.csv)  
 2010 [http://alaskafisheries.noaa.gov/2010/car260\\_psc\\_salmon.csv](http://alaskafisheries.noaa.gov/2010/car260_psc_salmon.csv)



## Regulatory Status

Chinook bycatch: Amendment 91 final steps

Comments due May 7

<http://www.fakr.noaa.gov/sustainablefisheries/bycatch/default.htm>

Chum Bycatch: In progress

[http://alaskafisheries.noaa.gov/npfmc/current\\_issues/bycatch/bycatch.htm](http://alaskafisheries.noaa.gov/npfmc/current_issues/bycatch/bycatch.htm)



## Marine Fisheries and Research Overview

*Jim Murphy, NOAA JTC presentation*     *jim.murphy@noaa.gov*

### **2009 AFSC Bering Sea Salmon Research Highlights**

Juvenile Chum Salmon Marine Growth Rates (Murphy et al. 2009) *in* Marine Ecology of Juvenile Chum Salmon: AYKSSI Final Report

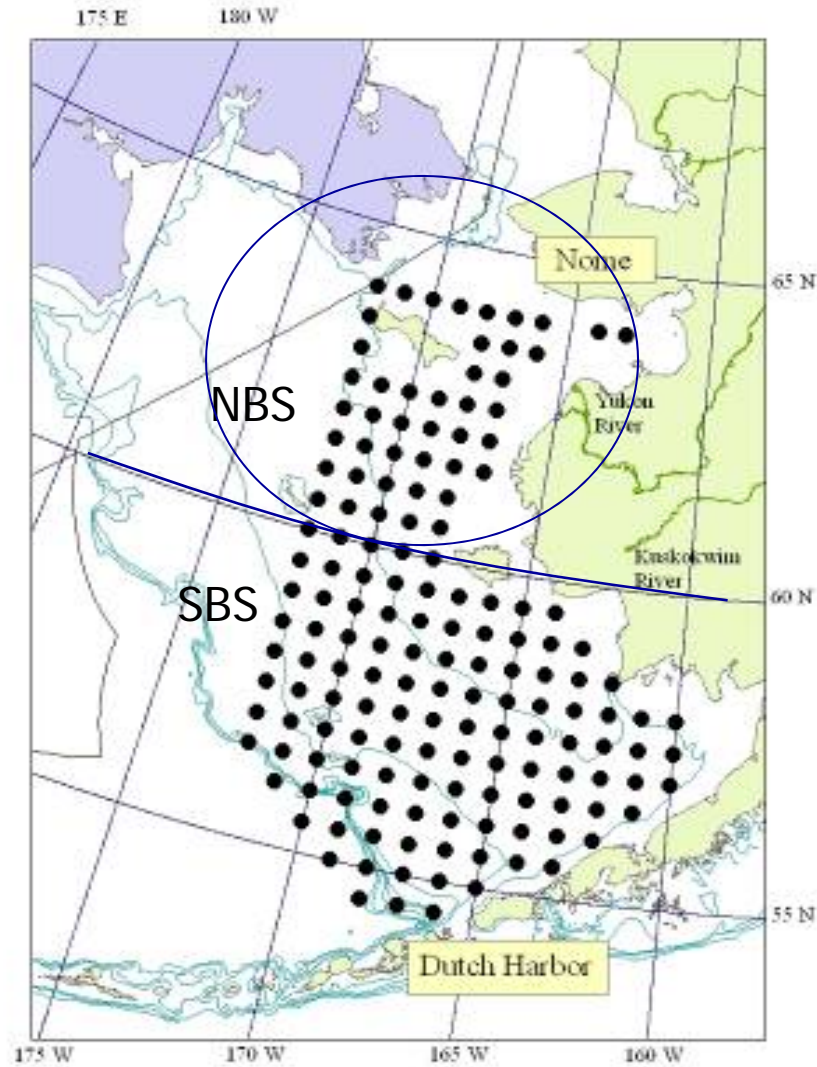
Moss, J.H. et al. 2009. Juvenile Pink and chum salmon distribution, diet, and growth in the northern Bering and Chukchi seas. N. Pac. Anadr. Fish Comm. Bull 5: 191–196.

Farley, E.V., Jr., and J.H. Moss. 2009. Growth rate potential of juvenile chum salmon on the eastern Bering Sea shelf: an assessment of salmon carrying capacity. N. Pac. Anadr. Fish Comm. Bull. 5: 265–277.

+ on going work



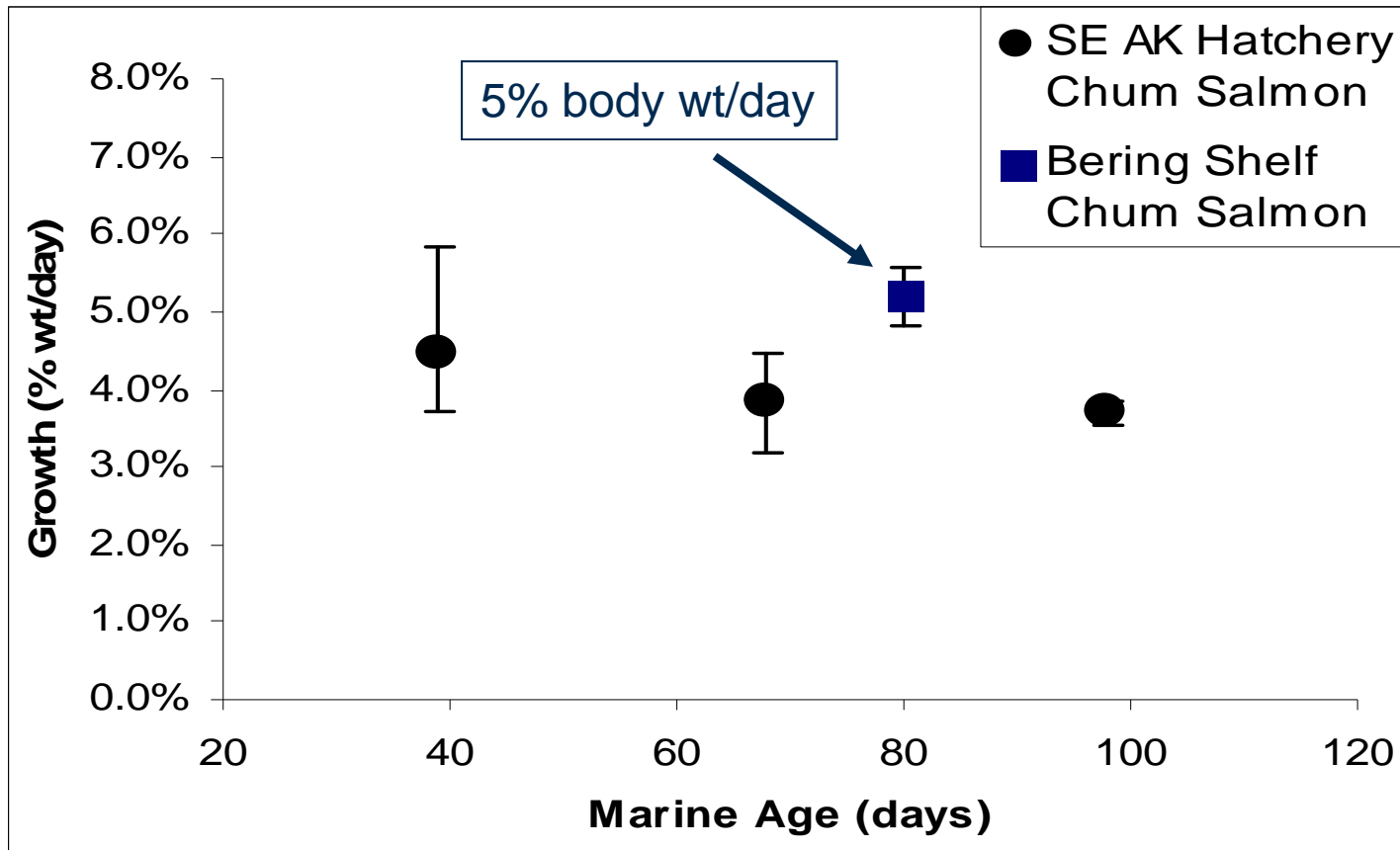
# US BASIS Survey area



# Northern Bering Sea Shelf

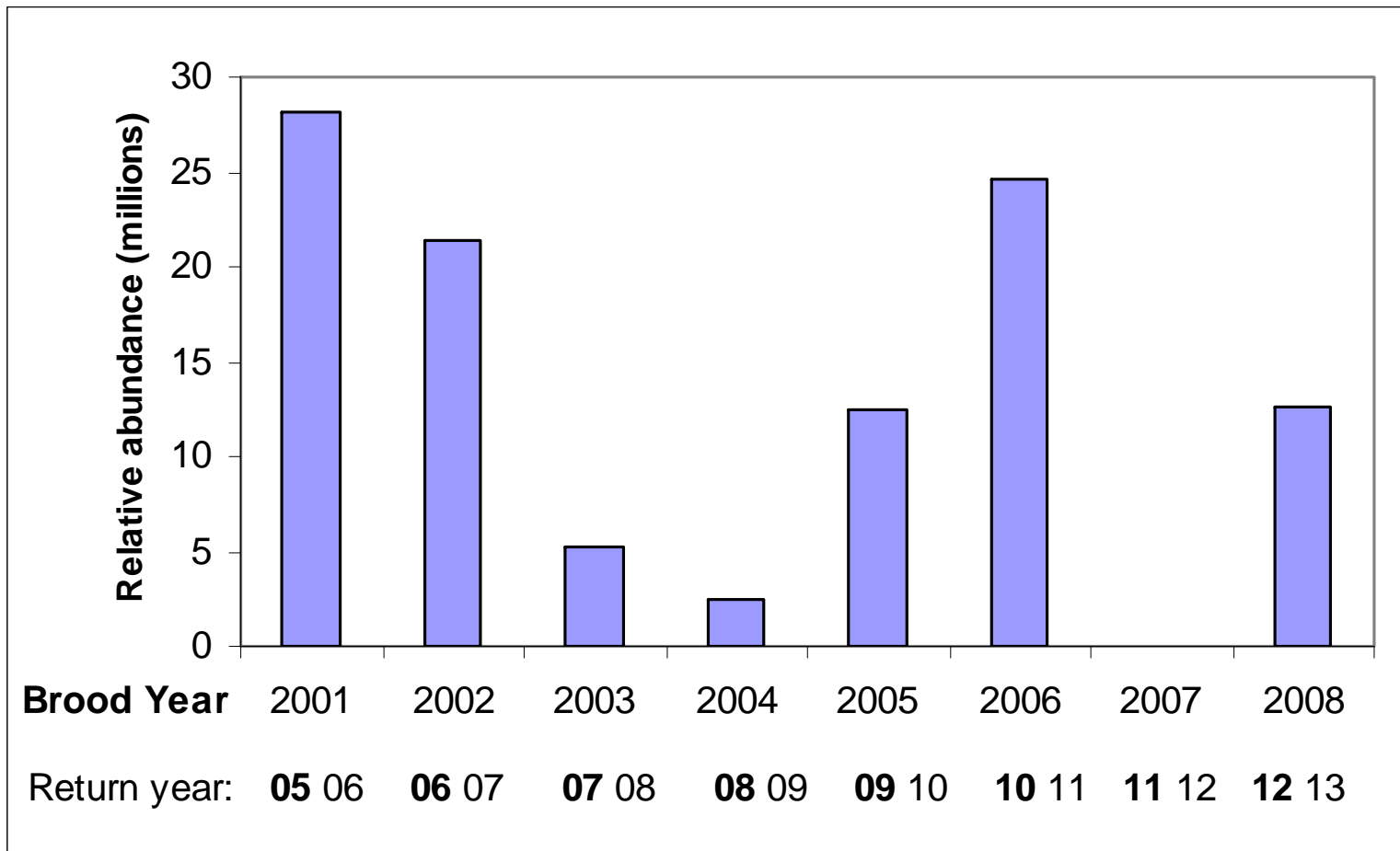


## AYKSSI Research: Marine Growth of Juvenile Chum Salmon (2006 Brood Year)



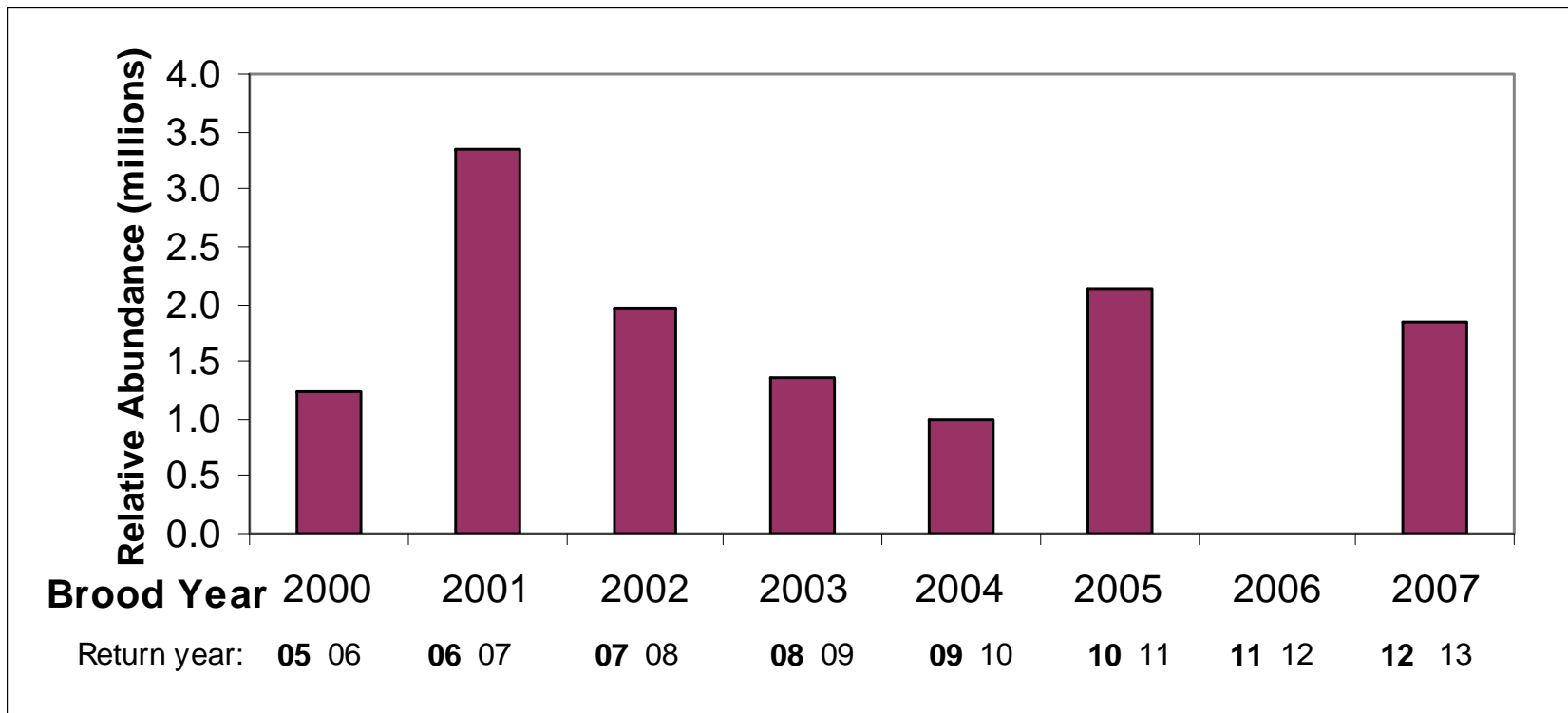


## Northern Bering Shelf Juvenile Chum Salmon Index (Survey Index)



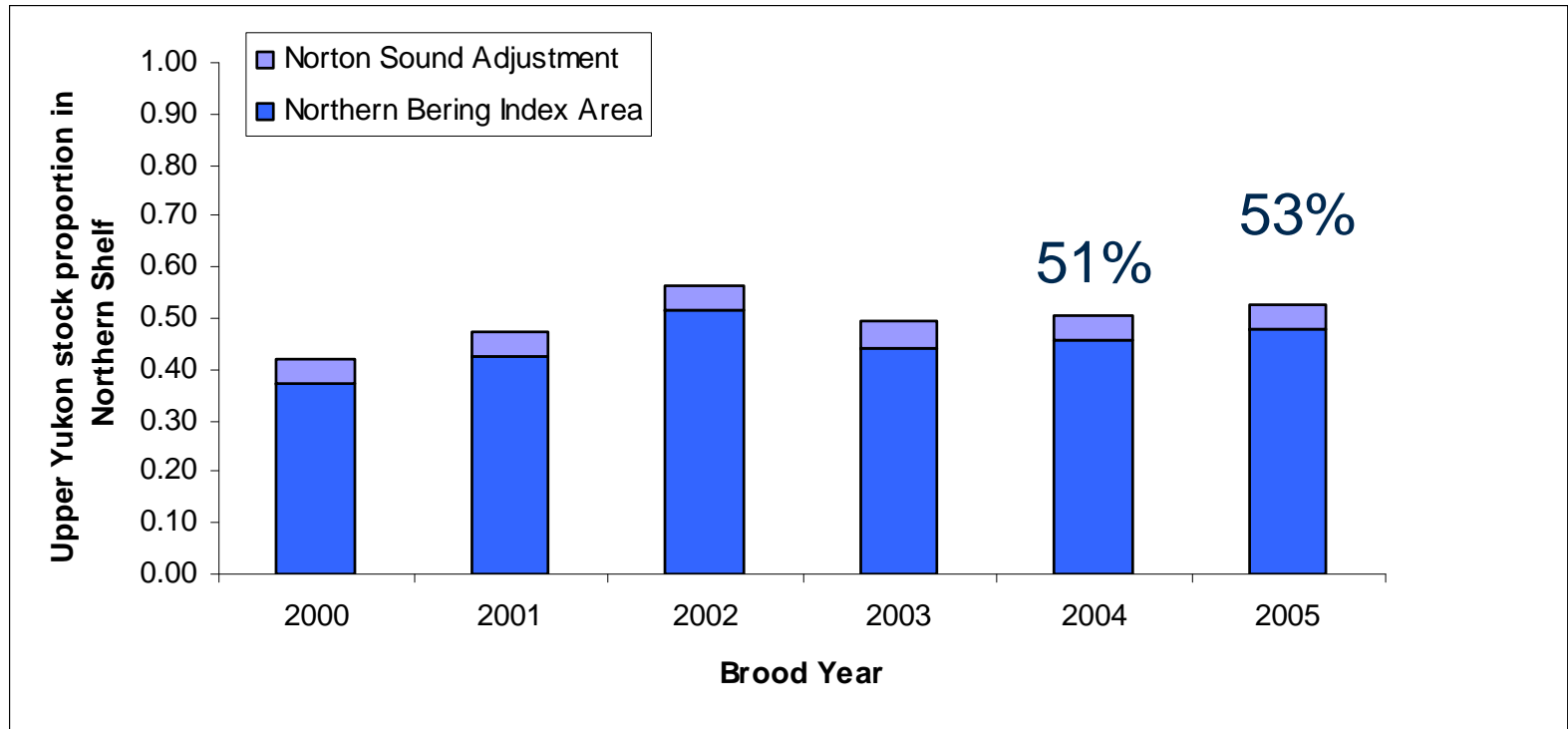


## Northern Bering Shelf Juvenile Chinook Salmon Index (Survey Index)





## Upper Yukon Stock Proportion In Northern Bering Index area Adjusted to Yukon Drainage





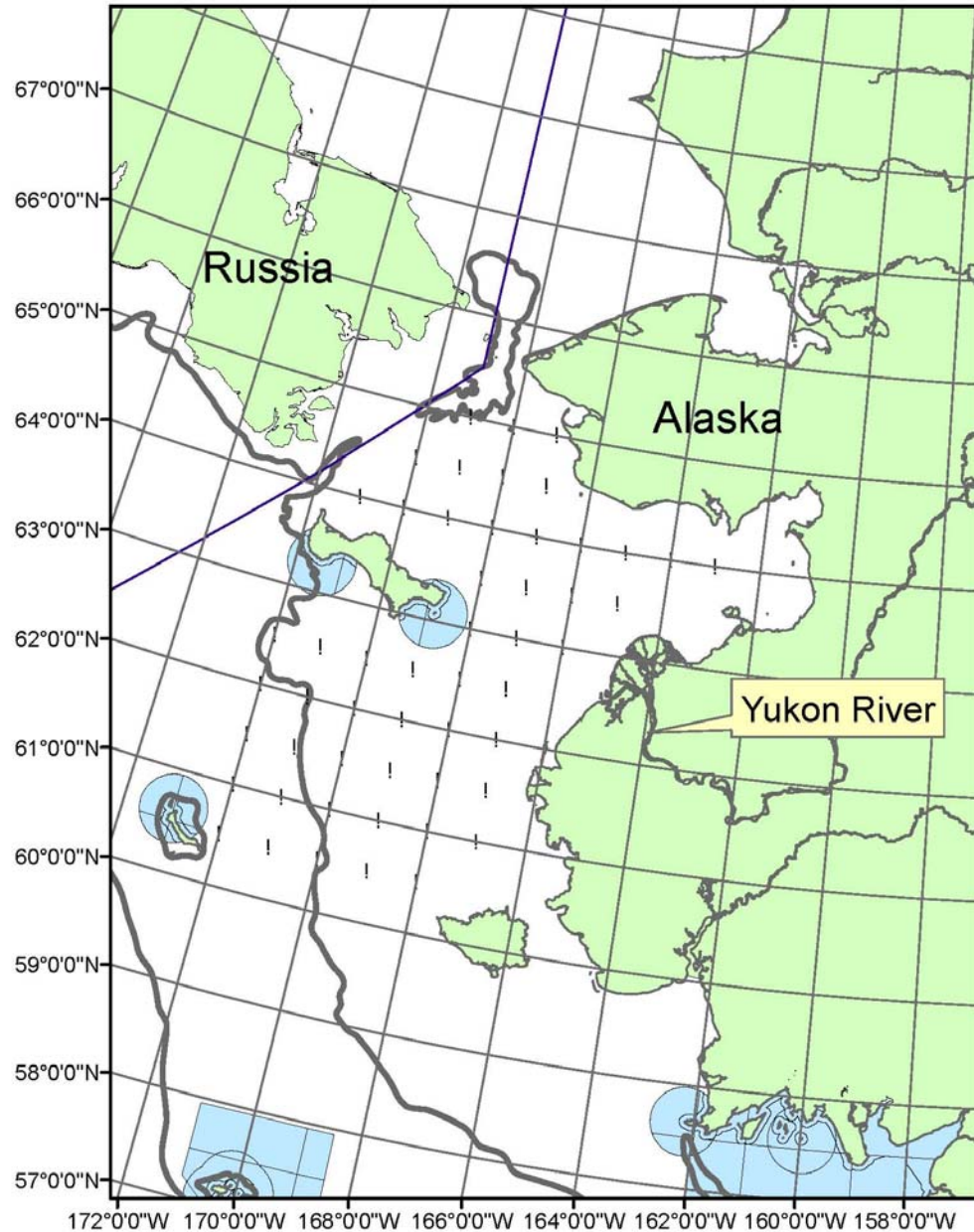
## Juvenile Index Related to 2010 Returns (Jim Murphy's JTC prediction)

	Upper Yukon	Total Return
Age 5 (avg. = 37,500)	44,174 [43,308-45,935]	
Age 6 (avg. = 46,656)	42,146 [37,397-45,608]	
Age 7 (avg. = 1,400)	1,076 [872-1,208]	
Age 3, 4, and 8	2,971	
Projected Run	90,366 <b>[84,699-93,663]</b>	180,732 <b>[169,399-187,326]</b>



## 2010 Survey ?

Yes!  
Notice of funding just  
received

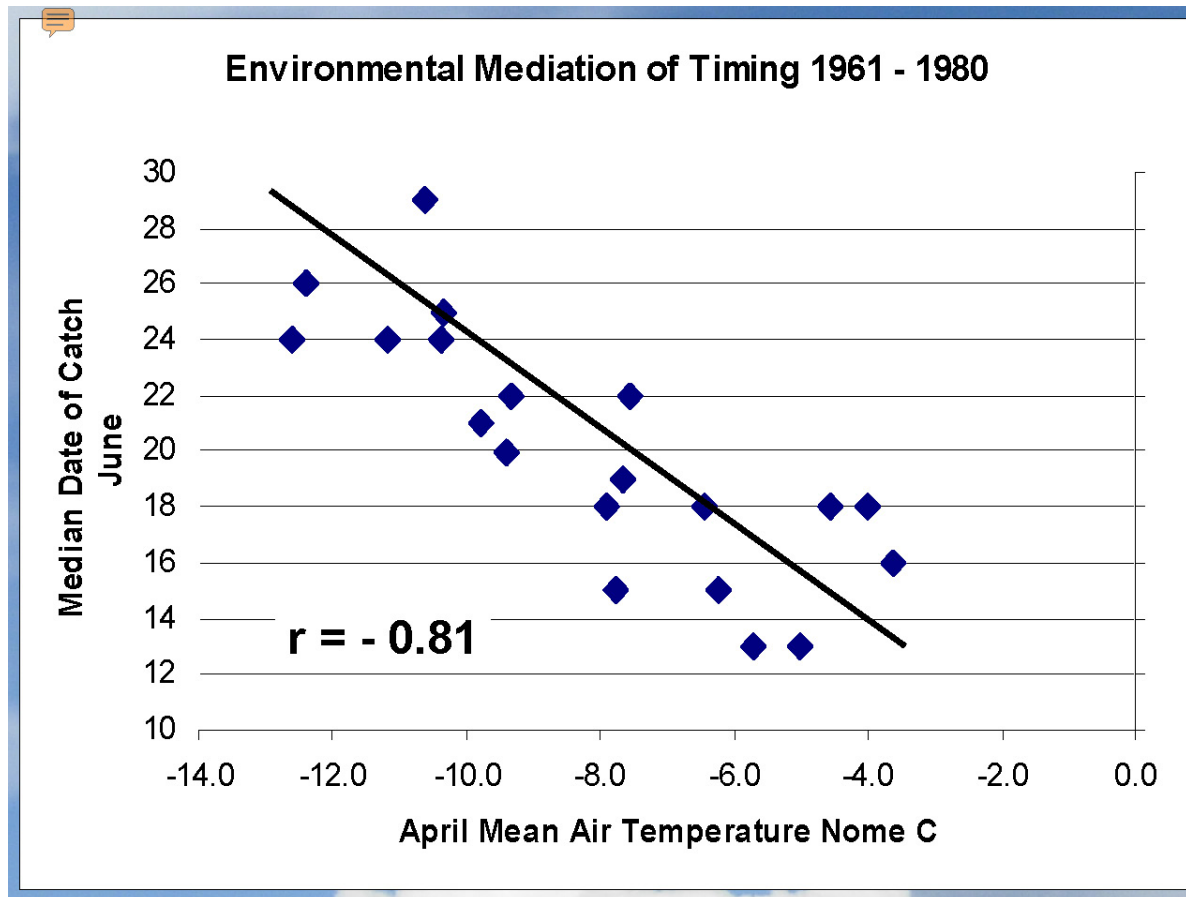




## Other studies in the works

### Incorporate climate data into runtime estimates

P.R Mundy 1982 *North American Journal of Fisheries Management* ; 2: 359-370

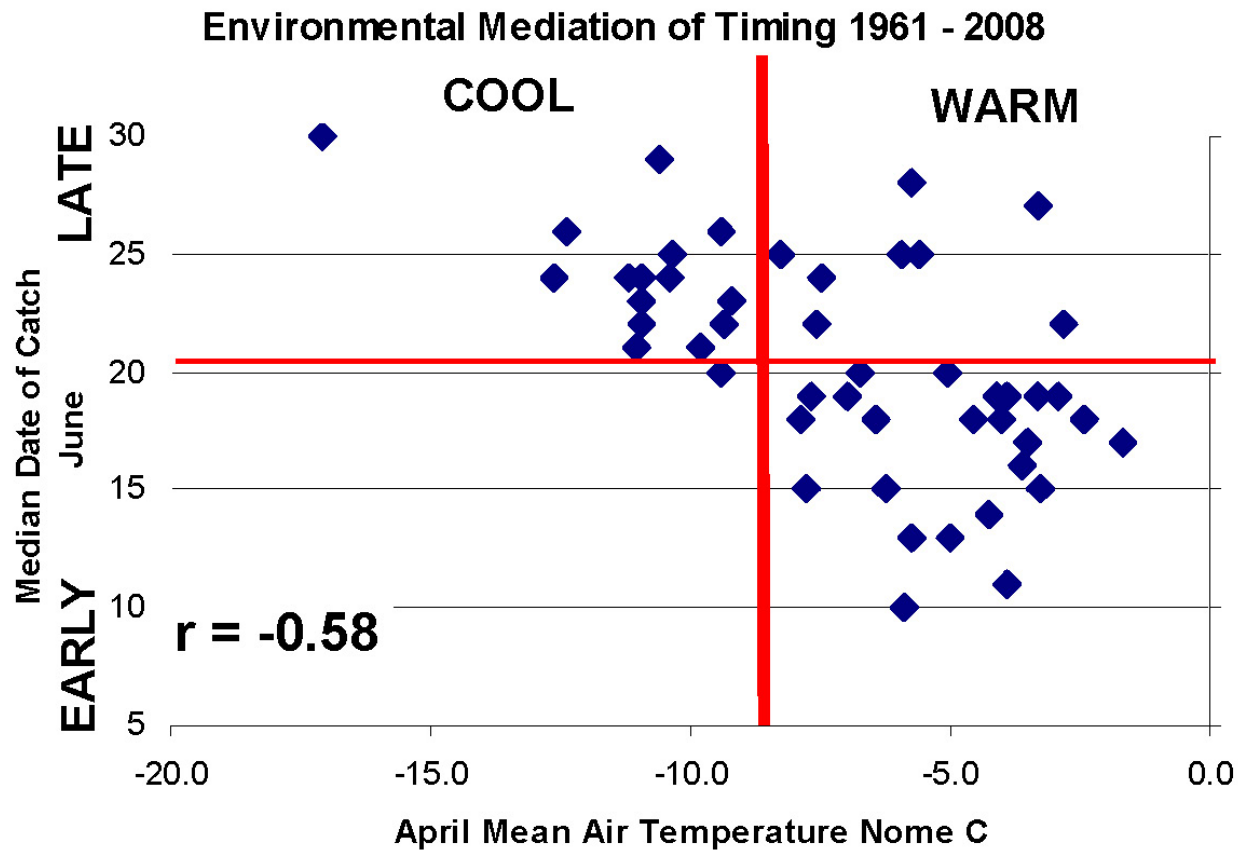




## Other studies in the works

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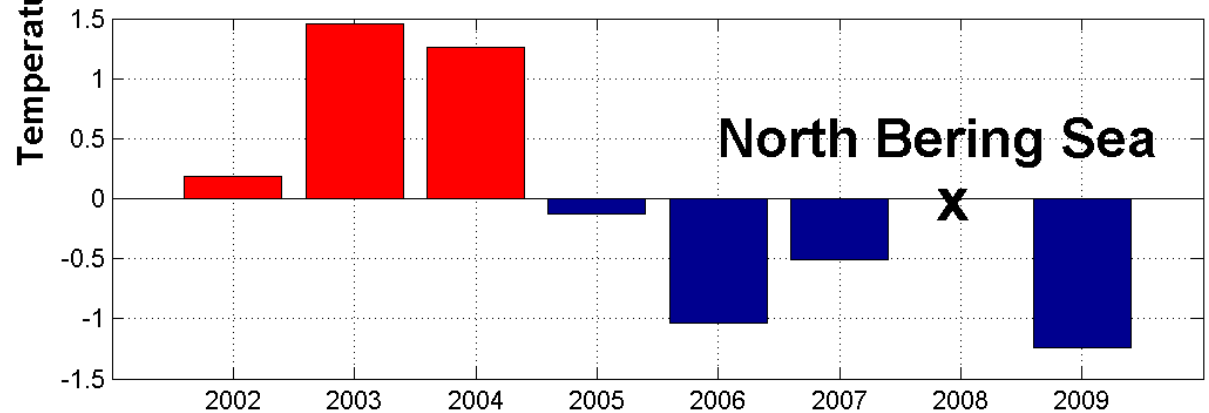
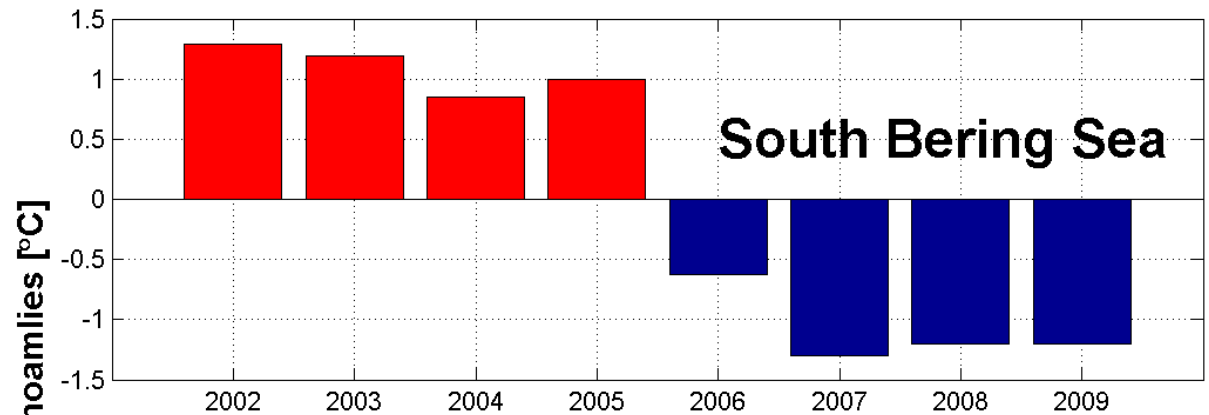
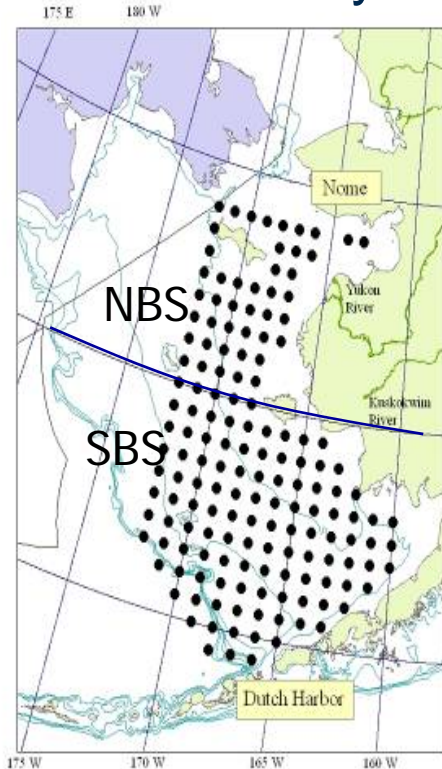
(Mundy, Evenson, Bond, Overland )





# Status of the Bering Sea - Ocean Temperatures

From U.S.  
BASIS surveys





## Deep Temperatures

2002

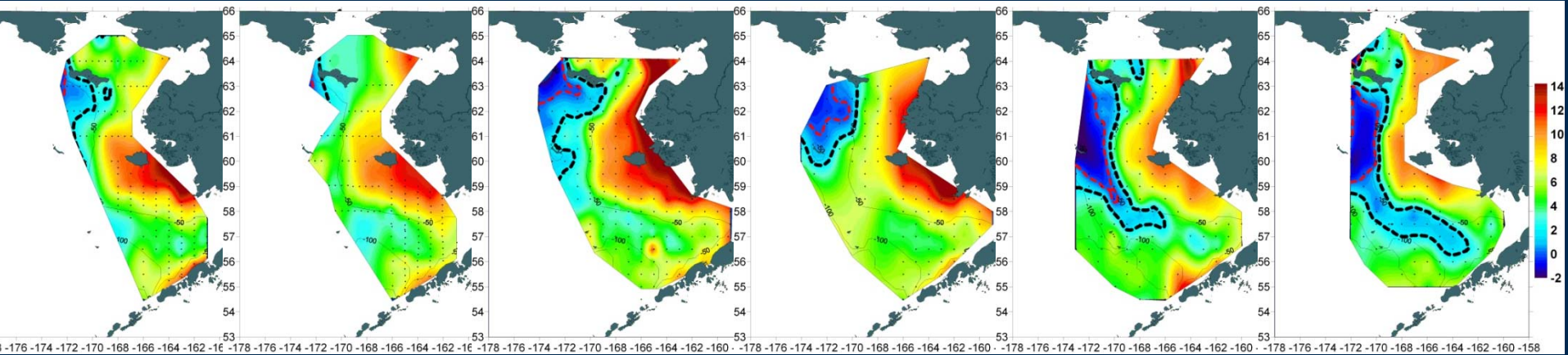
2003

2004

2005

2006

2007



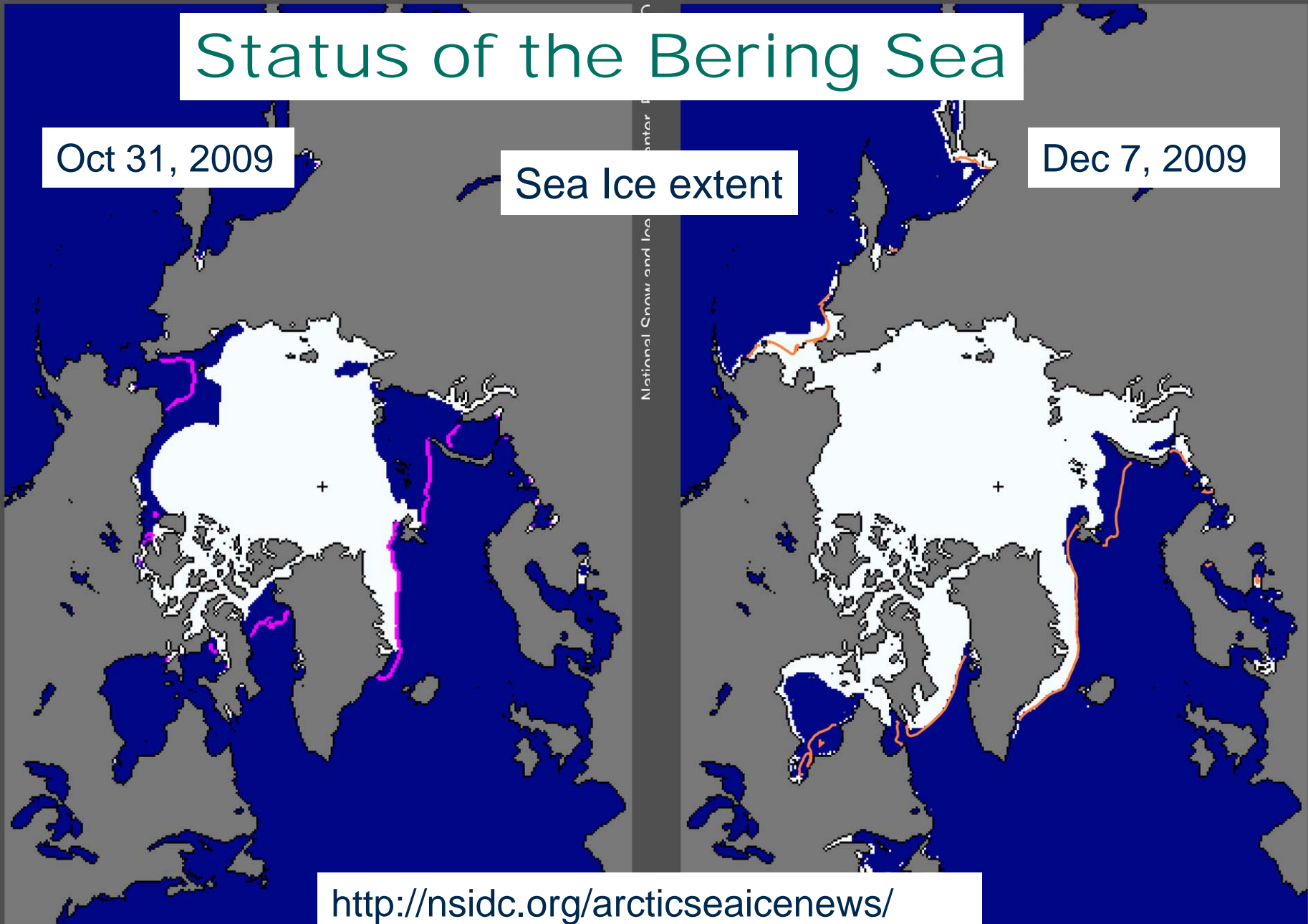
Cold pool (< 2°C) indicated by dashed black line

# Status of the Bering Sea

Oct 31, 2009

Sea Ice extent

Dec 7, 2009

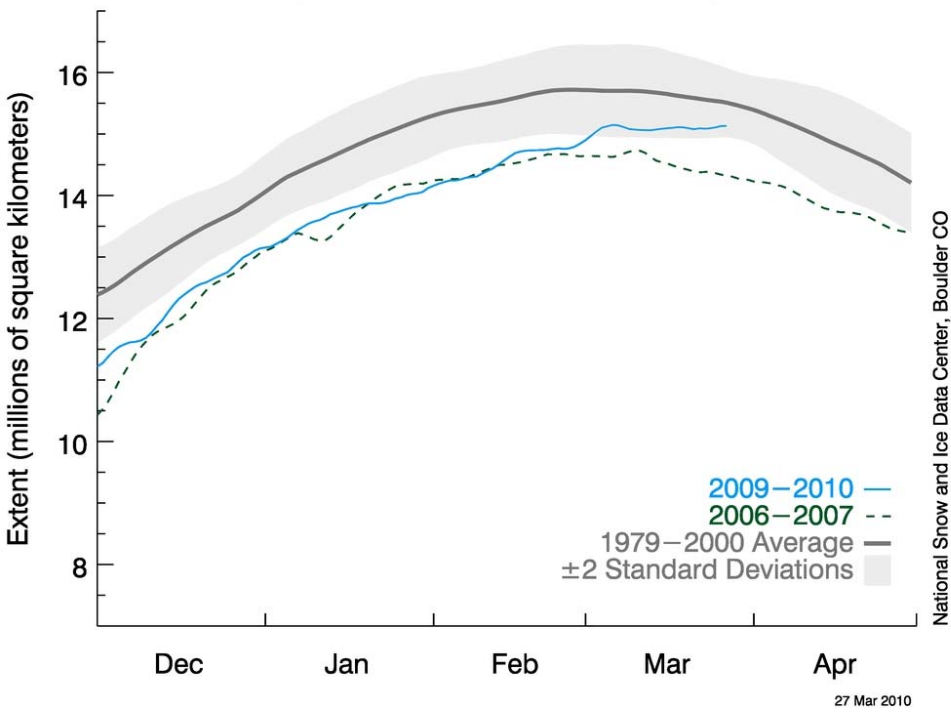


<http://nsidc.org/arcticseaicenews/>

Total extent = 7.5 million sq km

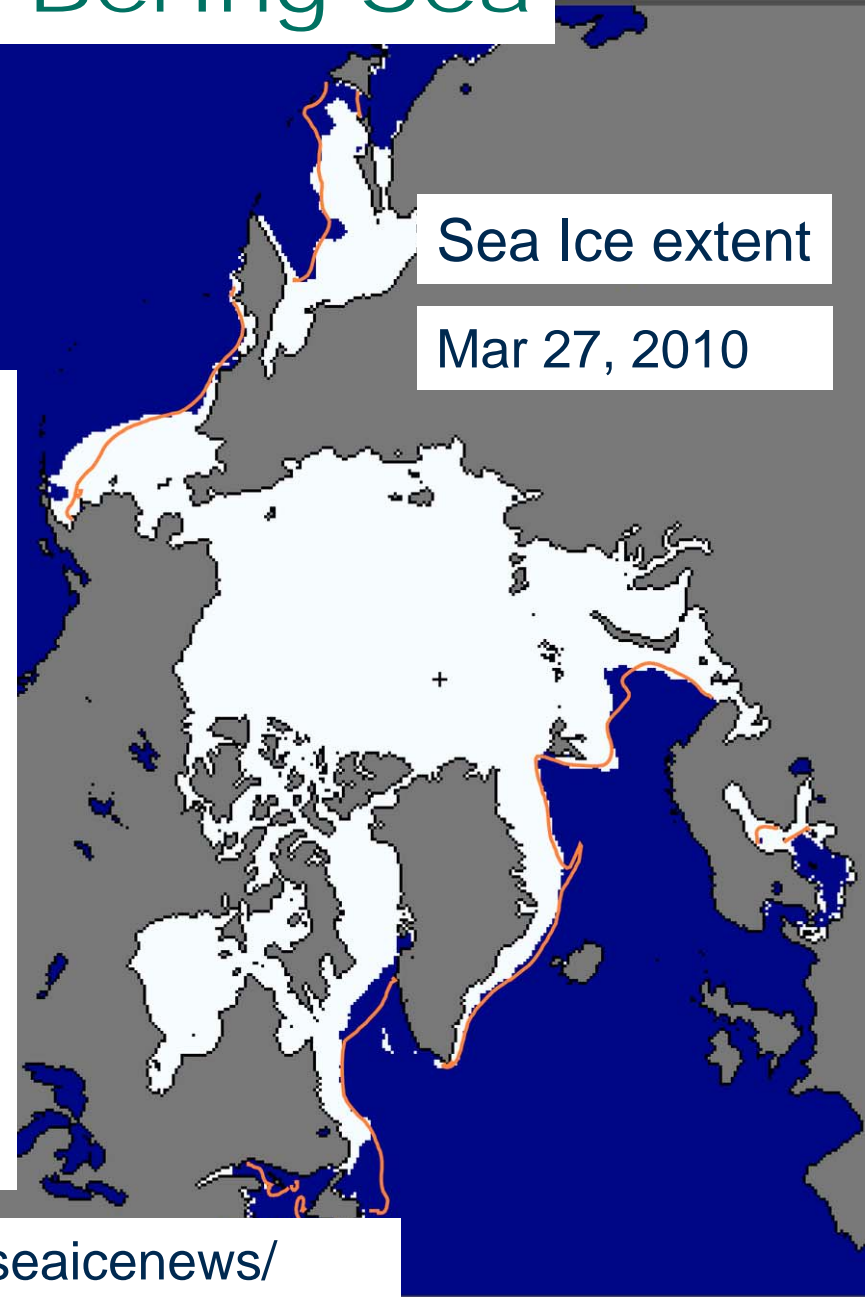


Arctic Sea Ice Extent  
(Area of ocean with at least 15% sea ice)



Sea Ice extent

Mar 27, 2010

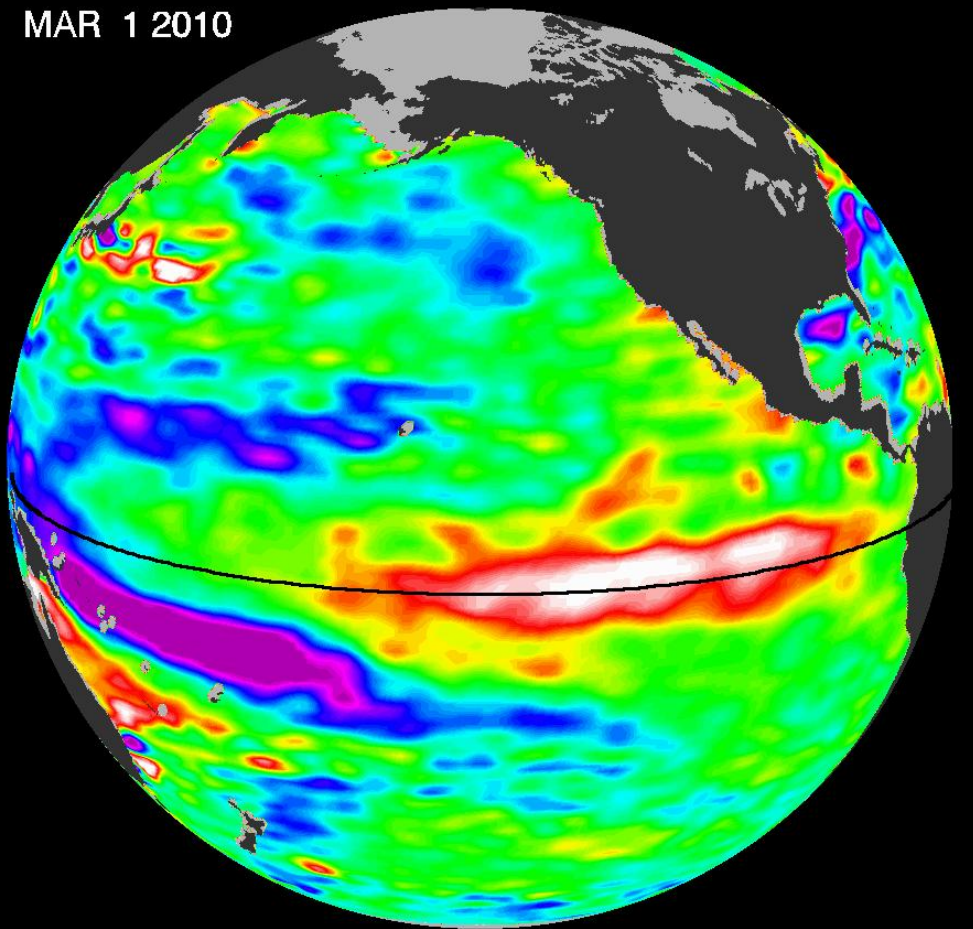


<http://nsidc.org/arcticseaicenews/>



# Status of the Bering Sea

MAR 1 2010



*El Nino conditions  
developed in the  
summer of 2009*

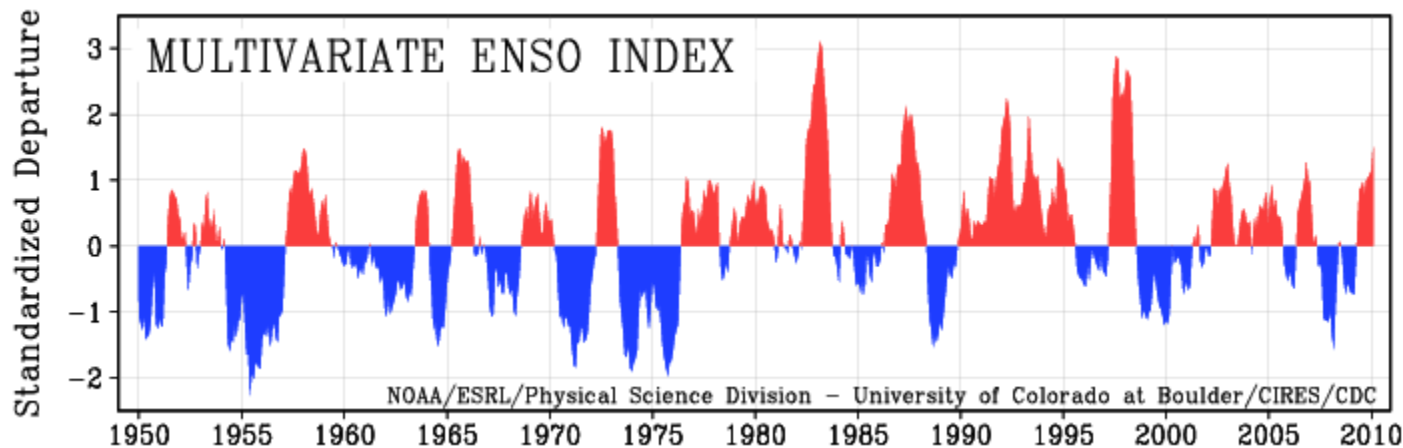
Jason-2 Sea level residuals

<http://sealevel.jpl.nasa.gov/science/jason1-quick-look/>

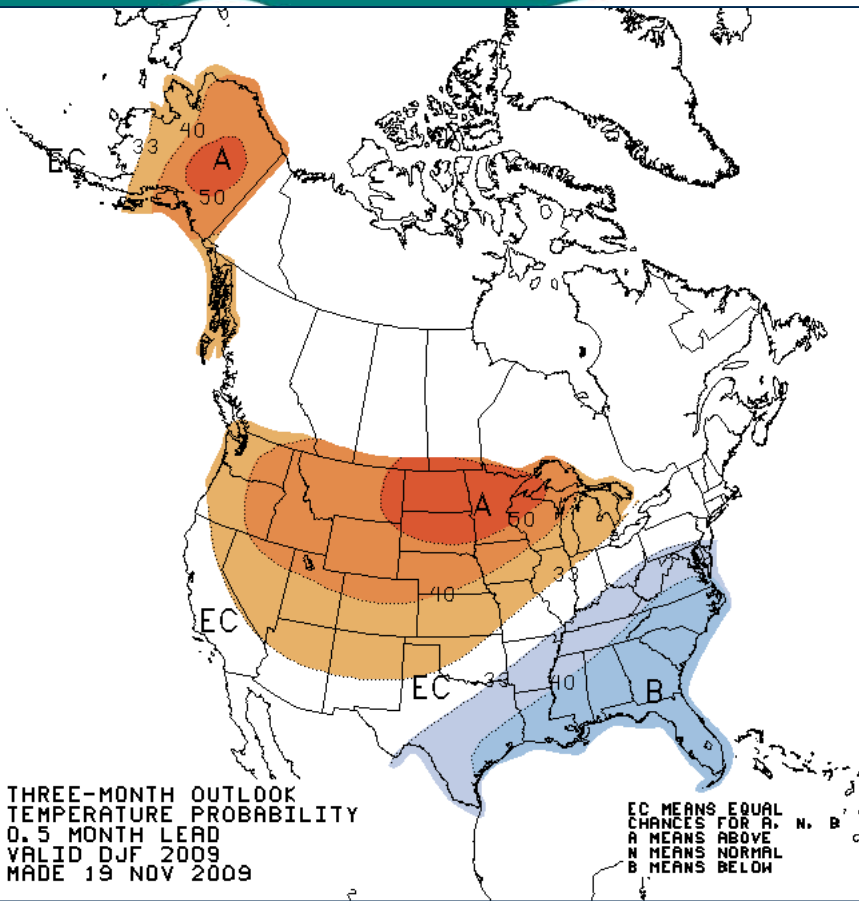


## Status of the Bering Sea

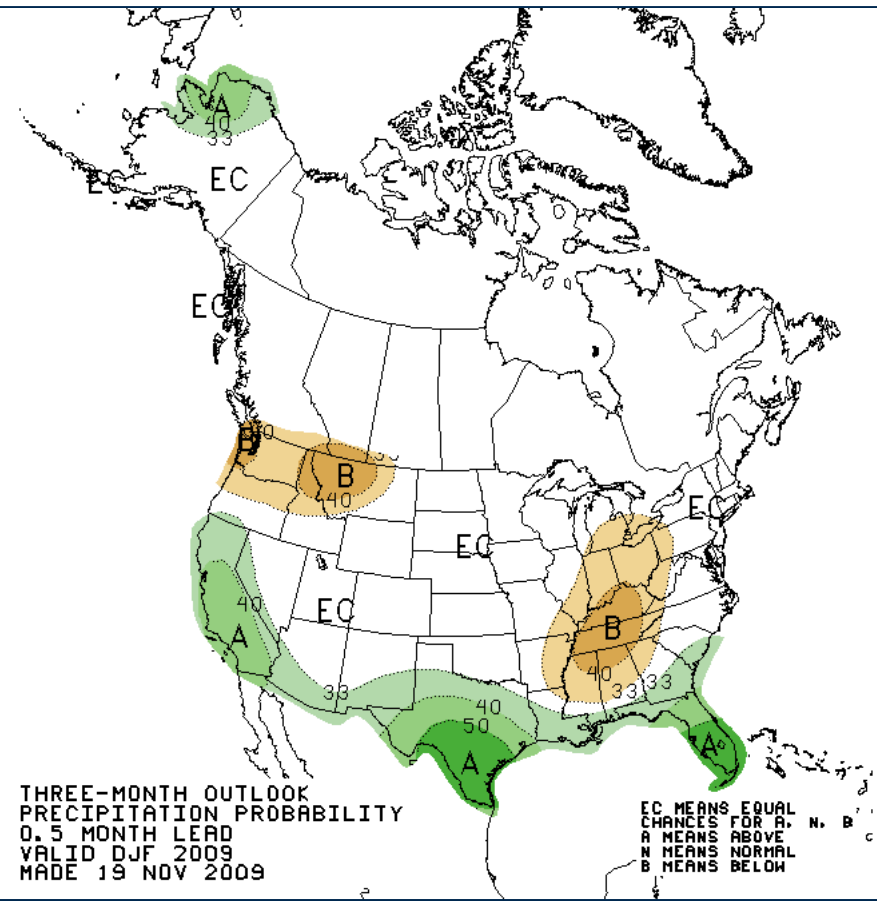
- *A moderate-to-strong El Niño continued during February 2010 - but predicting when El Niño will dissipate and what may follow remains highly uncertain.*



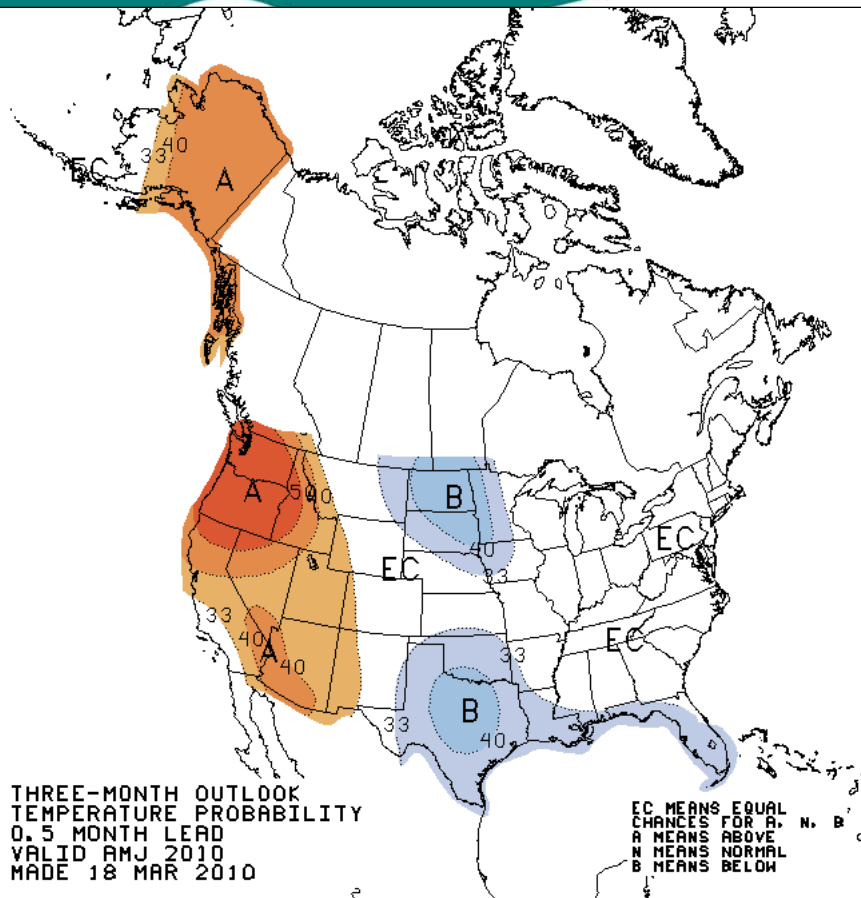
[http://www.esrl.noaa.gov/psd/enso/enso.mei\\_index.html](http://www.esrl.noaa.gov/psd/enso/enso.mei_index.html)



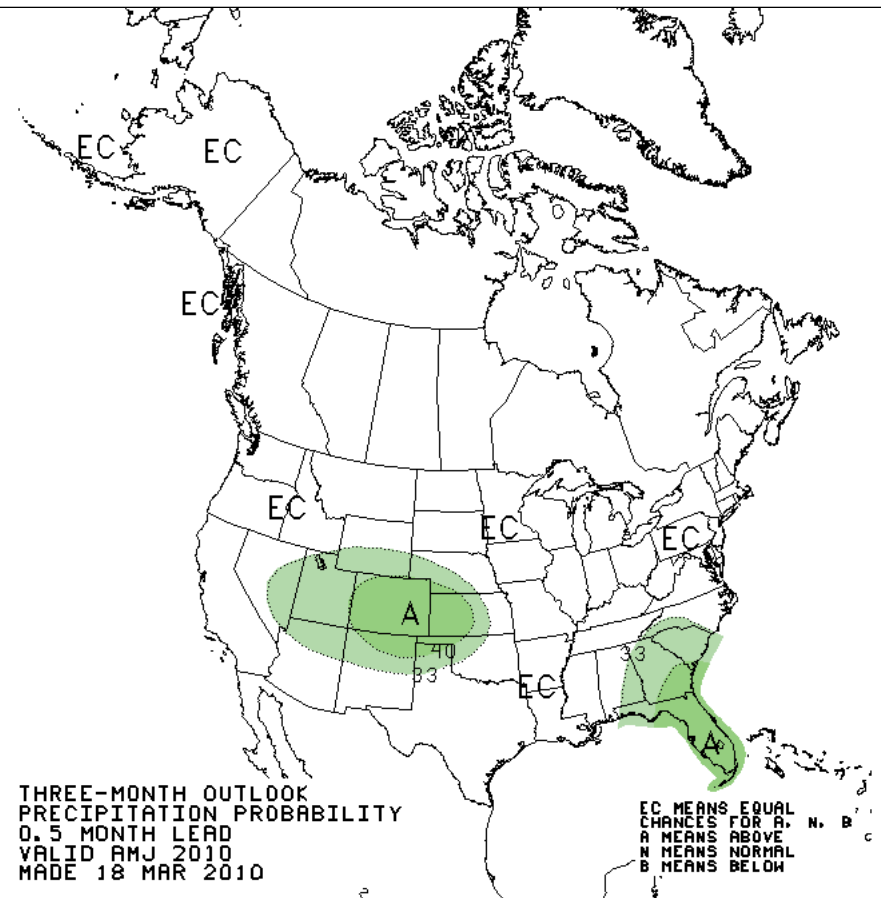
Temperature



Precipitation



Temperature



Precipitation



<http://www.arctic.noaa.gov/future/>

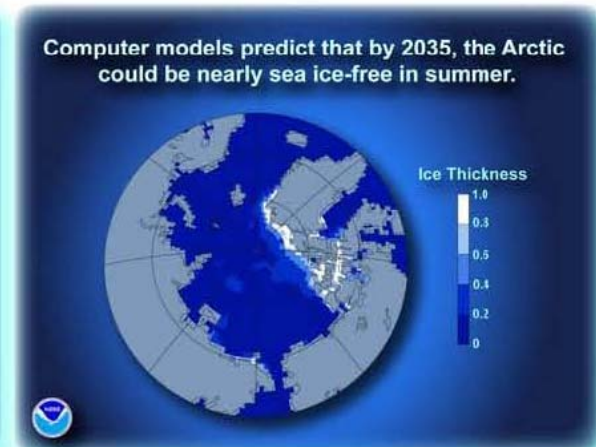
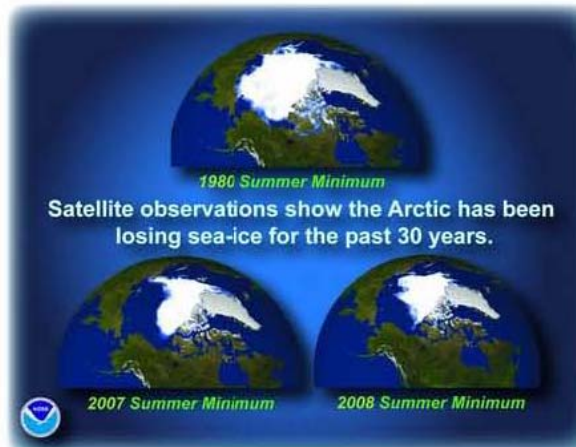
New NOAA  
website

National Oceanic and Atmospheric Administration

Home Sea Ice Heat Impacts

## ➤ Future of Arctic Sea Ice and Global Impacts

The Arctic is losing sea ice, impacting climate & weather farther South



Tell me more.... [Will the Arctic be free of summer ice in 30 years?](#)

### References

<sup>1</sup> Wang, M., and J.E. Overland (2009): A sea ice free summer Arctic within 30 years? *Geophys. Res. Lett.*, 36, L07502, doi: 10.1029/2009GL037820.

<sup>2</sup> Overland, J.E., and M. Wang (2012): Large-scale atmospheric circulation changes associated with the recent loss of Arctic sea ice. *Tricks, CS&A*, 4, 8.