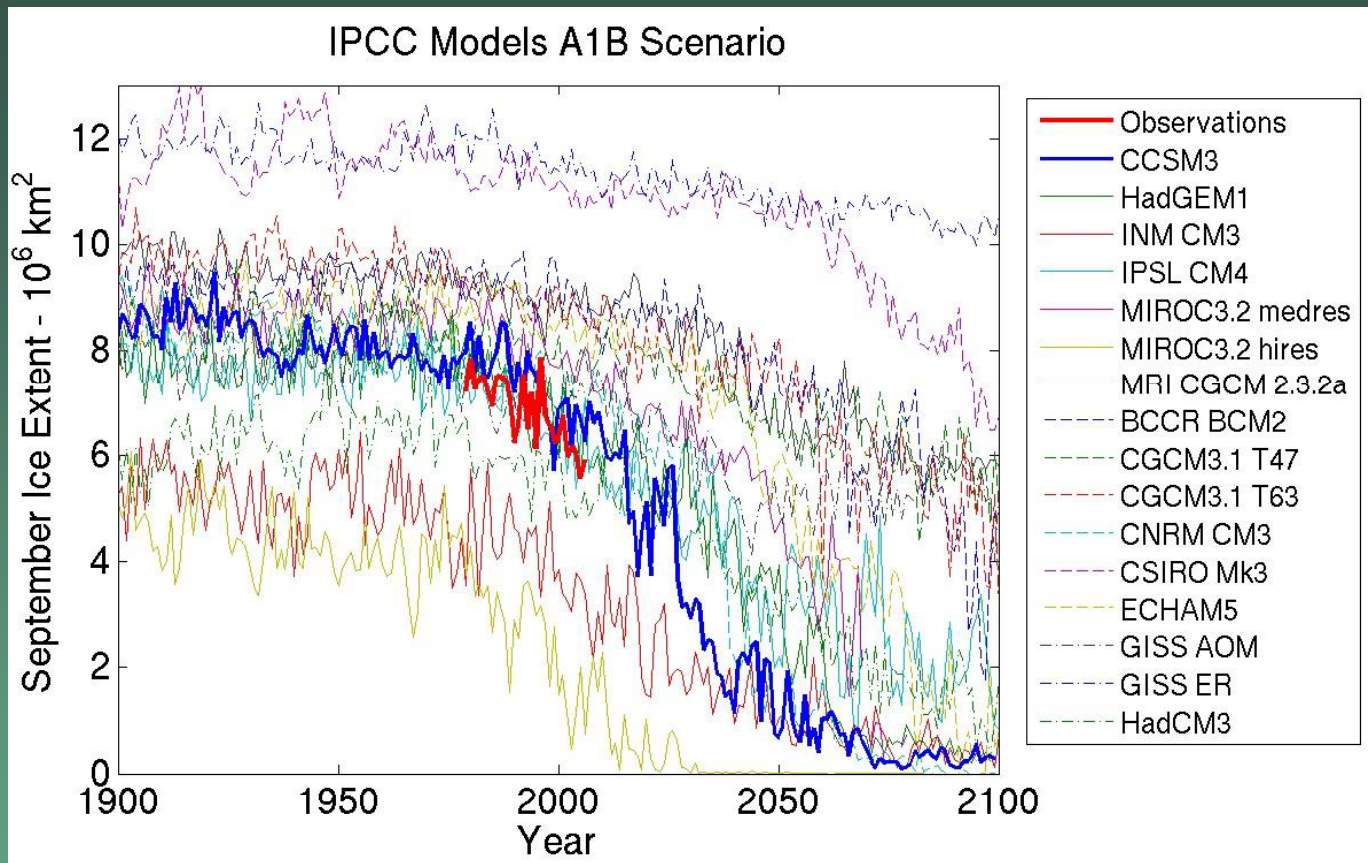
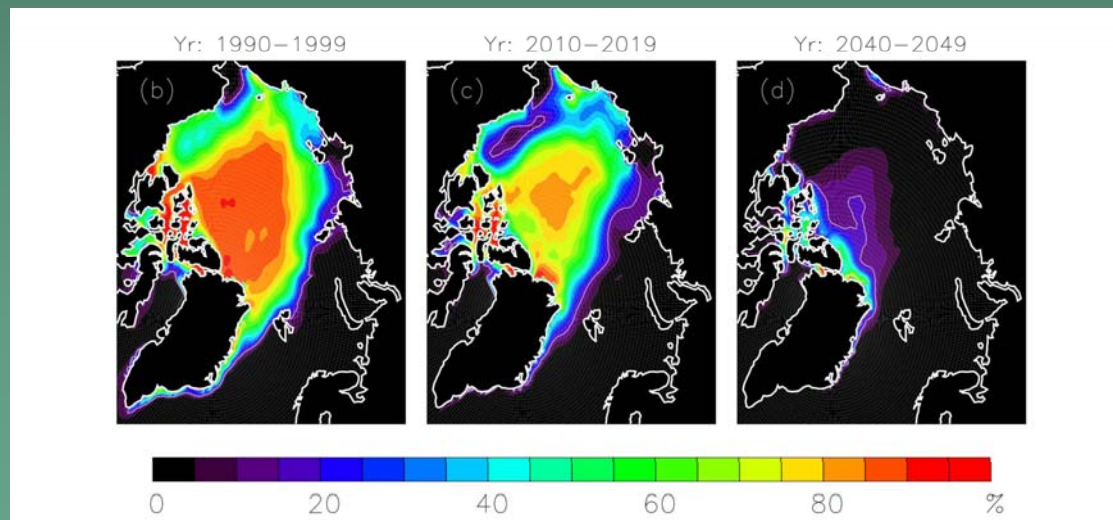
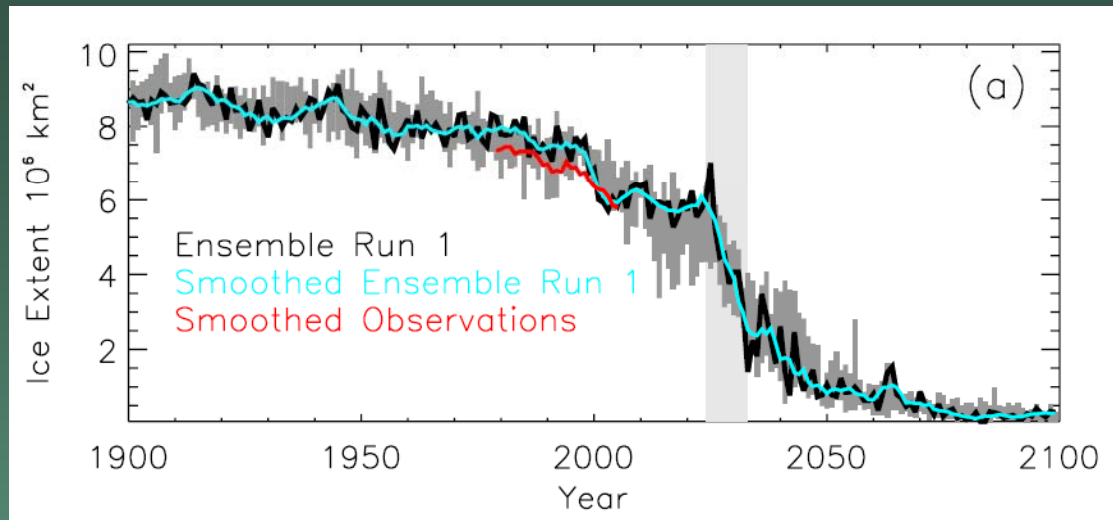


GLOBAL MODEL PREDICTIONS



Source: Intergovernmental Panel on Climate Change (IPCC)

GLOBAL MODEL PREDICTIONS



Holland et al., 2006, Geophys. Res. Lett.

Pacific Walrus

(Odobenus rosmarus divergens)

Chad Jay

Tony Fischbach

Alaska Science Center



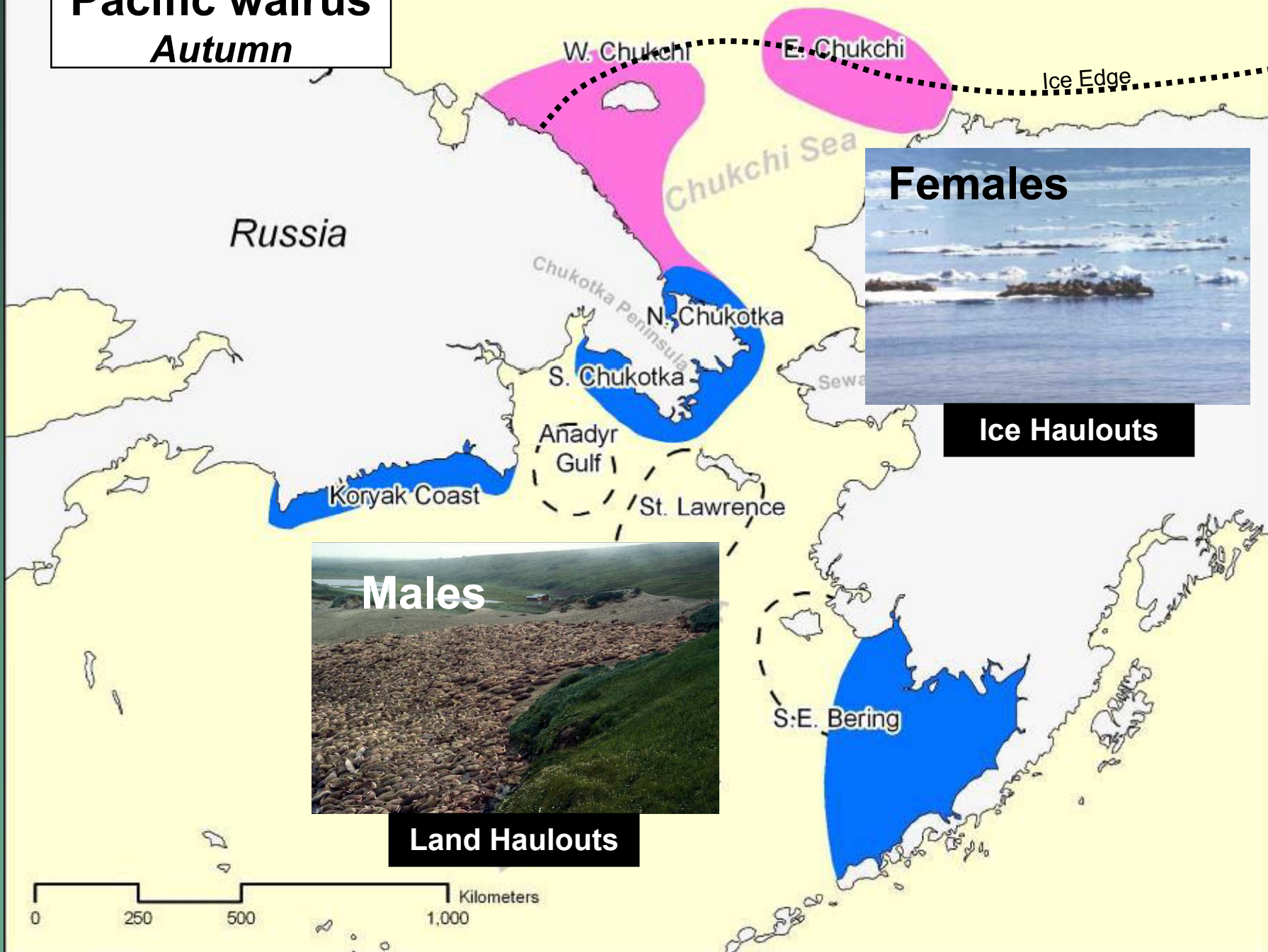
Pacific walrus

Winter



Pacific walrus

Autumn



Females



Ice Haulouts

Males



Land Haulouts

Primary goal of walrus research

To better understand:

- Distribution
- Movement patterns
- Habitats



Design of radio transmitters



Jay, C.V., and G.W. Garner. 2002. Performance of a satellite-linked GPS on Pacific walrus (*Odobenus rosmarus divergens*). *Polar Biology* 25:235-237.

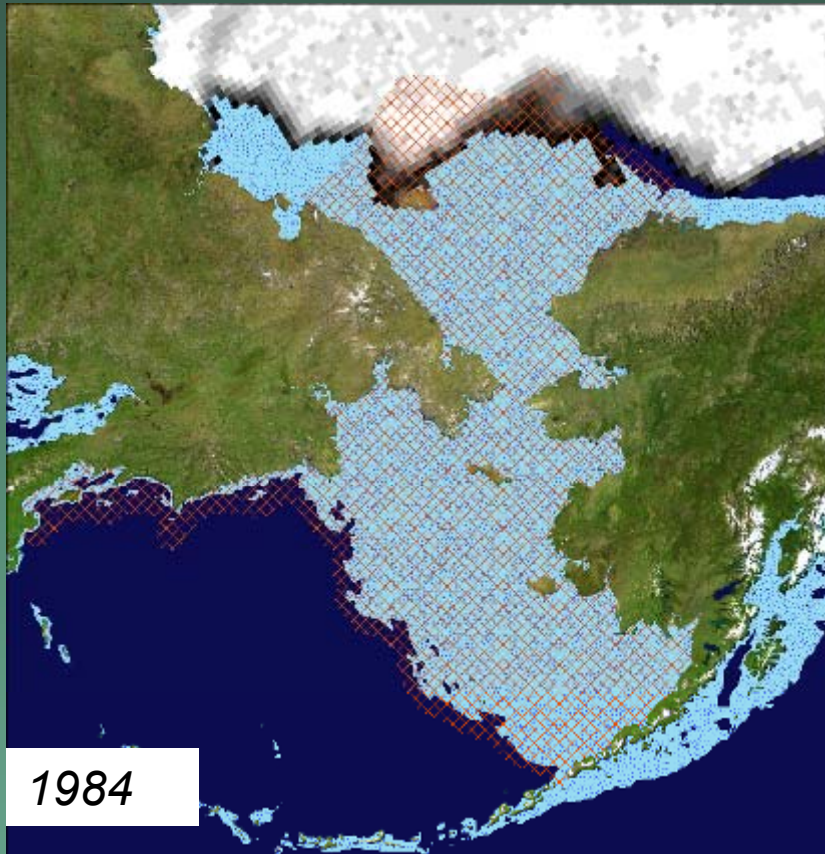
Captures are time consuming and difficult



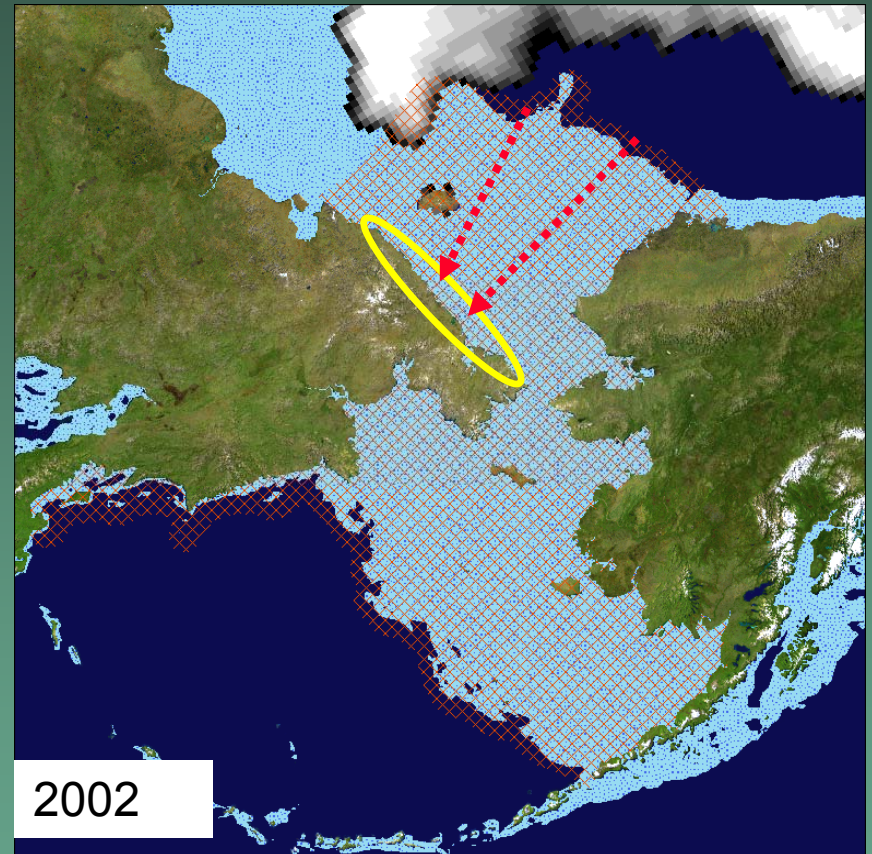
Mulcahy, D.M., P.A. Tuomi, G.W. Garner, and C.V. Jay. 2003. Immobilization of free-ranging male Pacific walrus (*Odobenus rosmarus divergens*) with carfentanil citrate and naltrexone hydrochloride *Marine Mammal Science* 19(4):846-850.

Climate Warming

Average Extent



Warming



Females with calves on beaches



Future Research

- Impacts of depleting ice on walrus behavior
- Linking behavior to population responses



Polar bears: State of knowledge and Climate Change Challenges



**Steven C.
Amstrup**

George Durner

Geoff York

Eric Regehr

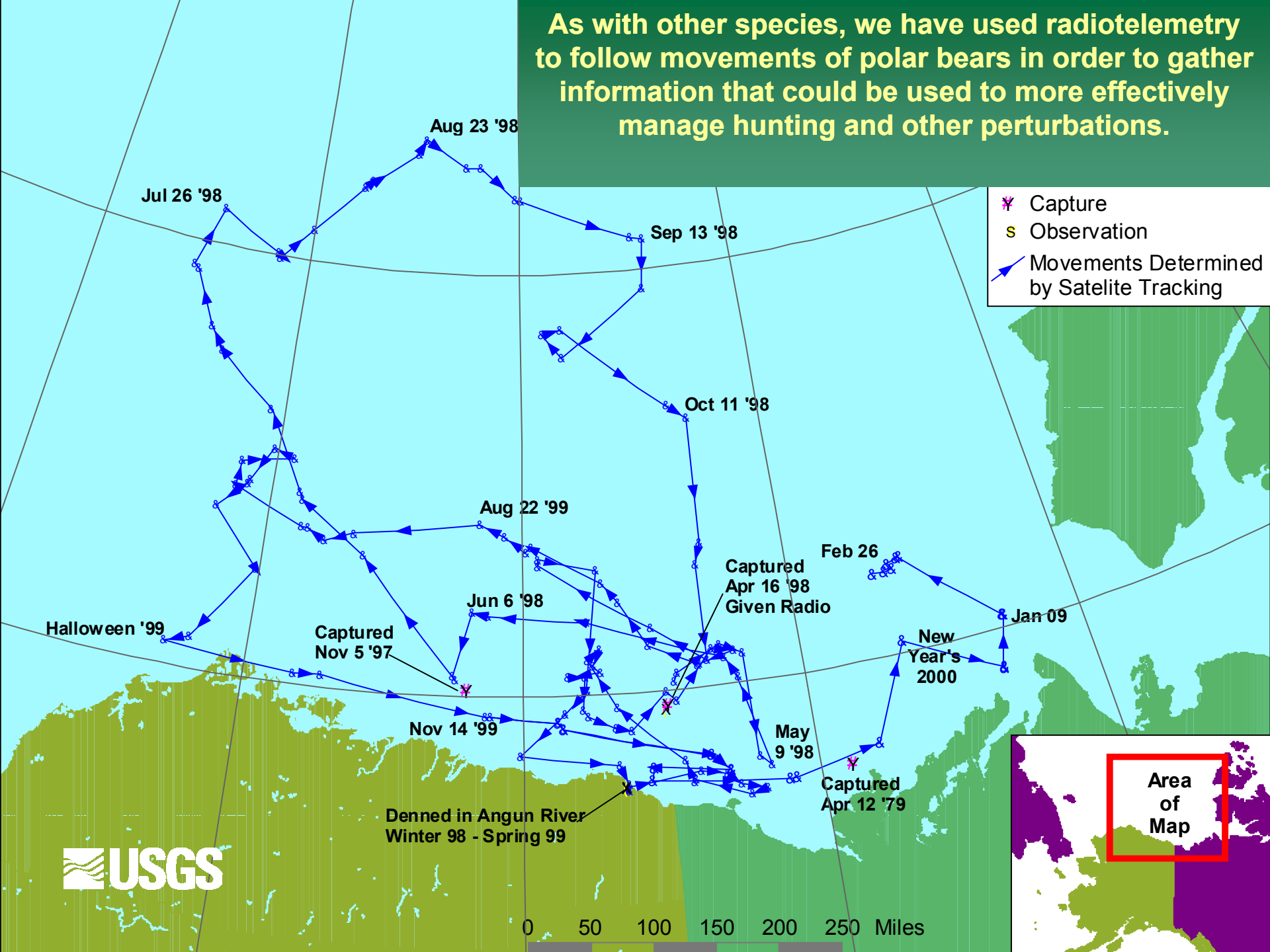
Kristin Simac

David Douglas

Radiotelemetry has allowed us to see the extreme mobility of polar bears



As with other species, we have used radiotelemetry to follow movements of polar bears in order to gather information that could be used to more effectively manage hunting and other perturbations.



- Y Capture
- s Observation
- ➔ Movements Determined by Satellite Tracking



0 50 100 150 200 250 Miles

Area of Map

To see what changing ice means to bears let's first look at the southern most areas they occupy

