Endangering the polar bear: How "environmentalists" kill

Willie Soon (vanlien@earthlink.net)

Adapted from ppt by Francois Messier (2006)

Al Gore, p. 147 of AIT:

"The melting of the ice represents bad news for creatures like polar bears. A new scientific study shows that, for the first time, polar bears have been drowning in significant numbers. Such deaths have been rare in the past. But now, these bears find they have to swim much longer distances from floe to floe. In some places, the edge of the ice is 30 to 40 miles from the shore."

Fact: 4 polar bears found dead during aerial surveys in September 2004

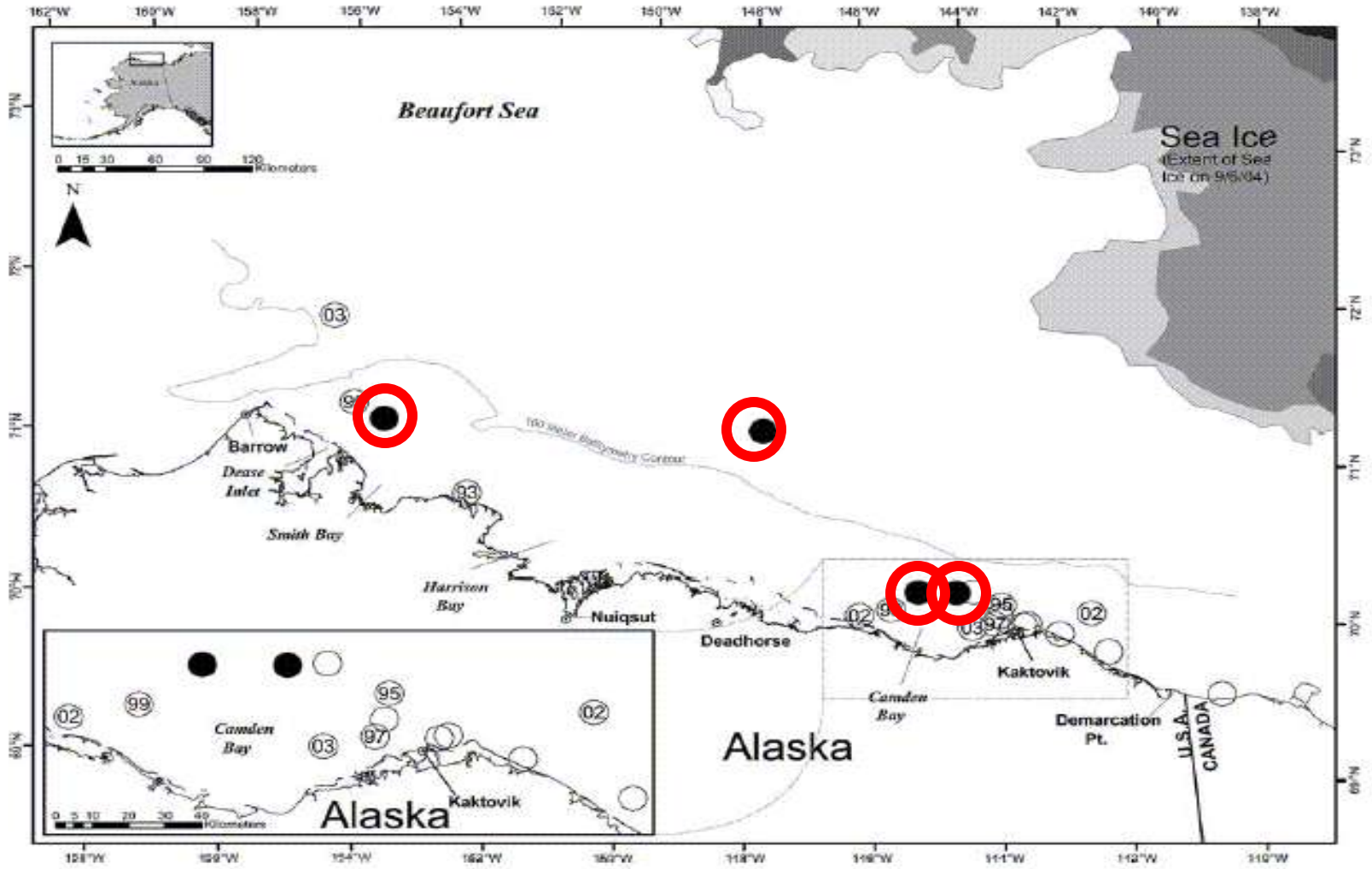
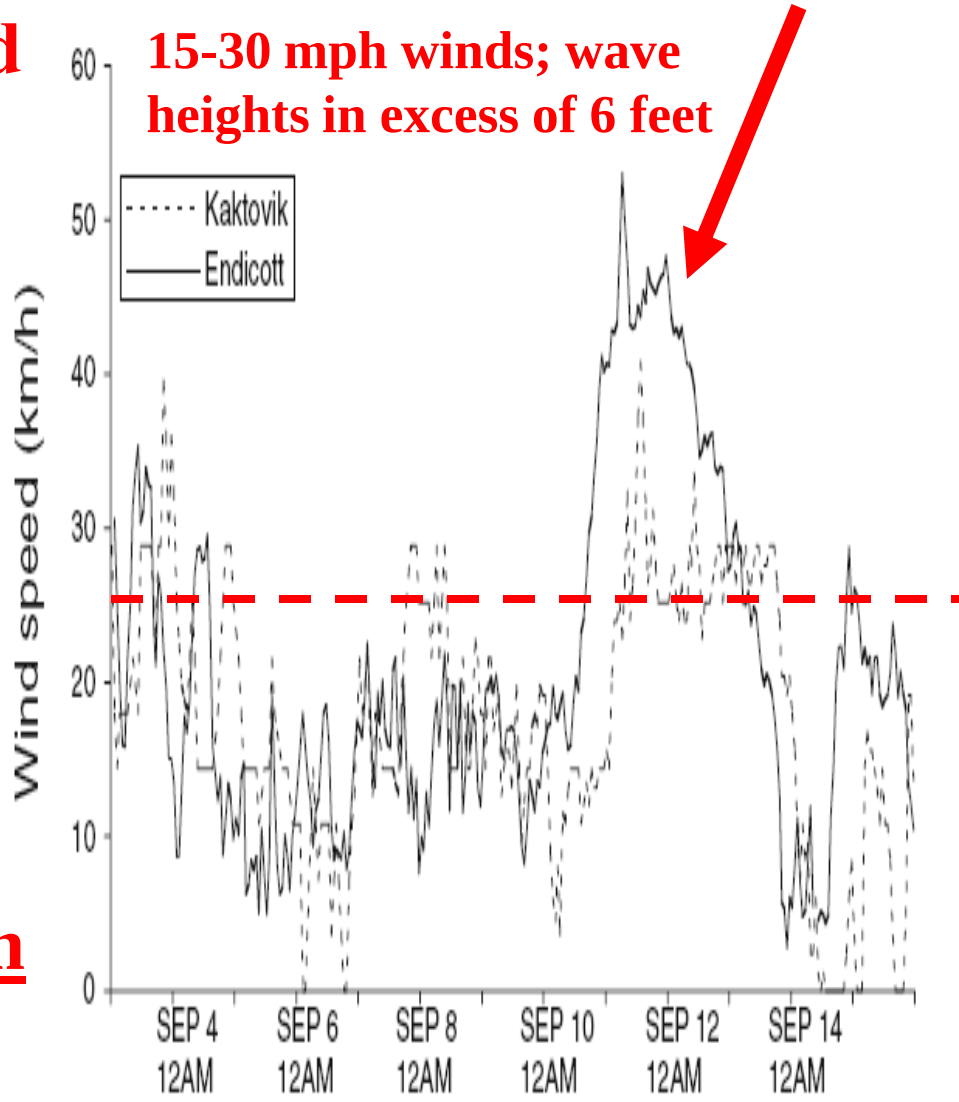


Fig. 1 Distribution of polar bears (*Ursus maritimus*) observed during fall annual bowhead whale (*Balaena mysticetus*) aerial surveys in the Beaufort Sea, 1987–2004. *Open circles* represent live bears that were observed swimming. *Closed circles* represent dead bears observed in 2004. Numbers within *open circles* indicate year in which the observation occurred. *Circles* without numbers represent observations in 2004

Monnett and Gleason (2006)

More facts: Those polar bears died because of extremely rough sea conditions from high wind

"We believe that the increased risk of swimming in open water is not likely to result simply from long-distance swimming as polar bears are considered strong swimmers (Oritsland 1969; Burns et al. 1981). High mortality in 2004 was more likely related to extreme and metabolically demanding conditions, as high sea states associated with stormy weather."



Monnett and Gleason (2006)

Limited, but factual, data from Beaufort Sea shelf do not suggest any alarming trends in worsening sea-ice conditions: A hint of increased ice concentration instead!

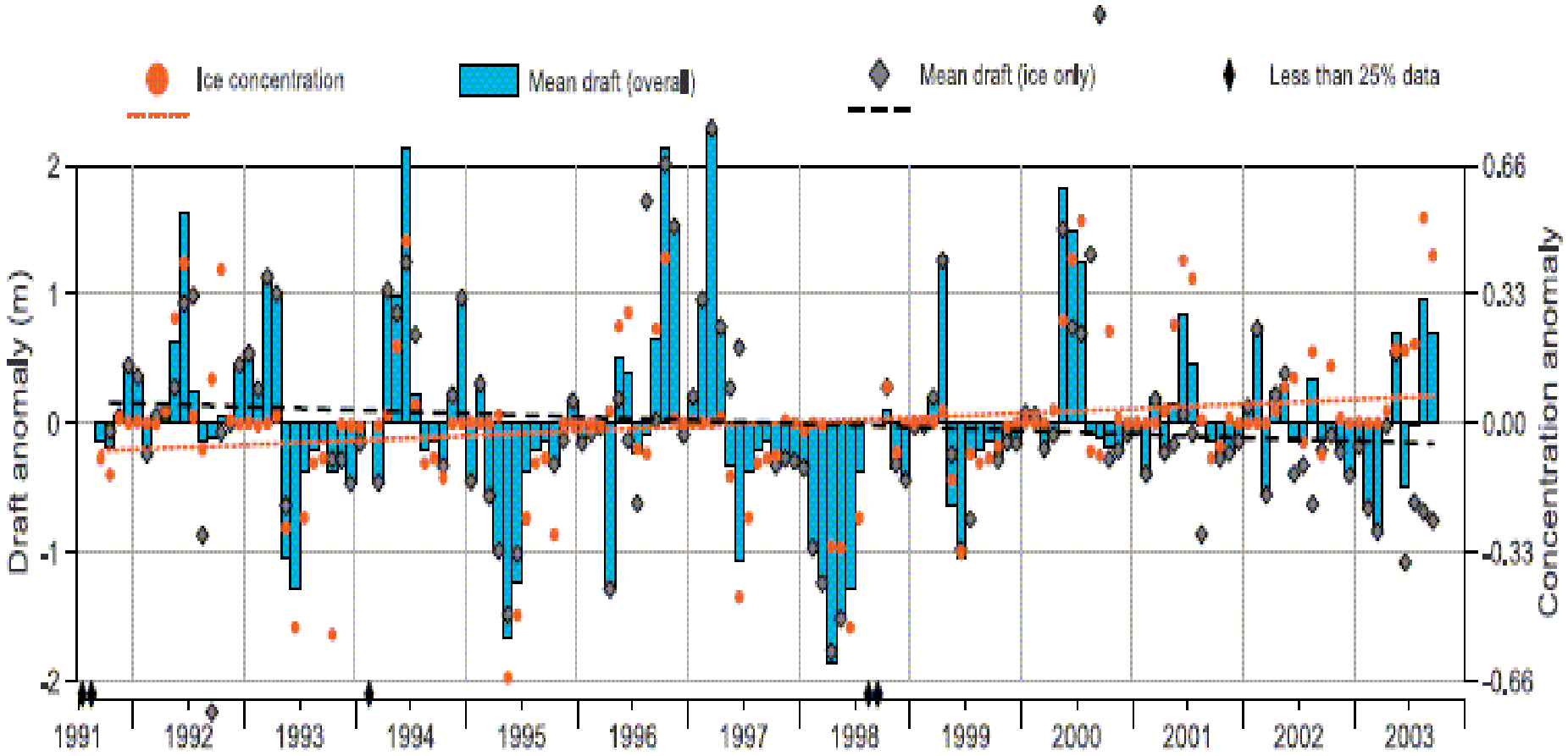
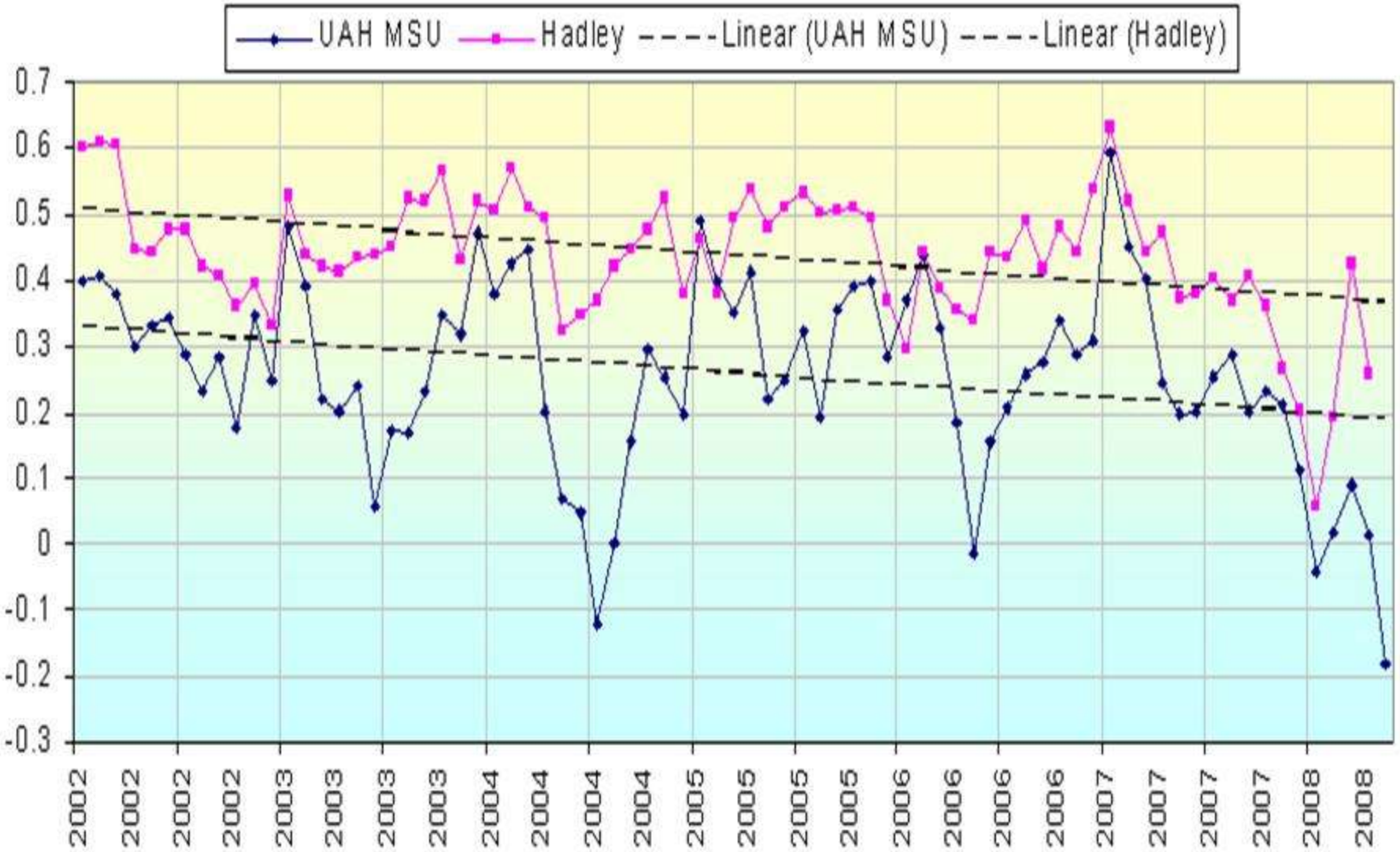


Figure 4. Anomalies in the monthly mean concentration and draft of pack ice at Site 1 on the Beaufort Sea shelf, 1991–2003. Trend lines are shown for concentration and ice-only draft.

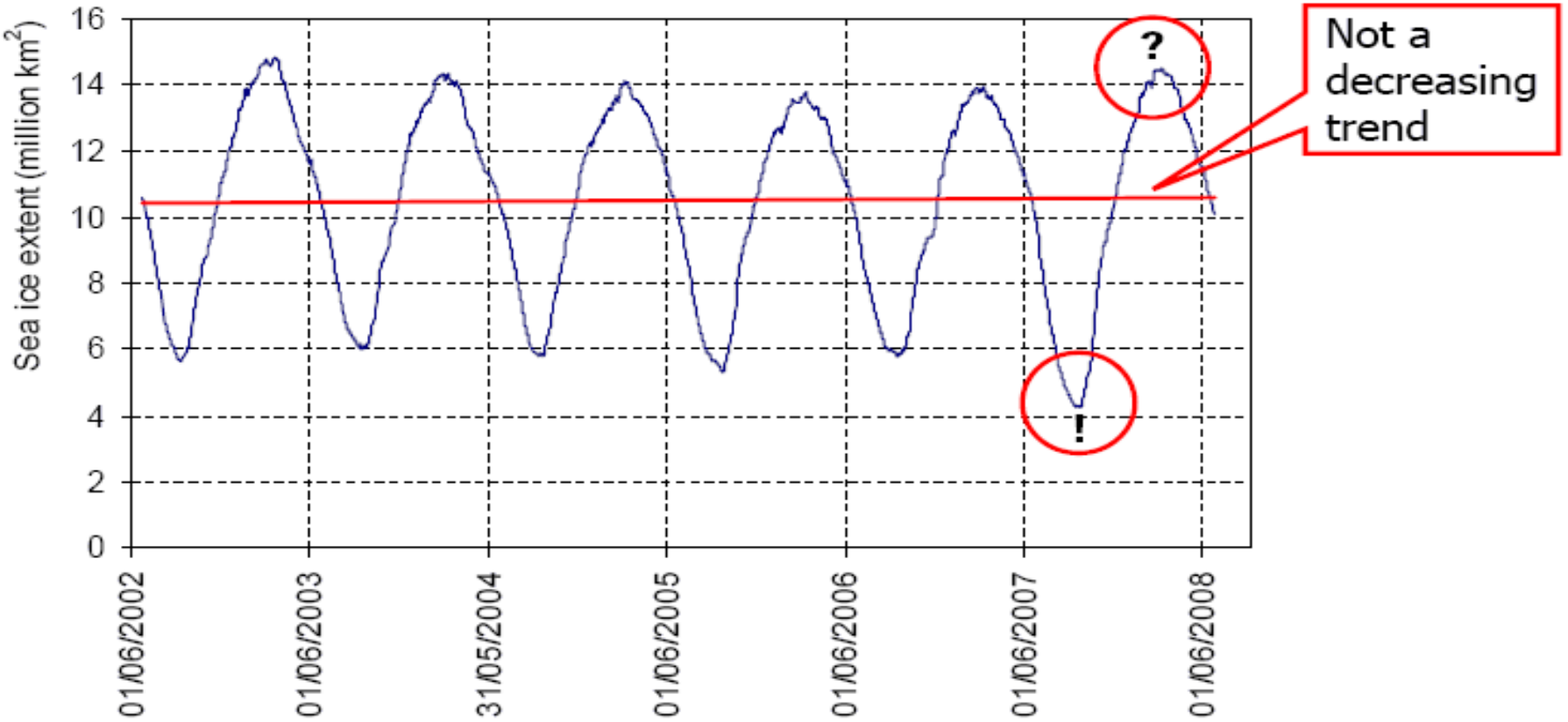
Melling et al. (2005)

Where is the global warming in the 21st century?



Where is the great Arctic melting in the 21st century?

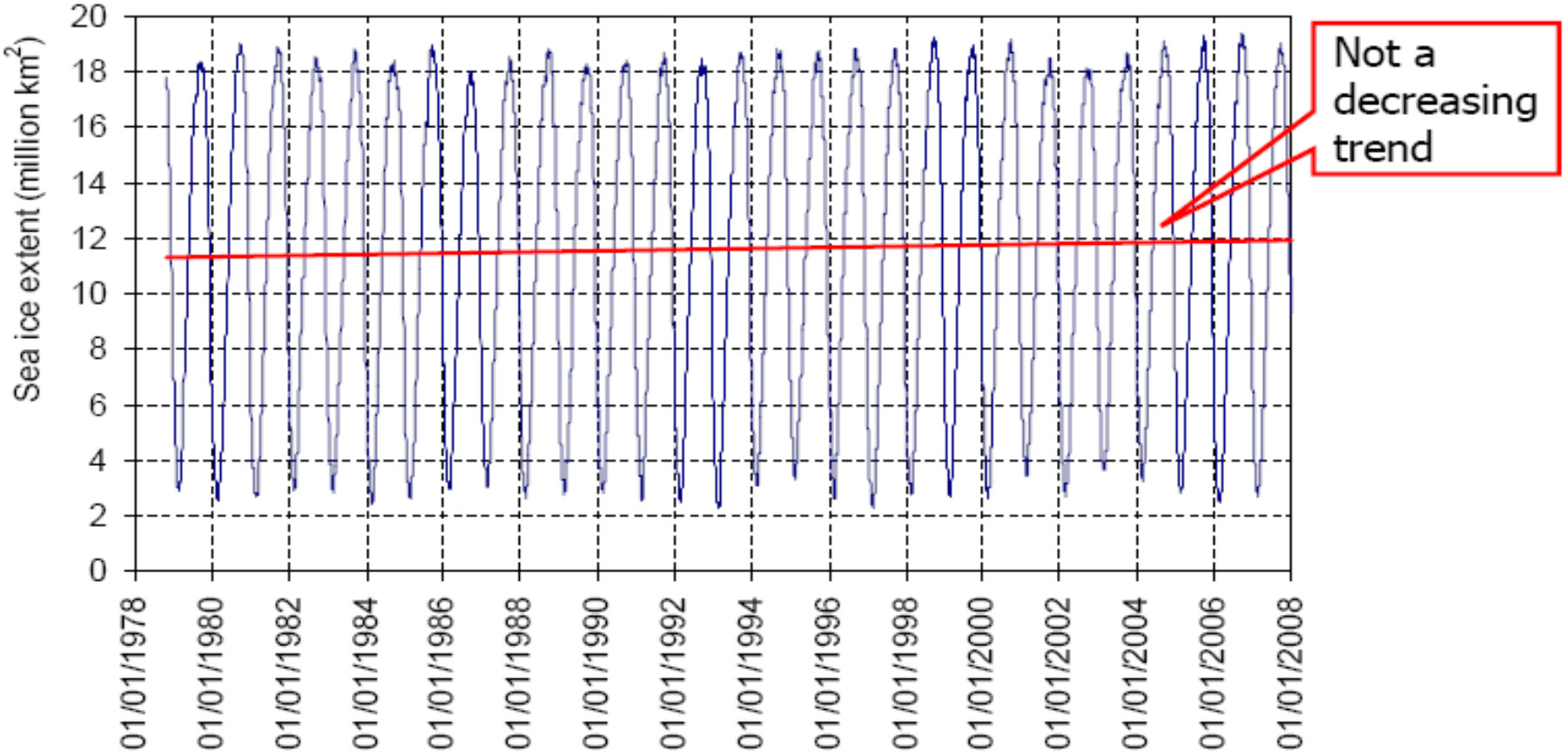
Data: Satellite-derived sea ice extent in the Arctic Ocean



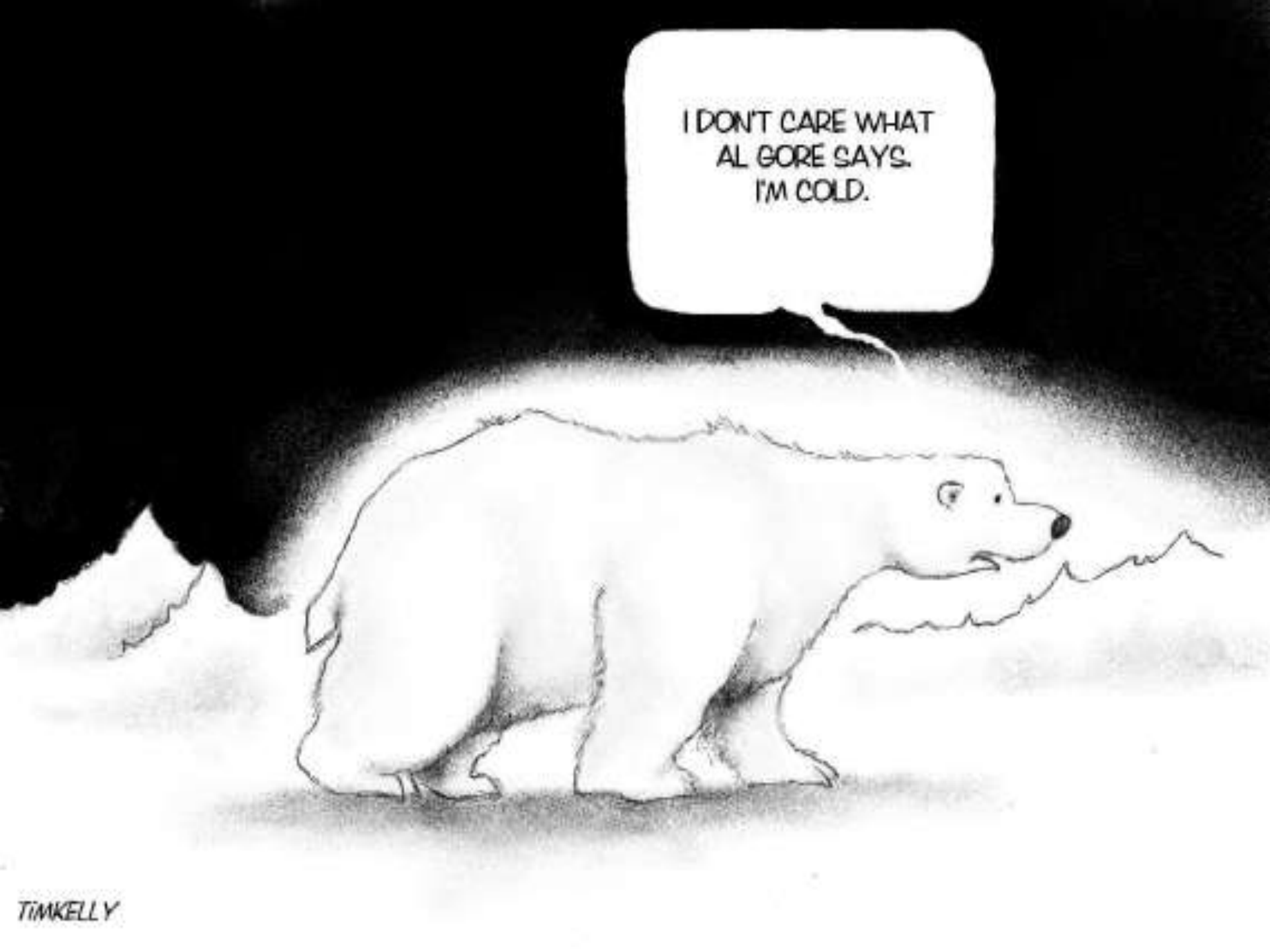
Data from the FIARC-JAXA Information System (IJIS) of the International Arctic Research Center in corporation with the Japan Aerospace Exploration Agency and the Advanced Earth Science and Technology Organization of Japan [http://www.ijis.iarc.uaf.edu/en/home/seaice_extent.htm]

Where is the great Antarctic melting from increasing CO_2?

Data: Satellite-derived sea ice extent in Antarctica



Data from the US National Snow and Ice Data Center
[nsidc.org/data/smmr_ssmi_ancillary/area_extent.html; sidads.colorado.edu/DATASETS/seaice/polar-stereo/trends-climatologies/ice-extent/nasateam/gsfc.nasateam.daily.extent.1978-2007.s]


I DON'T CARE WHAT AL GORE SAYS. I'M COLD.
TIMKELLY

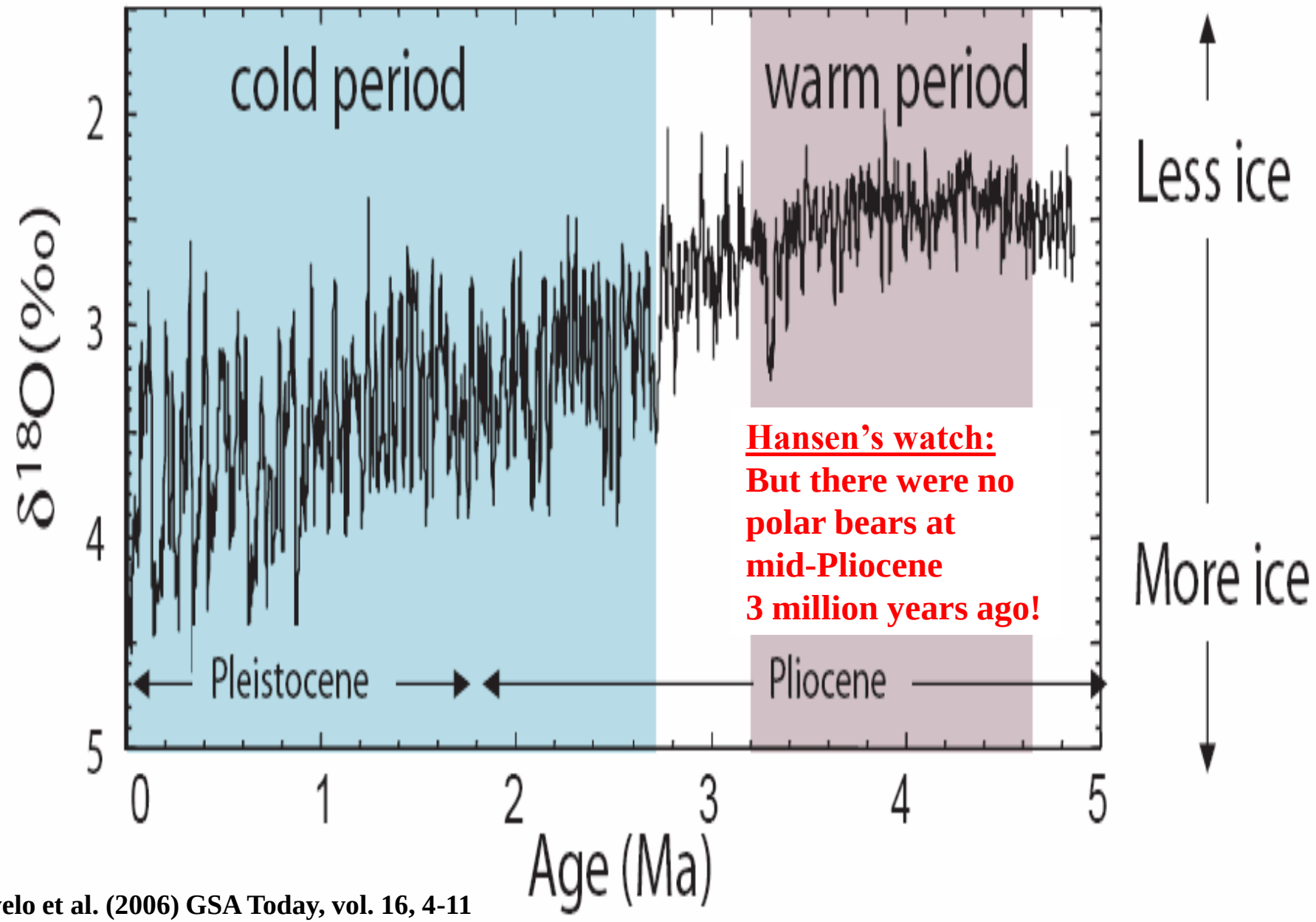
Hansen on polar bears and species extinction

"Three million years ago (middle Pliocene), the sea level was at least 25 meters [about 80 feet] (*sic*.) higher, and there was no sea ice in the Arctic. Polar bears and seals and other wildlife there that depend on the ice would be ("would be": a Freudian slip?) pushed off the planet."

(in an interview with a New Jersey newspaper published March 19, 2006, coinciding with his appearance in CBS's 60 Minutes with Scott Pelley)

One factual problem: Polar bears, as a pagophilic (i.e., ice-loving) species, are widely recognized to evolve from brown bears only about 200,000-250,000 years ago, so a fairly recent species

Smaller Variability During Warm Pliocene When Compared with Cooler Pleistocene Periods?



Ravelo et al. (2006) GSA Today, vol. 16, 4-11

Botkin et al. (2007):"Current Projections of Extinction Rates are Overestimates"

"Current forecasting methods suggest that global warming will cause many extinctions, but the fossil record indicates that, in most regions, surprisingly few species went extinct during the Quaternary (from approximately 2.5 million years BCE to present)—in North America, for example, only one tree species is known to have gone extinct ... [R]ecent information from both Greenland and Antarctica ... indicates that there have been many intervals of very rapid temperature change ... Some of the most dramatic changes (e.g., 7ºC to 12ºC within approximately 50 years) are actually of greater amplitude than anything projected for the immediate future."

What if you have too much ice?

Decreased ringed seals and polar bear natality!

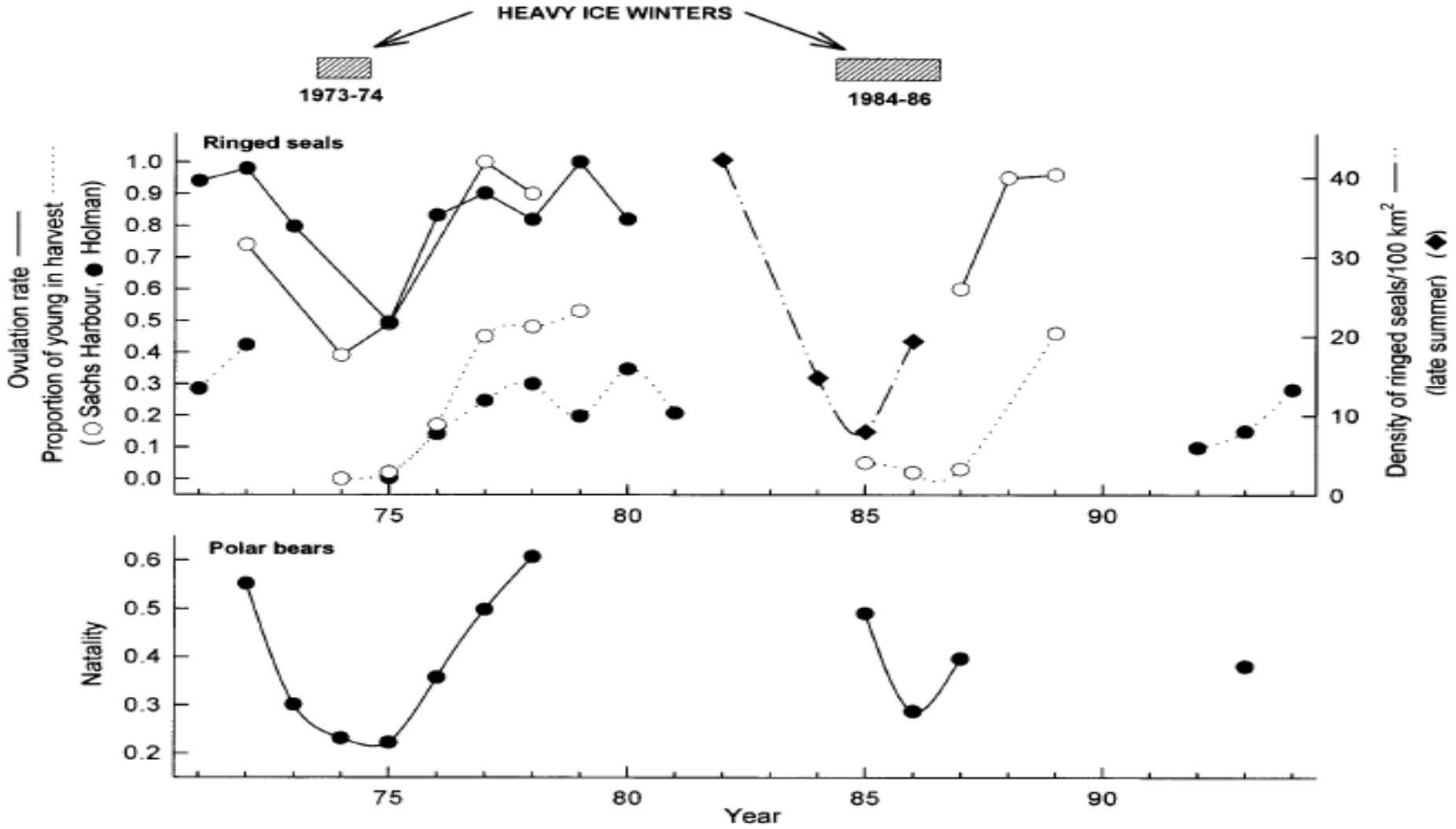


FIG. 5. Changes in indices of productivity of ringed seals and polar bears in relation to winters of particularly heavy ice in the eastern Beaufort Sea from 1971 through 1994. (Data on seals, polar bears, and ice conditions taken from Stirling and Archibald, 1977; Smith and Stirling, 1978; Stirling et al., 1982; Smith, 1987; Kingsley and Byers, 1998; Harwood and Stirling, 1992; Melling, 1996; Stirling and Lunn, 1997; Harwood et al., 2000.)

Stirling (2002) Arctic, vol. 55 (suppl. 1) 59-76

What if you have too much ice?

Decreased ringed seals and polar bear natality!

"In the eastern Beaufort Sea, **in years during and following heavy ice conditions in spring, we found a marked reduction in production of ringed seal pups and consequently in the natality of polar bears** ... The effect appeared to last for about three years, after which productivity of both seals and bears increased again. **These clear and major reductions in productivity of ringed seals in relation to ice conditions occurred at decadal-scale intervals in the mid-1970s and 1980s ... and, on the basis of less complete data, probably in the mid-1960s as well ...** Recent analyses of ice anomalies in the Beaufort Sea have now also confirmed the existence of an approximately 10-year cycle in the region ... that is roughly in phase with a similar decadal-scale oscillation in the runoff from the Mackenzie River" (p. 68)

Stirling (2002) Arctic, vol. 55 (suppl. 1) 59-76


WATCH
FOR
ICE

Sediment core location

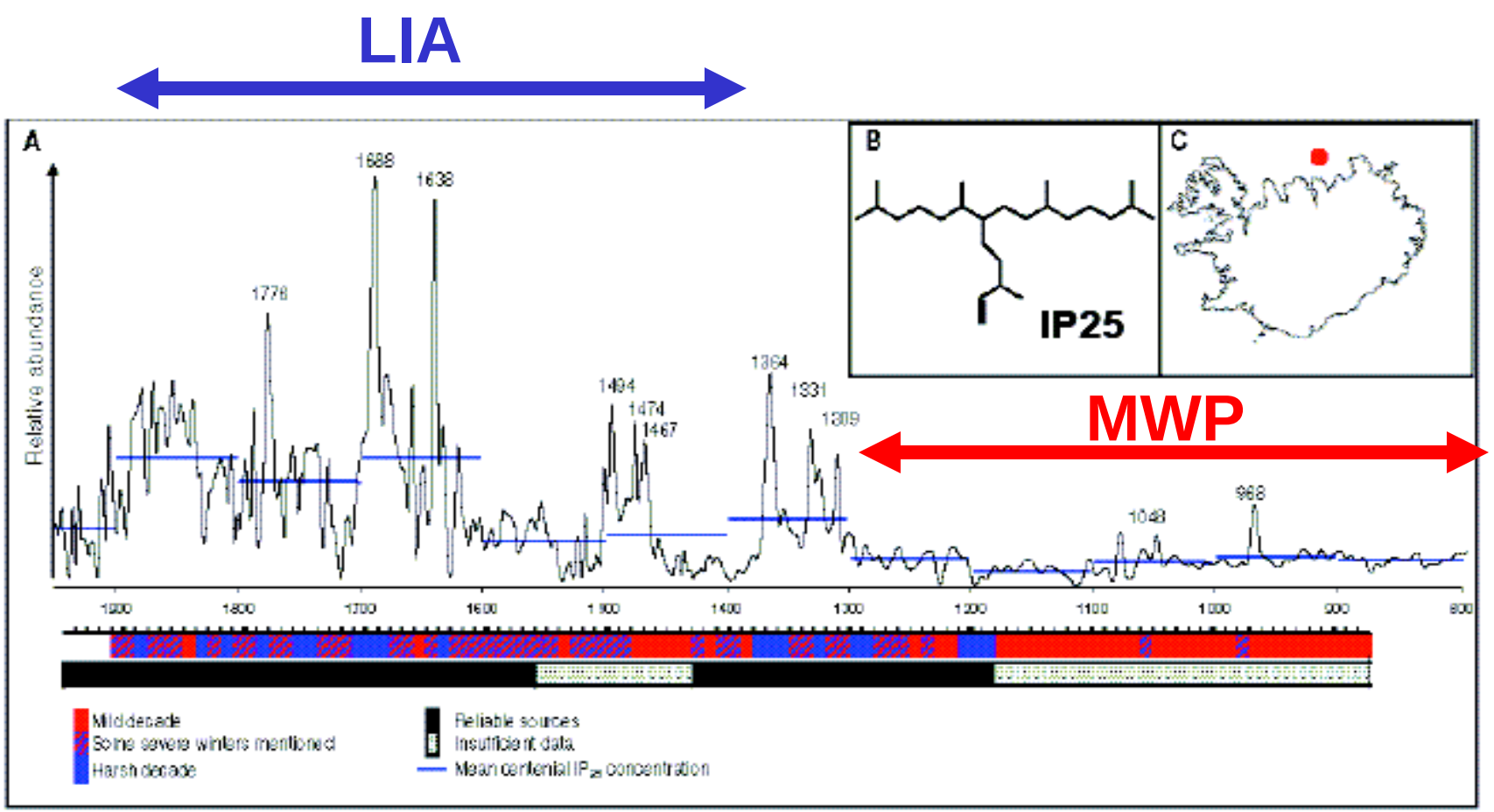
ICELAND

E. *Huxleyi*: alkenone producer

How well did the polar bears do during MWP and LIA?

More ice

IP25 a *proxy* for sea-ice extent ?



Less ice

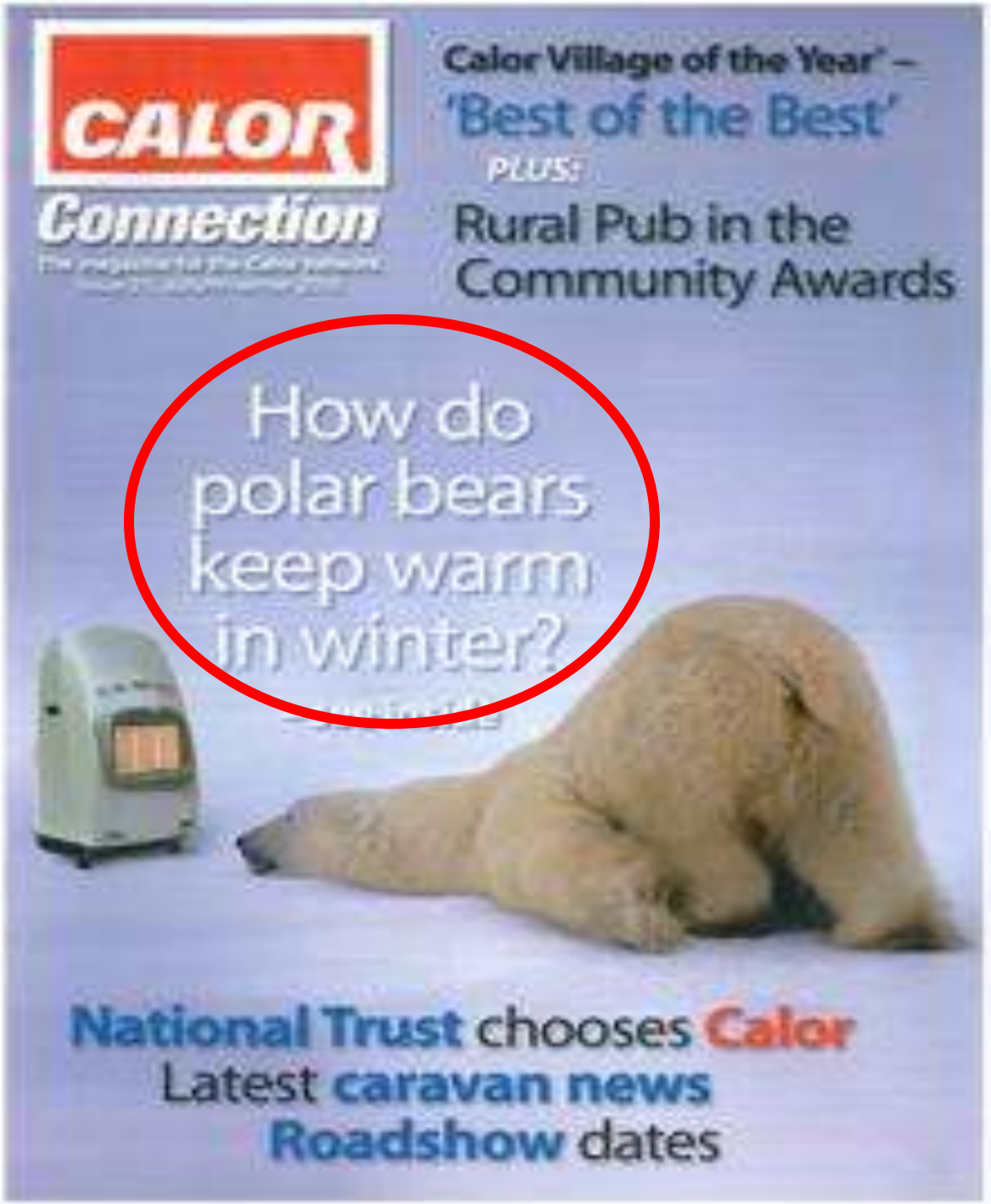
Masse, G. et al, in press in EPSL

Notes on polar bears during MWP (800-1300AD) from Iceland/Greenland: No mentions during LIA?

1056-1060: Audun travels from Greenland to Denmark to give King Sven a polar bear [story of Audun]

1123: Sokki Thorisson becomes chieftain of Brattahlid. He sends his son Einar (with a live polar bear) to meet with King Sigurd "*Jerumsalemfarer*" for a new bishop

1274: 22 polar bears wander ashore in Iceland and are killed.


CALOR
Connection
Calor Village of the Year' –
'Best of the Best'
PLUS:
Rural Pub in the
Community Awards
How do
polar bears
keep warm
in winter?
National Trust chooses Calor
Latest caravan news
Roadshow dates

Polar Bear Population Forecasts: A Public-policy Forecasting Audit

Scott Armstrong, Kesten Green and Willie Soon

(February 2008)

- Internet searches found 1000 related papers but none made reference to the scientific literatures on forecasting.
- Audited two of the nine USGS "administrative" reports made public September 7, 2007 (Amstrup et al. 2007; Hunter et al. 2007).
- **Amstrup et al. (2007) violated 73/90 principles we were able to rate. The report relies on ONLY one polar bear expert to specify variables, relationships, and input to their models.**
- **Hunter et al. (2007) violated 80/90 principles and their forecasts for 45, 75 and 100 years into the future were also flawed because they were based only on five years of data that were of doubtful validity.**
- To date, we have been unable to find scientific forecasts to support listing polar bears under the Endangered Species Act.

Procedures contravened scientific forecasting principles

	Amstrup	**Hunter**
Contravened	41	61
Probably Contravened	32	19
Insufficient information	26	15
Properly applied	17	10
	116	105

Thus, only 10-20% of relevant principles were properly applied

Question: How many occupations there are in the U.S. where people follow only 20% of the proper procedures?

Serious Problems Identified

- Conflict of interests and lack of scientific independence of the USGS studies
- Biases and exaggerations beyond scientific evidence, understanding and uncertainty
- Non-standard scientific procedures and non-disclosure of scientific data

USGS
science for a changing world

Conflict of interests?

USGS Science Strategy to Support U.S. Fish and Wildlife Service Polar Bear Listing Decision

Forecasting the Range-wide Status of Polar Bears at Selected Times in the 21st Century

By Steven C. Amstrup[1], Bruce G. Marcot[2], and David C. Douglas[3]

Administrative Report

U.S. Department of the Interior
U.S. Geological Survey

8 out of 9 USGS reports acknowledged direct funding supports of their analyses from USGS or USFWS;

5 out of 9 have supports from both agencies!

9 USGS reports list a total of 36 authors BUT only 17 unique authors

Amstrup was co-author of 6 reports;
Regehr was co-author of 5;
Douglass, McDonald and Stirling each co-authored 3 reports;
Caswell, Durner, Hunter, and Richardson 2

"We all decline to offer preview comments on your attached manuscript." (Steven Amstrup, November 30, 2007)

"Thanks for your interest in the western Hudson Bay and southern Beaufort Sea polar bear populations. Unfortunately, I am not able to comply with your request for these datasets. The western Hudson Bay data in Regehr et al. (2007) were collected by the Canadian Wildlife Service and the Manitoba Department of Conservation, so you should probably contact Nick Lunn or Daryl Hedman for more information. The southern Beaufort Sea data (collected by both the USGS and CWS) are currently being use for a variety of analyses and are not available for distribution." (Eric Regehr with copy to Steven Amstrup and Nick Lunn, February 13, 2008)

A Quiz: Who said these and when?

"Polar bear specialists were concerned about the future welfare of polar bears; however, Tim Flannery [author of the "Weathermakers"] overstated those concerns in suggesting that polar bears could be extinct by 2030."

A Quiz: Who said these and when?

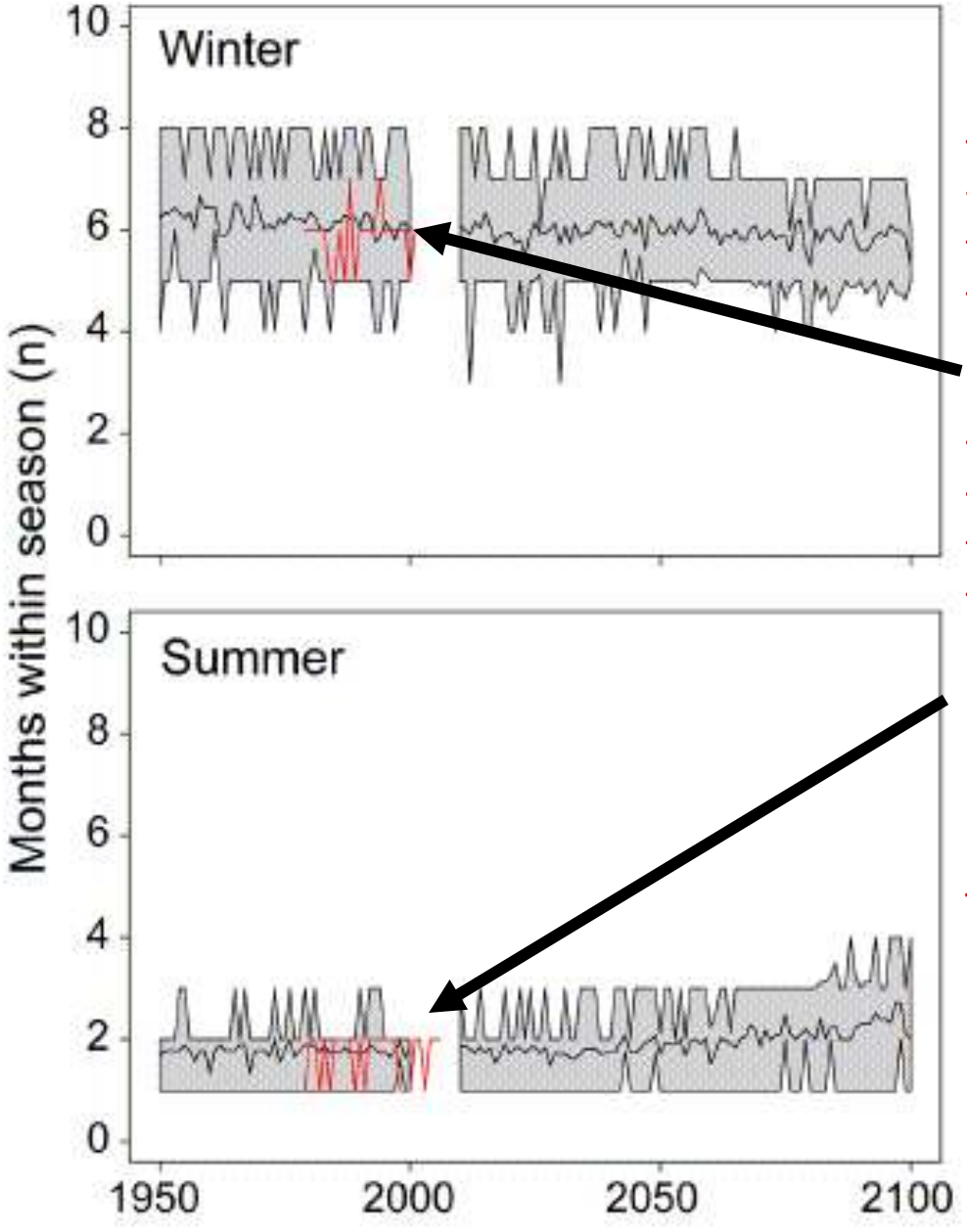
"... [M]olecular genetics data suggest [polar bears] may have become sea ice specialists and separated from parental brown bear stocks between 200,000 to 250,000 years ago. If that early date is real, polar bears have indeed seen temperatures warmer and colder than those of today. During the LIG [Last Interglacial] summer temperatures in the far north were 4-10°C warmer than at present. These warmer temperatures are documented in the distribution of fossil materials collected around the world. The much warmer temperatures of that time also are corroborated by a sea level which was 6-7 meter above that of current times. ... Summers also were 2-3 °C warmer than present during the Holocene Thermal Maximum of 6,000 to 11,000 years ago. ... Many things could have been different in ancient times, and much of what the climate and sea ice were like then remains unknown. In addition to warmer and cooler times, we can only speculate on other circumstances that polar bear may have faced."

A Quiz: Who said these and when?

ANSWER: Steven Amstrup
November 2006 issue of
***International Bear News*, volume**
15, no. 4, page 8

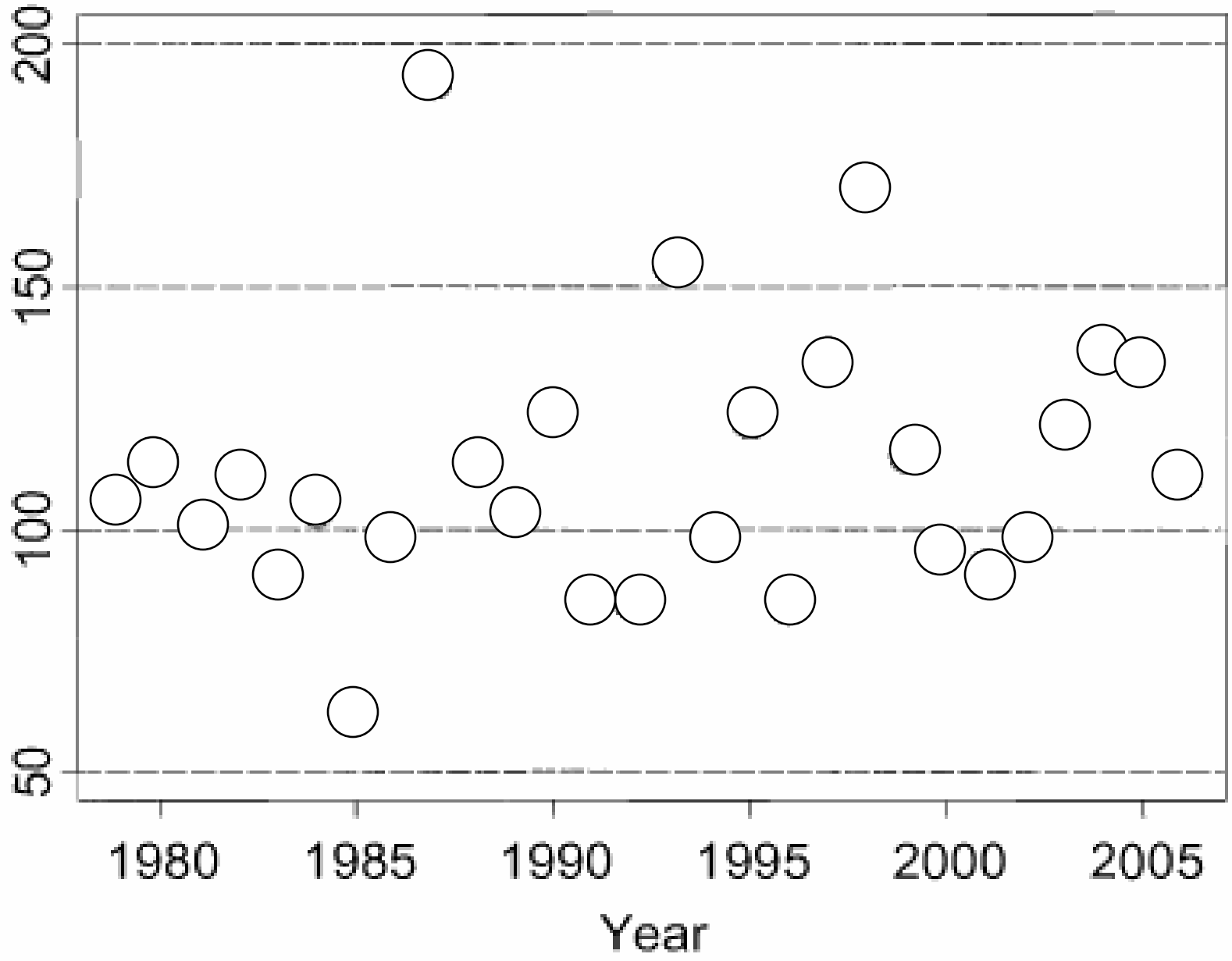
Readers beware what season is in the USGS administration reports:

Winter is not what you think it is and summer is not quite what you think it is too!

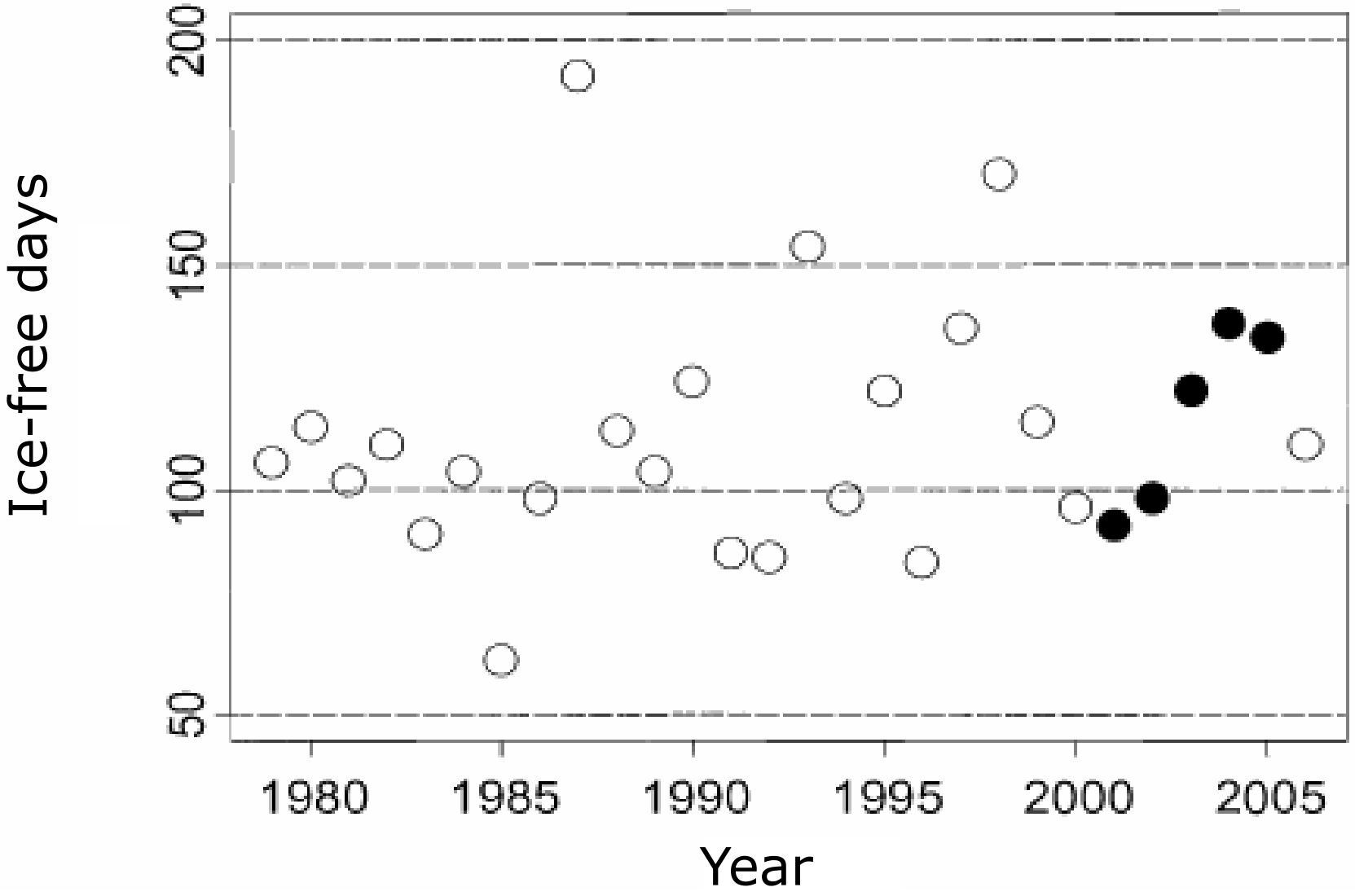


From p. 10 of Durner et al. (2007): "winter" can cover November through May (7 months) and "summer" is either September-only or August+September!

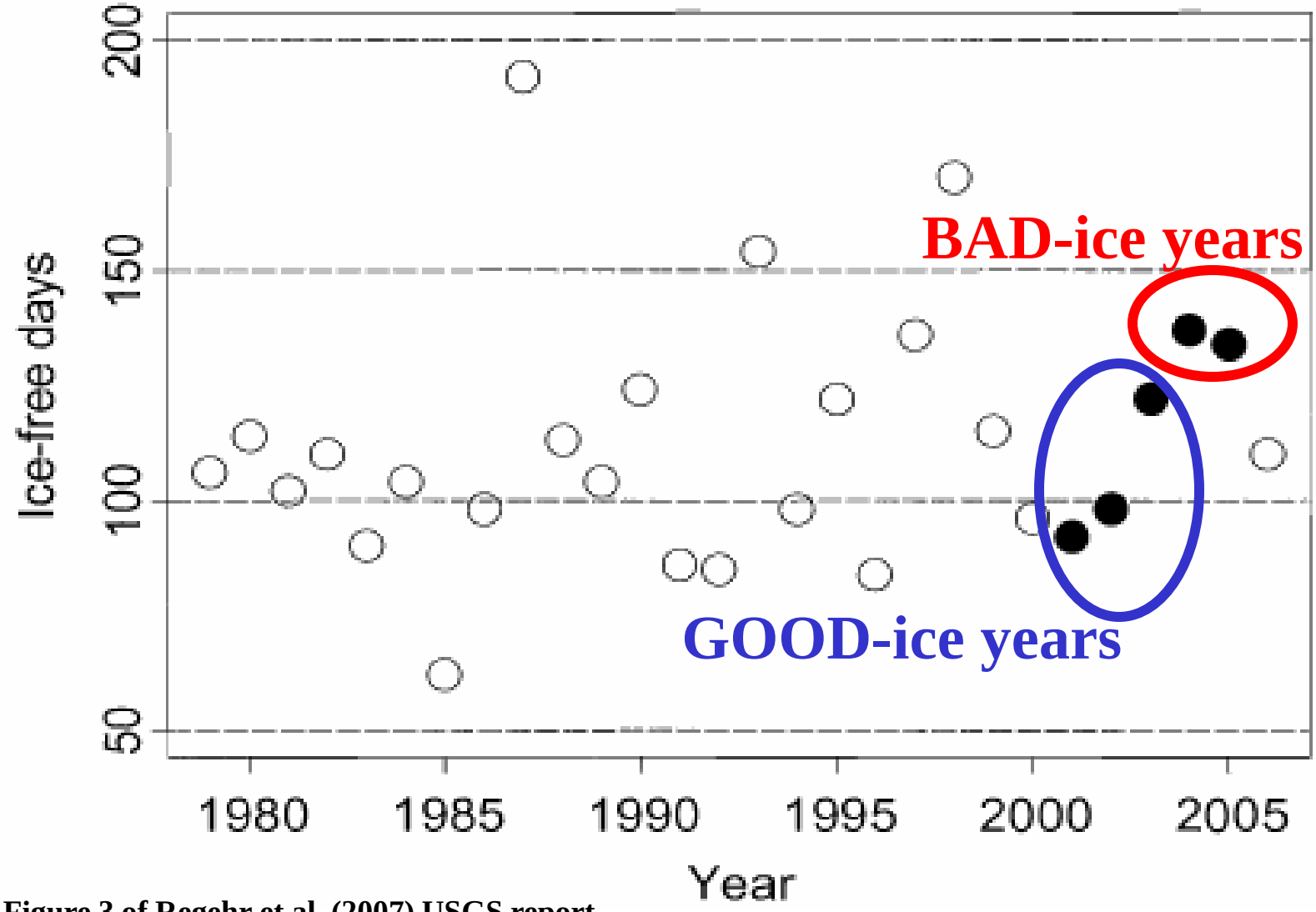
Please make a forecast for the rest of 21st century



Ice-free days in Southern Beaufort Sea
used by Hunter et al. (2007)

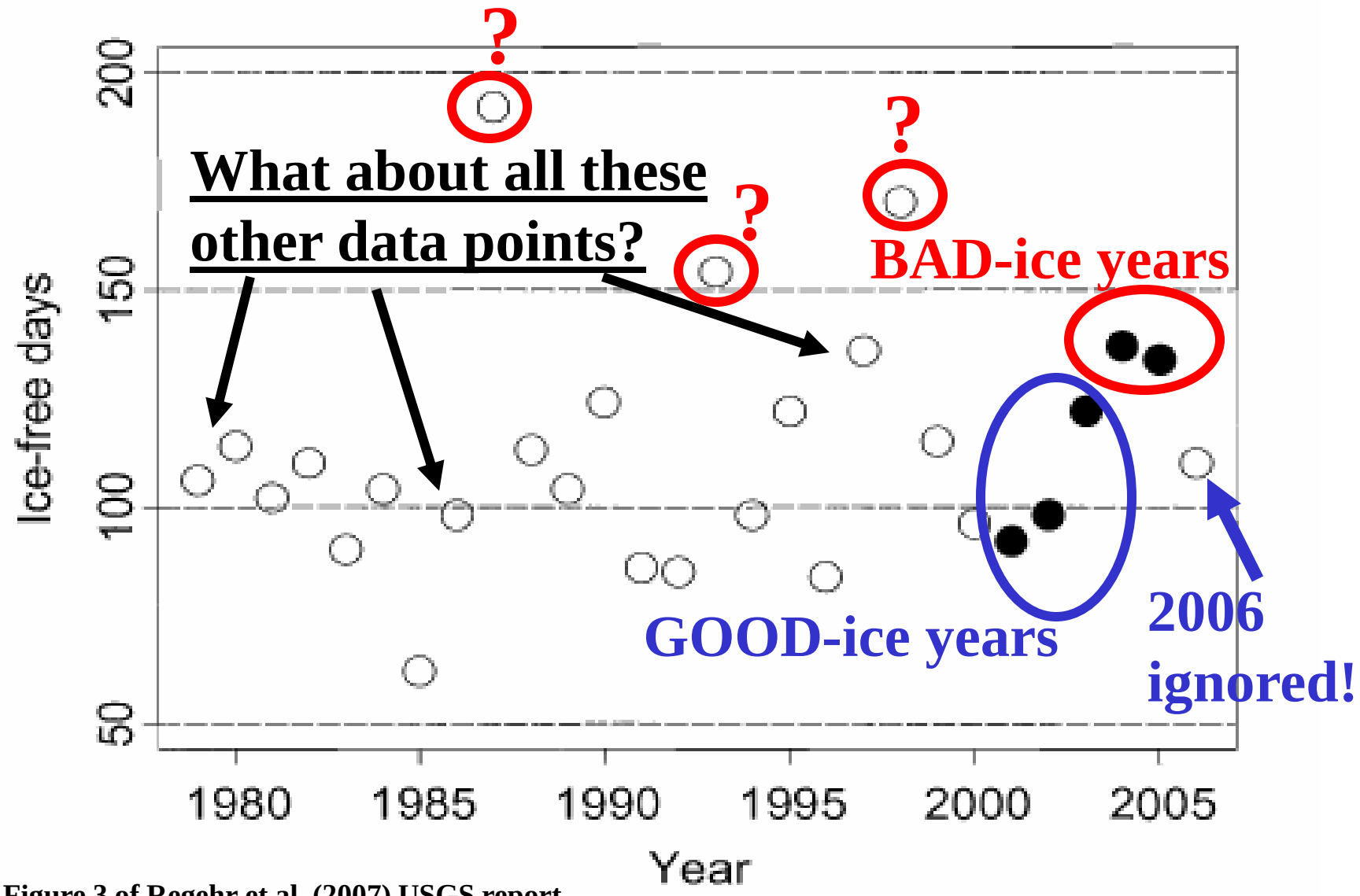


Projection of sea-ice and decline of polar bear population in Southern Beaufort Sea by Hunter et al. (2007): Relied only on information from these 5 data points!



Source: Figure 3 of Regehr et al. (2007) USGS report

Projection of sea-ice and decline of polar bear population in Southern Beaufort Sea by Hunter et al. (2007): Relied only on information from these 5 data points!



Source: Figure 3 of Regehr et al. (2007) USGS report

“It is very difficult to quantify demographic trends on the basis of only 5 data points (i.e., vital rates for the 5 yearly intervals from 2001-2006), especially for a species with a multiyear reproductive cycle that lives in a complex and dynamic ecosystem. Nonetheless, the intensive capture-recapture study in the SB region from 2001-2006 established a relationship between declining sea ice and decreased survival.” **(p. 18 of the Conclusions of Regehr et al. 2007)**

Improbable "hypothesis" of cannibalism as evidence of starving polar bears from longer ice-free season: Amstrup et al (2006, Polar Biology, vol. 29, 997-1002)

"Here, we report the killing and consumption, between 24 January and 10 April 2004, of two adult female polar bears (one in her den and one just after leaving den) and one yearling male. During 24 prior years of Alaskan research and 34 prior years of Canadian research in the Beaufort Sea we have not seen other evidence of polar bear stalking, killing and eating other polar bears. We hypothesize that these events must be related to nutritional stresses accompanying the longer ice-free seasons that have predominated in this region [SBS] in recent years."

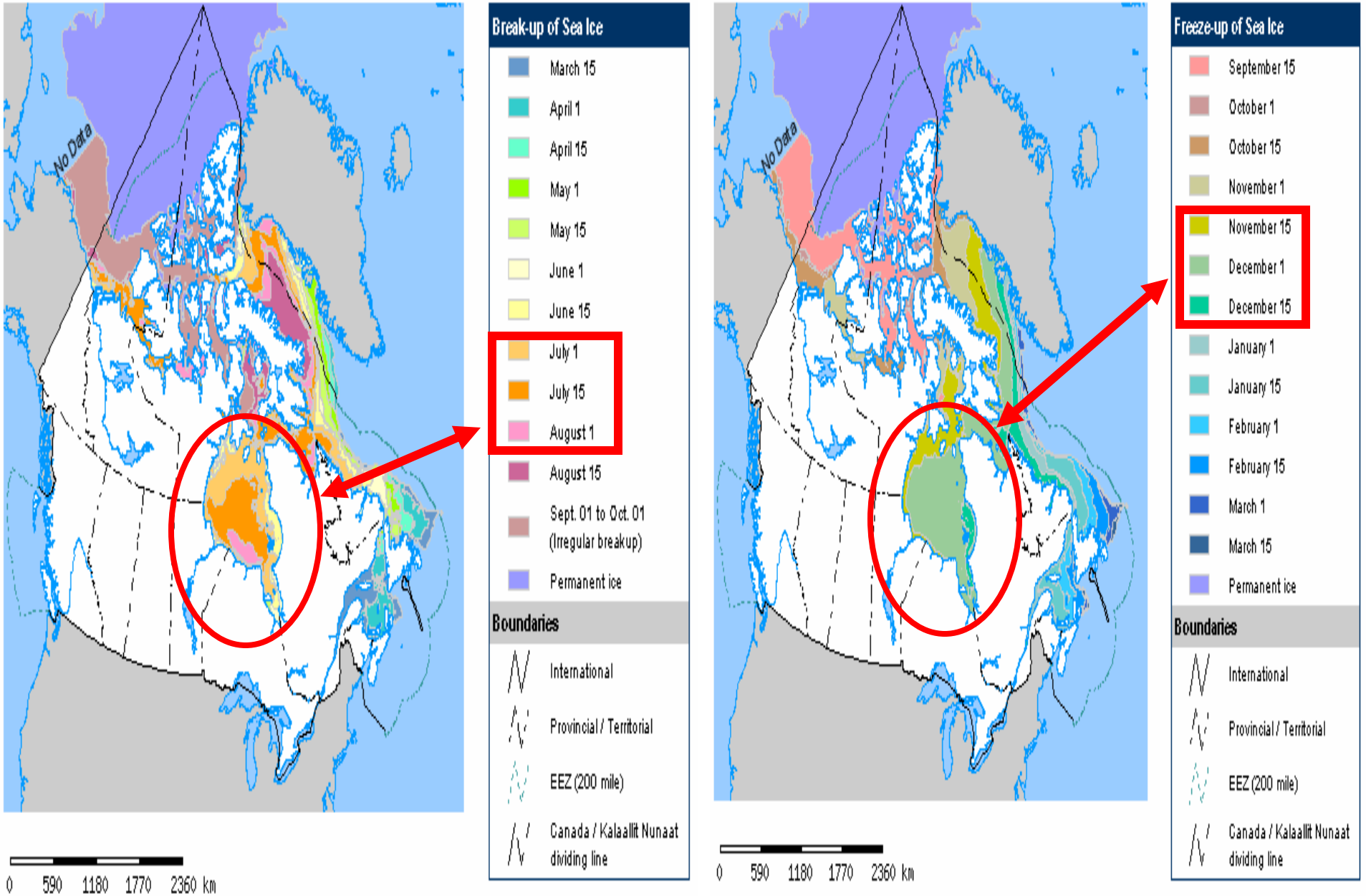
Implausible hypothesis: 2000, 2001, 2002 (and plausibly 2003) were all relatively "good" ice years which ruled out nutritional stress related to longer ice-free seasons!

"All ursids show behavorial plasticity but given the rapid pace of ecological change in the Arctic, the long generation time, and the highly specialised nature of polar bears, it is unlikely that polar bears will survive as a species if the sea ice disappear completely as predicted by some." –Derocher et al. (2004)

Nice word tricks?

Only September sea-ice are predicted to disappear completely by climate models (under the future scenarios of rising atmospheric CO_2)

Note that the Hudson Bay is ice-free in September despite warnings on "Arctic" (i.e., September only) sea ice disappearing in total as early as 2030!



The hypothesis of spring air temperatures as the "ultimate factor" for the survival of polar bears (as a species) based on data from Western Hudson Bay (one of 19-20 sub-populations)?

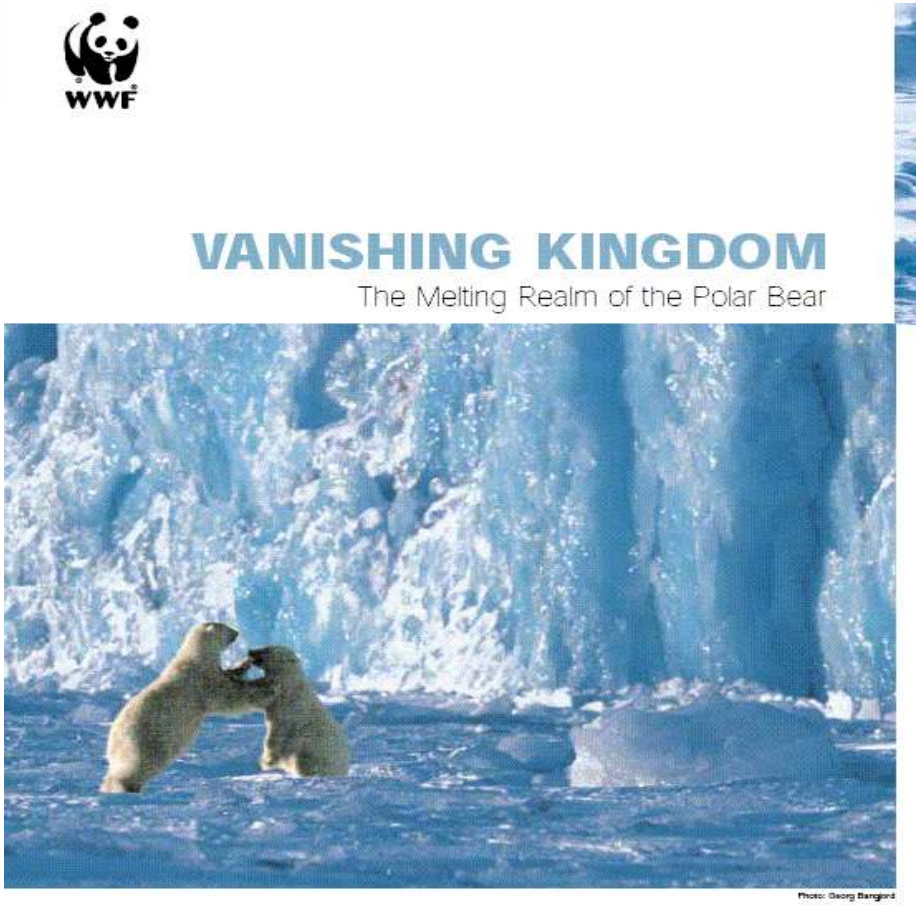
Stirling et al. (1999): **"We suggest that the proximate cause of the decline in physical and reproductive parameters of polar bears in WHB over the last 19 years has been a trend toward earlier breakup, which has caused the bears to come ashore in progressively poorer condition. The ultimate factor responsible for the earlier breakup in WHB appears to be a long-term warming trend in April-June atmospheric temperatures."**

From hypothesis to advocacy and alarmism?

"For every week earlier that break-up occurs in the Hudson Bay, bears will come ashore roughly 10kg lighter and thus in poorer condition. With reproductive success tied closely to body condition, if temperatures continue to rise in response to increases in greenhouse gas emissions and the sea ice melts for longer periods, polar bear numbers will be reduced in the southern portions of their range and may even become locally extinct."

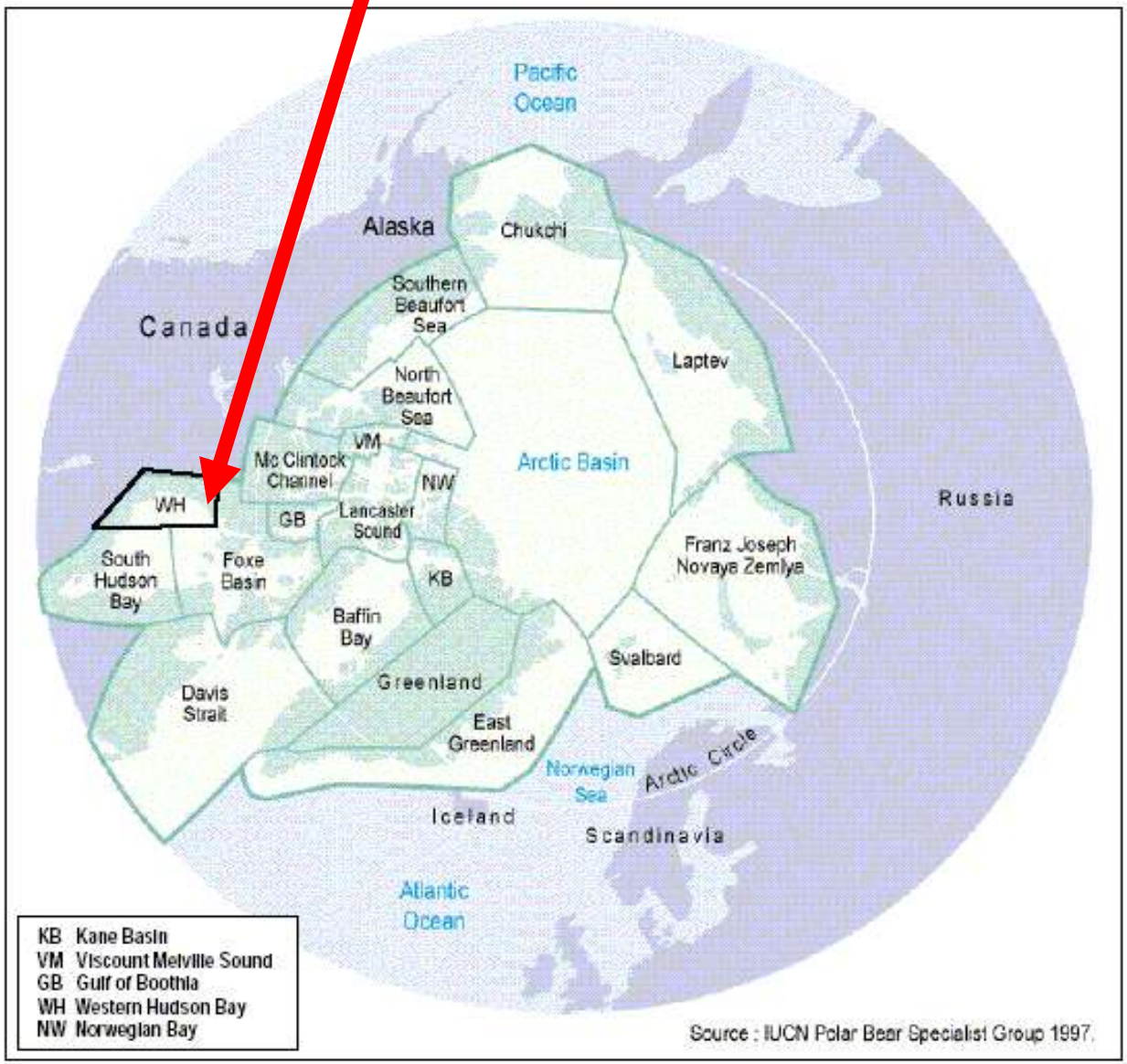
Dr. Ian Stirling, Polar Bear Scientist

WWF



The Polar Bear – *Ursus maritimus* – Bear of the Sea. King of the seemingly pristine arctic realm - but subject to the ravages of global warming.

The Western Hudson Bay (WH) polar bear population is only one of 19-20 sub-populations and makes up about 4% of the world population

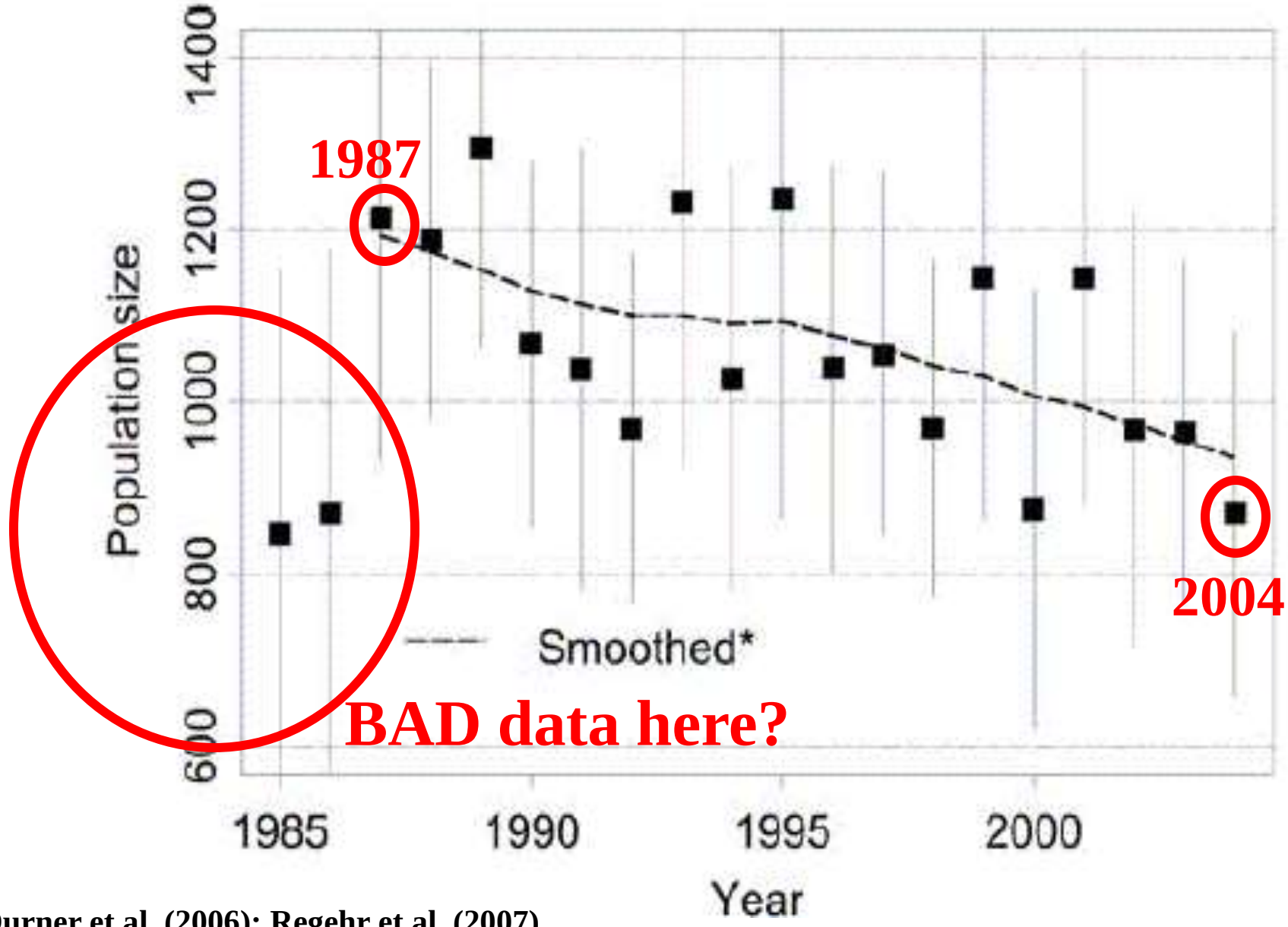


Another nice word tricks?

"Monitoring of that [WH] polar bear population has continued and Regehr et al. (2007) documented a decline from about 1200 in 1987 to 935 in 2004"

—Stirling et al. (2008)

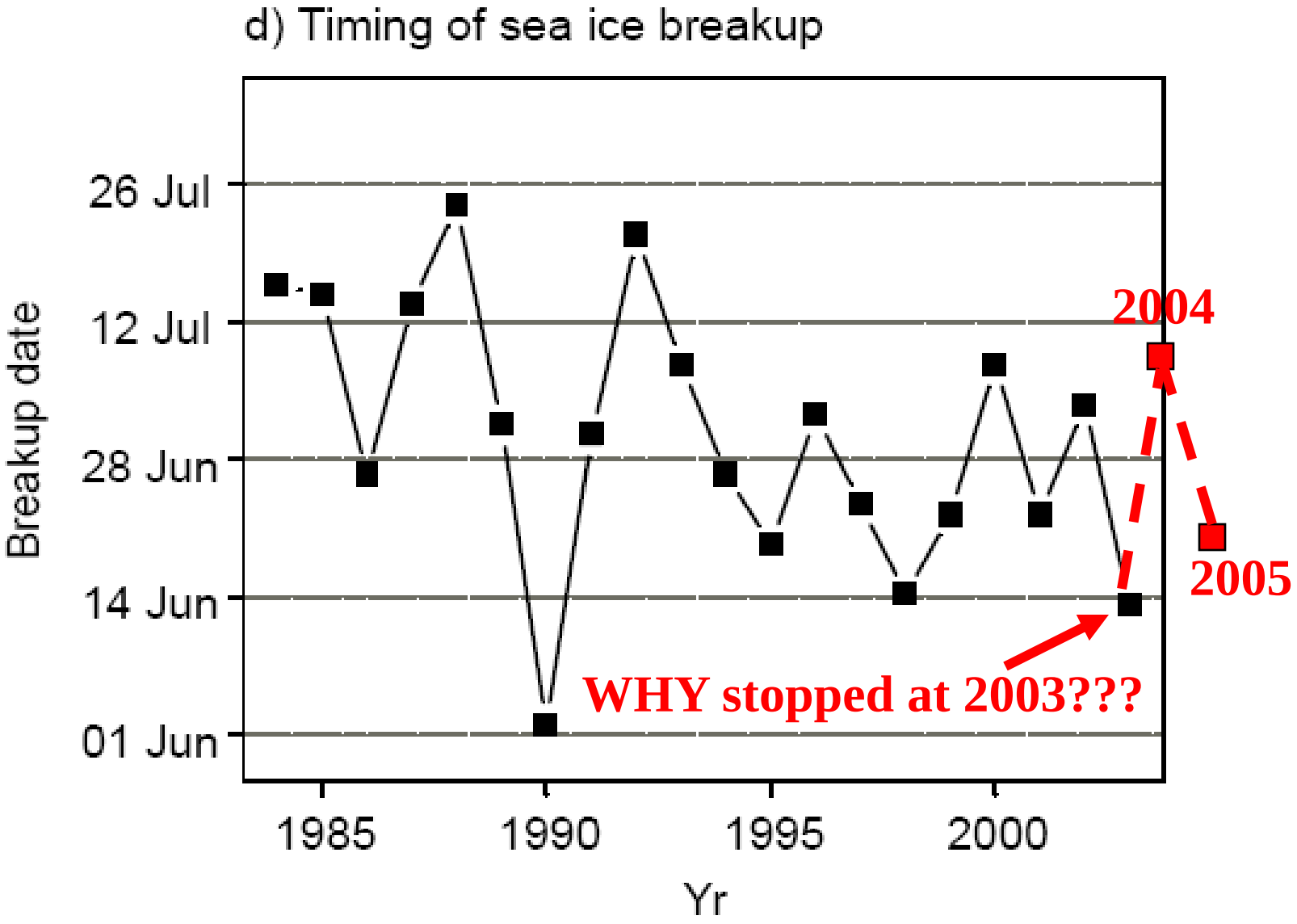
Is the Western Hudson Bay polar bear population decreasing in alarming or dangerous rate?



Durner et al. (2006); Regehr et al. (2007)

Why was the two latest sea-ice data points deleted from Regehr et al. (2007) paper published November 2007?

Source: Figure 3d of Regehr et al. (2007) Journal of Wildlife Management, vol. 71, 2673-2683



All in the name of statistical smoothing: The short tale of how next year's ice condition can affect polar bear now!!!

"We also modeled using the centered, 3-year running mean of ice breakup date to investigate whether survival was a cumulative function of environmental conditions over several years."

(p. 2676 of Regehr et al. 2007)

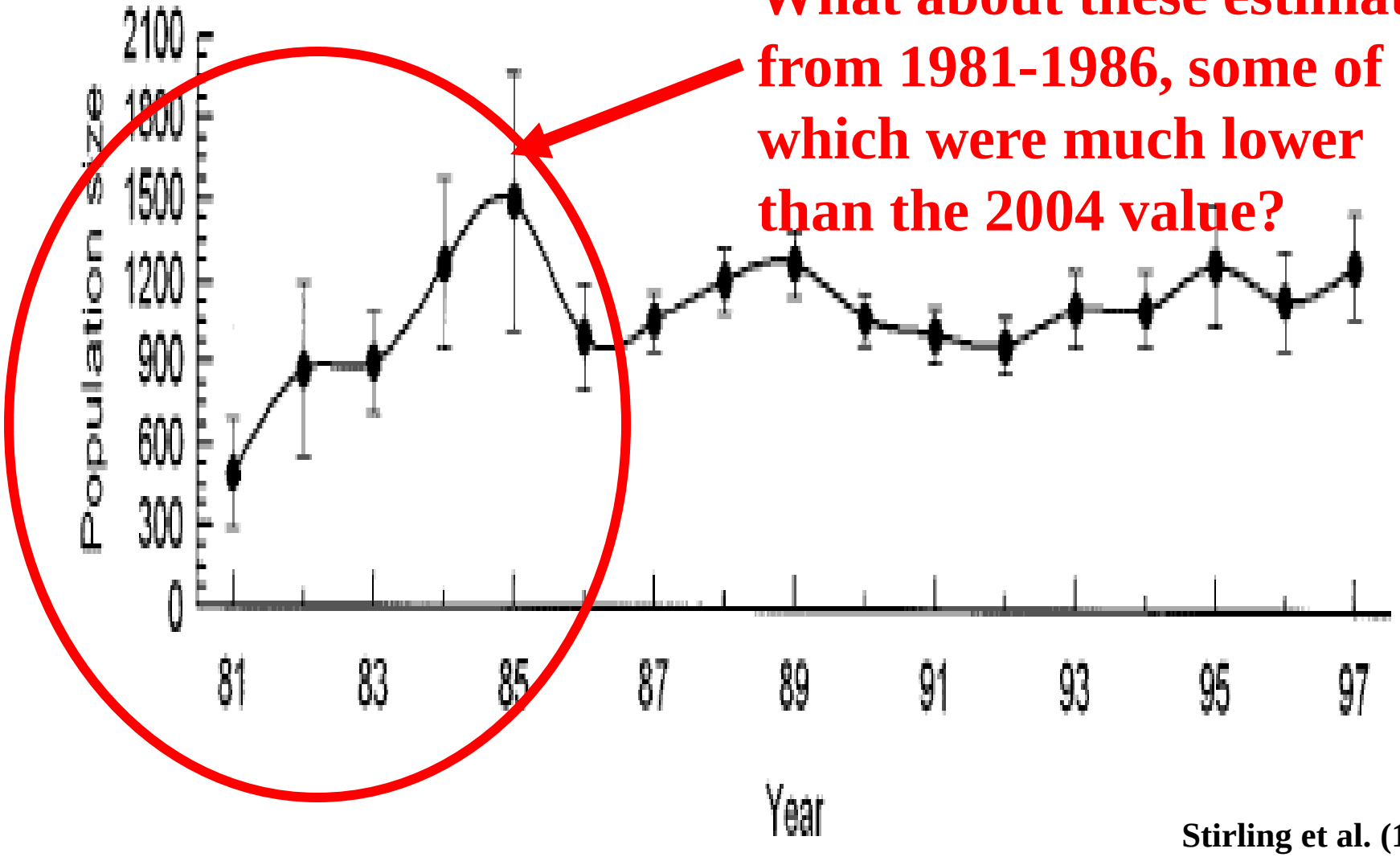
"The widely mentioned WH [Western Hudson Bay population] decline has yet to be published, and is based on sampling that did not include a substantive portion of the WH summer retreat area. The adult female natural survival estimate from the current WH mark-recapture analysis has been questioned because it did not decline over the same period in which effects of climate change were detected in recruitment, and because the known recovery of the WH population from low numbers in the 1950s and 1960s would not have occurred if natural survival was actually that low."

"The new GB [Gulf of Boothia population] estimates show the population is a robust 1500, not 900 as formerly assumed."

– Dr. Mitchell K. Taylor's April 6, 2006 expert review of the petition by the Center for Biological Diversity (and Greenpeace Inc.)

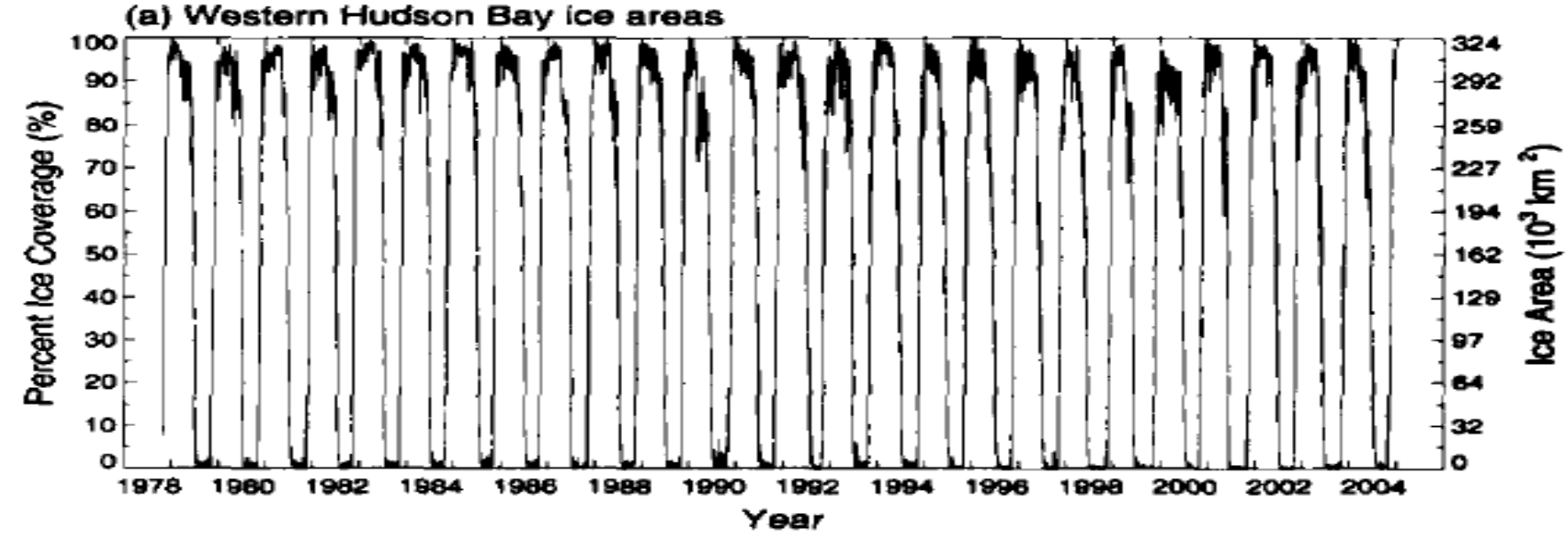
How about estimates of the polar bear population around Western Hudson Bay extending a little longer into the past?

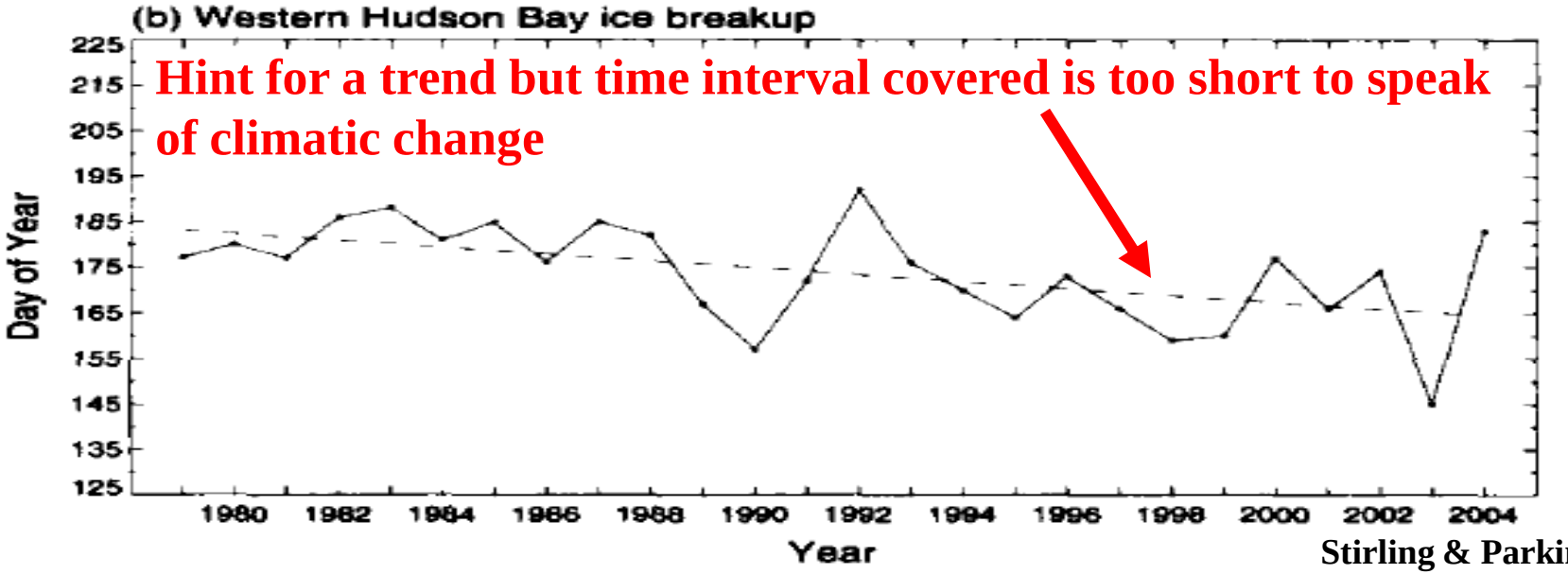
What about these estimates from 1981-1986, some of which were much lower than the 2004 value?



Stirling et al. (1999)

What about the idea of earlier melting of spring sea ice of Western Hudson Bay?

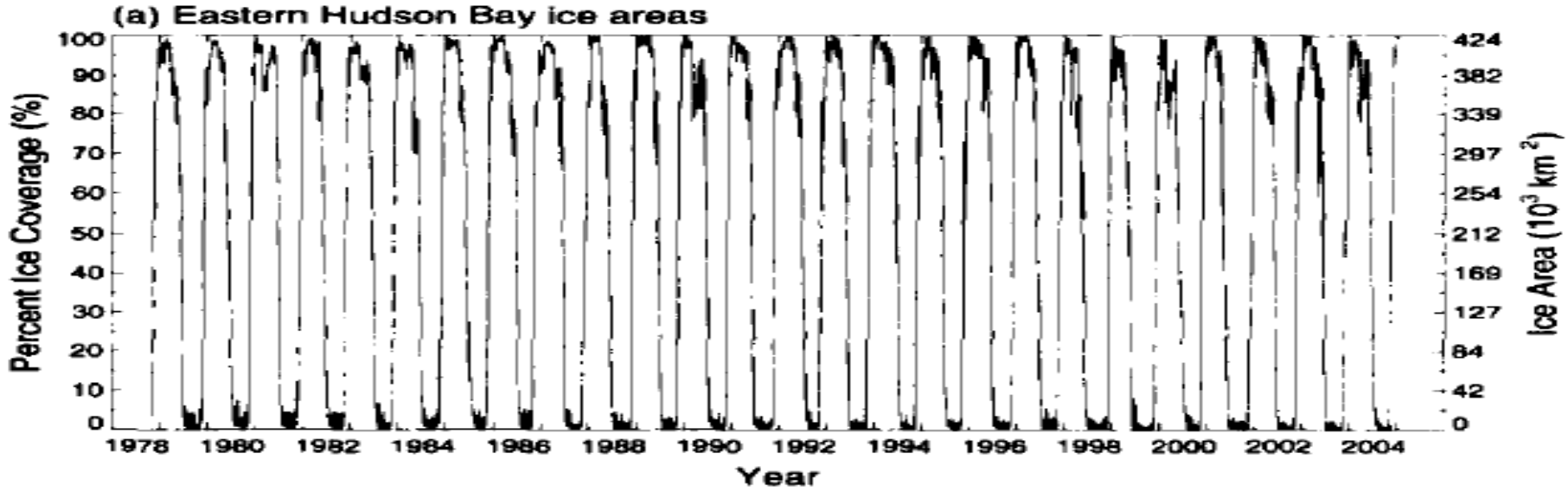


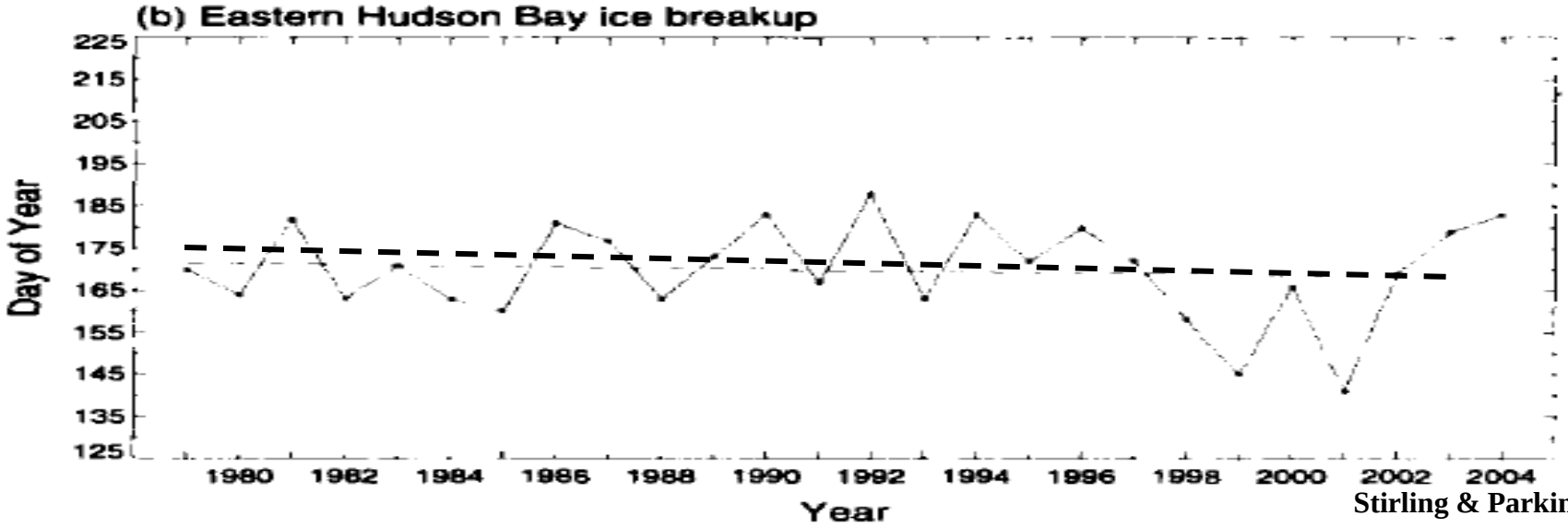


Stirling & Parkinson (2006)

Adapted from ppt by Francois Messier (2006)

But break-up dates for Eastern Hudson Bay really do not show any meaningful decrease: Why such large regional differences?





Stirling & Parkinson (2006)

Sea and lake ice thickening around western Hudson Bay!

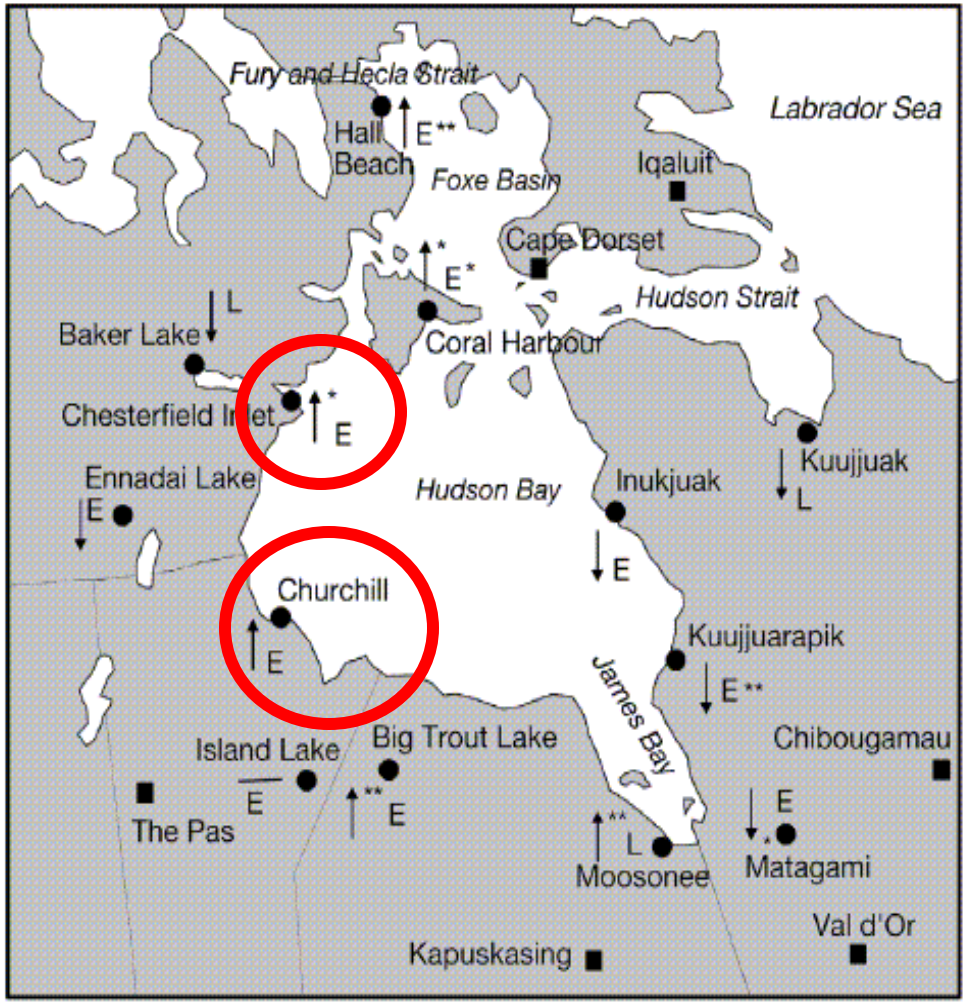
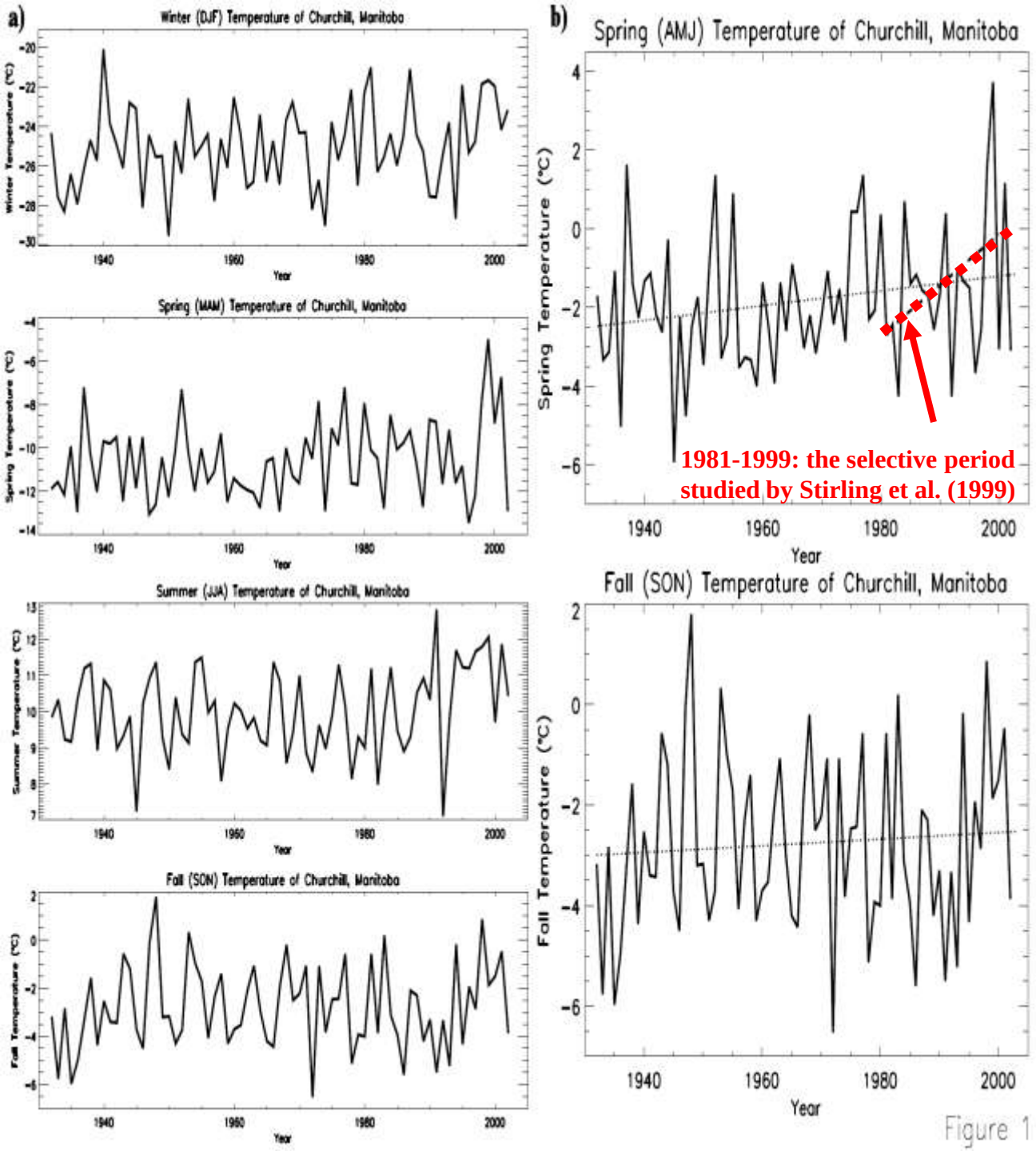


Fig. 2. Ice thickness trends in the Hudson Bay region (HBR). ●: ice thickness measuring sites; ■: weather stations. Ice thickness measuring sites have a weather station, with the exception of Island Lake and Matagami. An arrow pointing upward/downward indicates an increasing/decreasing trend in maximum ice thickness; E and L stand for earlier and later occurrence of maximum ice thickness, respectively. *p = 0.90, **p = 0.95

Gagnon and Gough (2006) Climate Research, vol. 32, 177-186

"[S]tatistically significant thickening of the ice cover over time was observed on the western side of the Hudson Bay ... These results are in contrast to the projections from GCMs, and to the reduction in sea-ice extent and thickness observed in other regions of the Arctic. This contradiction must be addressed in regional climate change impact assessments."(p. 177)



Is the surface air temperature around Churchill, Western Hudson Bay area, warming up alarmingly?

No!

Dyck, Soon et al. (2007)

Conclusions (on WH bears)

- Evidence from estimates of polar bear population of the Western Hudson Bay does not suggest any alarming decline in numbers
- Evidence from estimates of sea ice conditions over Hudson Bay does not suggest increasingly earlier breakups of spring ice; data records are simply too short with very large temporal variabilities and regional differences
- Evidence from estimates of air temperatures around Western Hudson Bay, when taken over a longer basis of 50 to 70 years, does not suggest rapid warming trends

"Polar bears are believed to have evolved from grizzly bears during the Pleistocene era some 200-250,000 years ago. Polar bears are well developed as a separate species by the Eemian interglacial approximately 125,000 years ago. This period was characterized by temperature fluctuations caused by entirely natural events ... Polar bears obviously adapted to the changing environment, as evidenced by their presence today. ... This fact alone is sufficient grounds to reject the petition. Clearly polar bears can adapt to climate change. They have evolved and persisted for thousands of years in a period characterized by fluctuating climate. No rational person could review this information and conclude that climate change pre-destined polar bears to extinction."

– Dr. Mitchell K. Taylor's April 6, 2006 expert review of the petition by the Center for Biological Diversity (and Greenpeace Inc.)

Irrational world/decision?

On May 14, 2008, Secretary Kempthorne enlisted polar bears as a 'threatened' species under ESA

Adapted from ppt by Francois Messier (2006)