

# How Does Climate Change Effect Potential Polar Bear Extinction?

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# Introduction

- \* The polar bear (*Ursus maritimus*) is the largest carnivore on land(WWF).
- \* They live on ice covered waters within the Arctic and can be found in the Arctic areas of Canada, Greenland, Norway, Russia, Alaska and around the North pole.
- \* The polar bear is known as a “threatened species” and are protected under the Endangered Species Act.

# Introduction con't

- \* Climate change is the long-term shift in statistics of weather including its averages (NOAA 2007).
- \* There is also human induced change like greenhouse gases and carbon emissions
- \* The change in climate is effecting the ice in which the polar bears hunt, mate , breed and travel on.
- \* The largest threat to the polar bear's survival is the changing in their climate (Center for Biological Diversity 2013).

# Background information

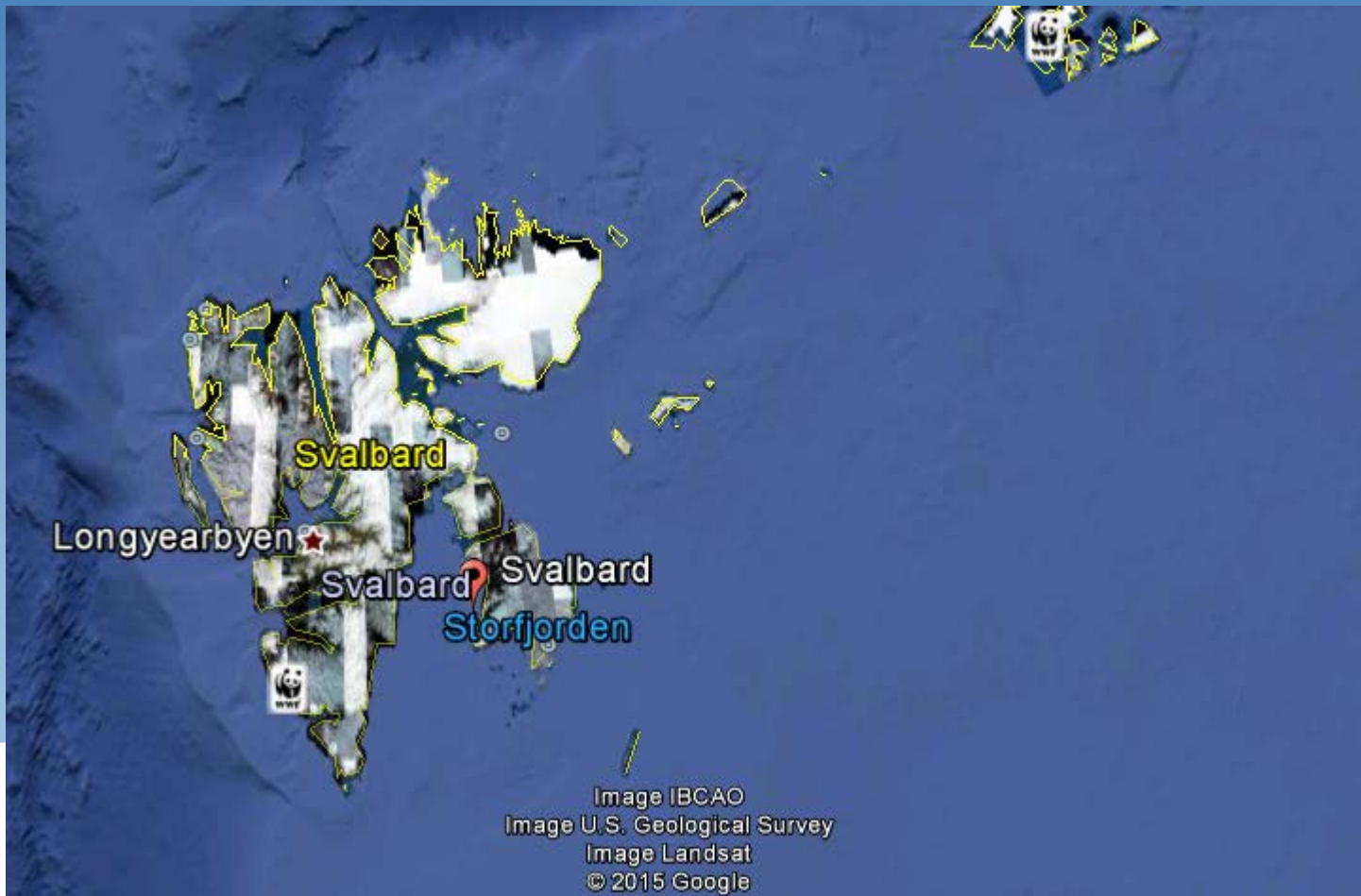
- \* Over the past 3 decades 1,609,344 kilometers of sea ice has disappeared (NRDC 2007)
- \* The declining number of polar bear population has lead the IUCN to classify polar bears as a “vulnerable species”
- \* Climate models are used to study the dynamics of climate system projections
- \* This becomes a greater factor due to the melting ice because the ice is where the pelagic (land) bears den.

# Background con't

- \* The amount of sea ice has been decreasing by approximately 3.5% per decade from 1979 to 2006 (Greenpeace international 2012)




# Svalbard, Norway



# Polar bears in Svalbard



 | Polar bears at the Von Post Glacier on Svalbard, Norway

# Hypothesis

- \* If the arctic continues its melting trend, the worldwide polar bear population will decline by more than two thirds by 2050 and will be near extinction by the end of the century. (Center for biological diversity May 2013)



# Analysis

Figure 1. Global Average Absolute Sea Level Change, 1880–2011

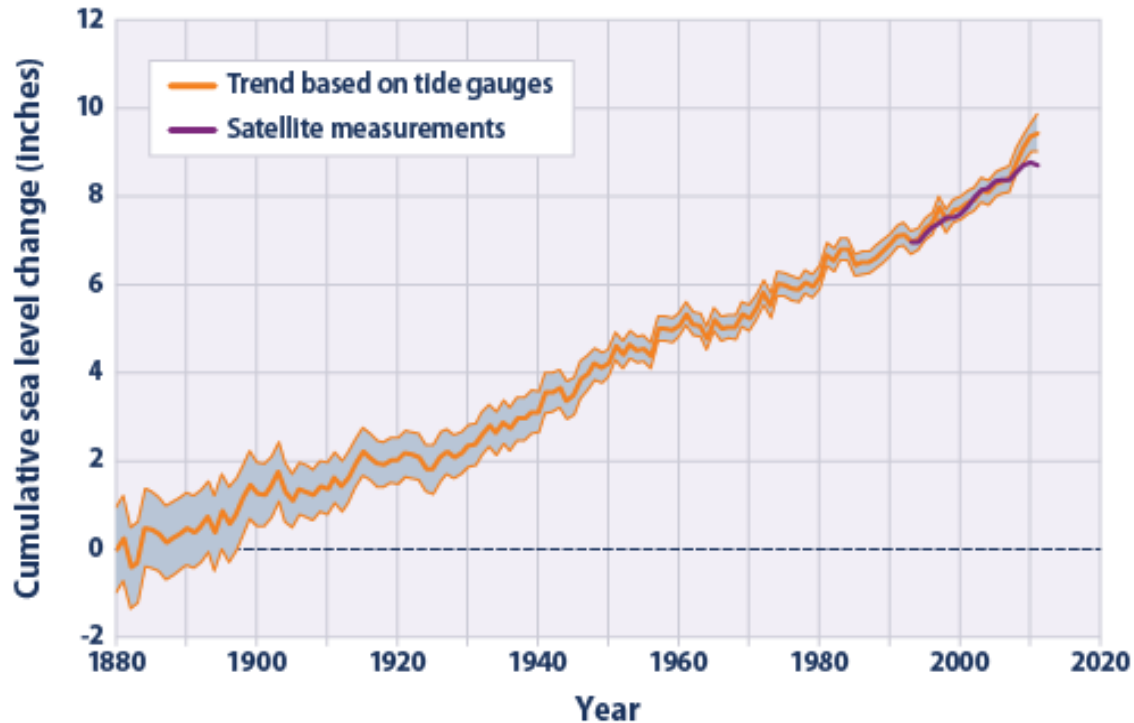


Figure 1. Shows the overall change in sea level from 1881 to 2011

# Average Arctic Ice

Figure 1. September Monthly Average Arctic Sea Ice Extent, 1979–2012

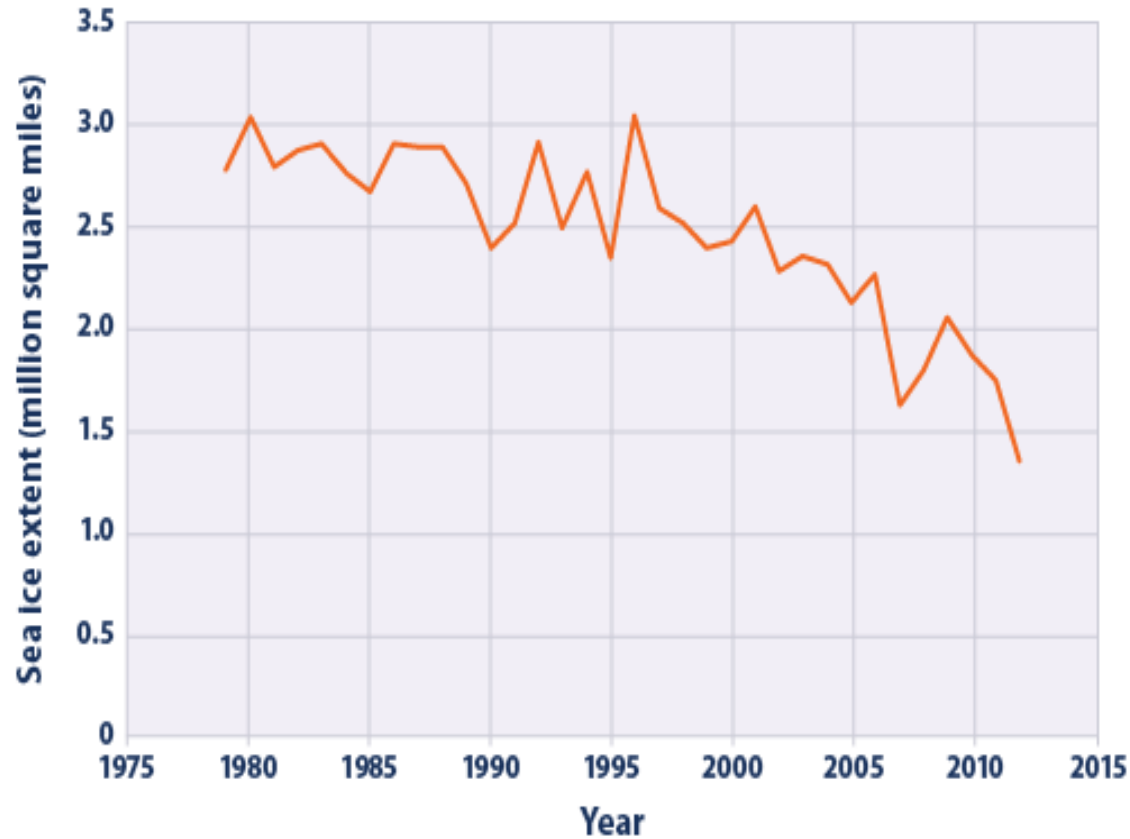


Figure 2. shows arctic ice extent from 1975 to 2012

# Global Sea Surface

Figure 1. Average Global Sea Surface Temperature, 1880–2012

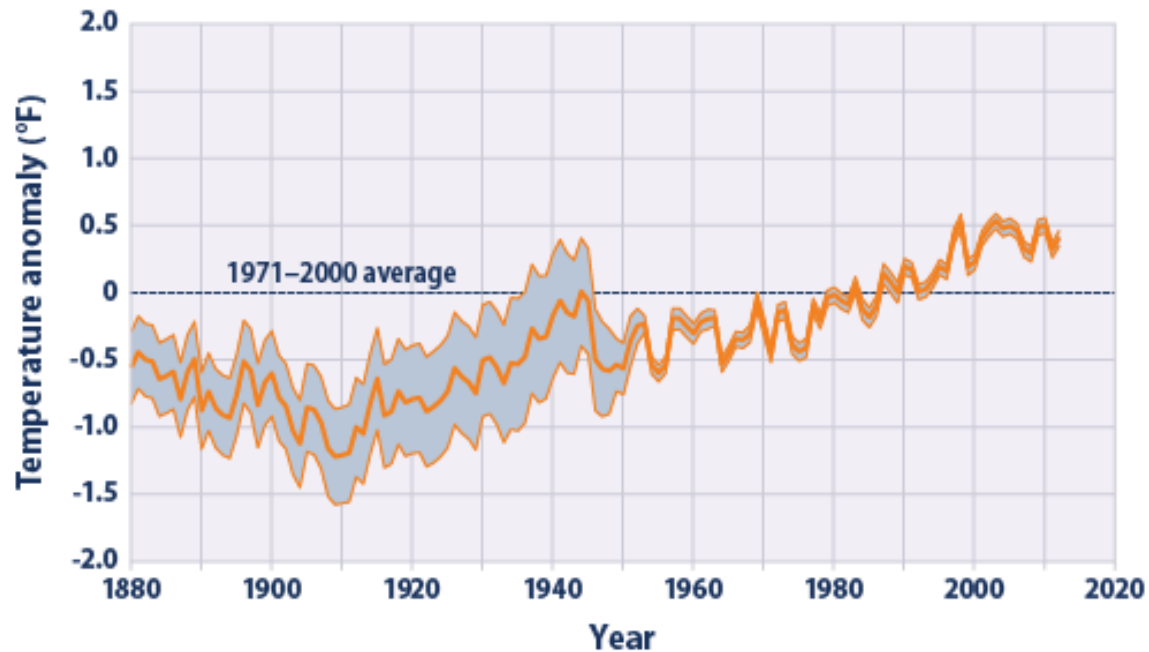


Figure 3. average of sea surface temperature 1880 to 2012

# Greenhouse Gases

Figure 1. Radiative Forcing Caused by Major Greenhouse Gases, 1979–2011

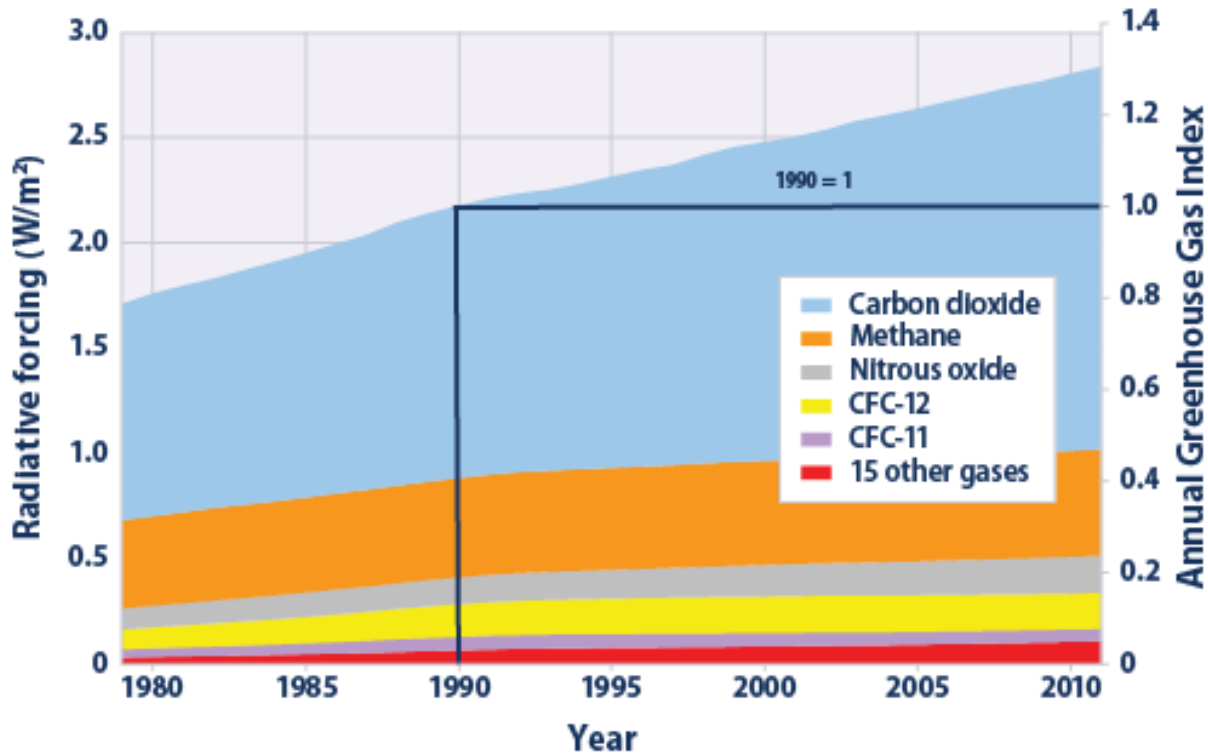


Figure 4. radioactive forcing caused by Greenhouse Gases 1979-2011

# Population

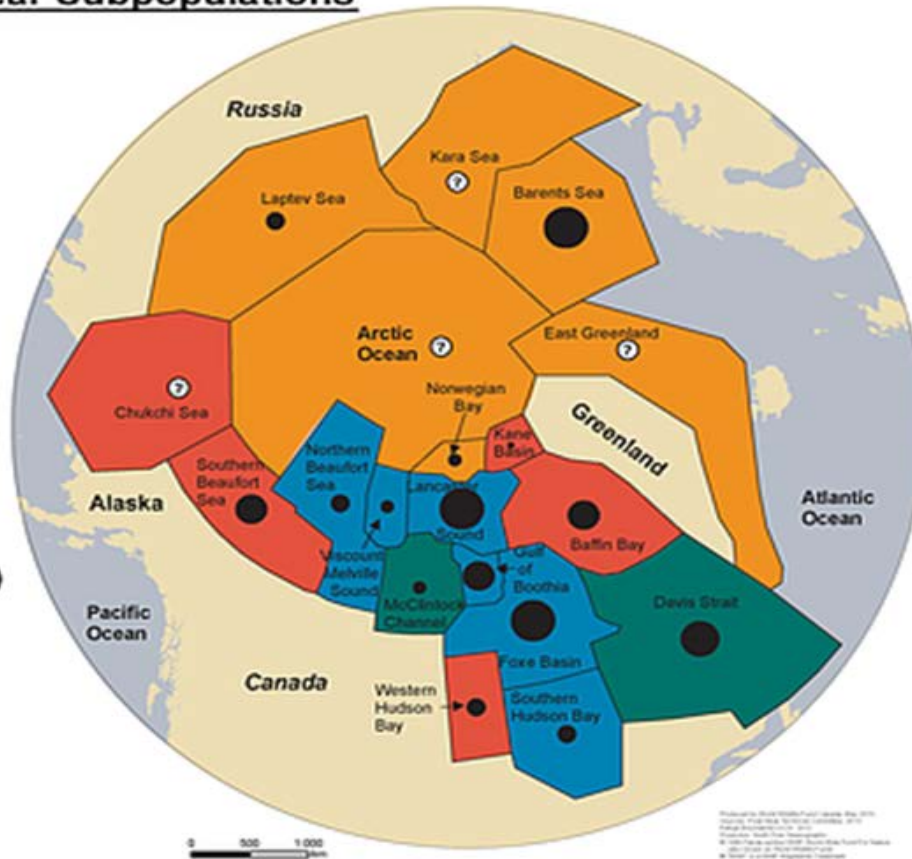
## Trends in Polar Bear Subpopulations

### Subpopulation size

No. of Bears



### Population Trend (2013)



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# Conclusion

- \* It is apparent that the changing climate does in fact effect possible polar bear extinction.

