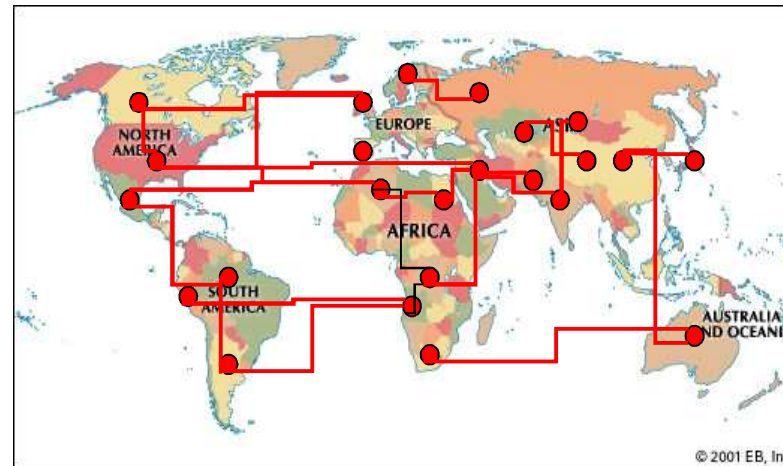


A Snapshot: Climate, Conflict, & Risk



Climate change consequences are complex, interrelated and threatening.

Global Impacts

Severe global drought

Increased vector-borne diseases

Increased social disruption and conflict.

Significant sea level rise

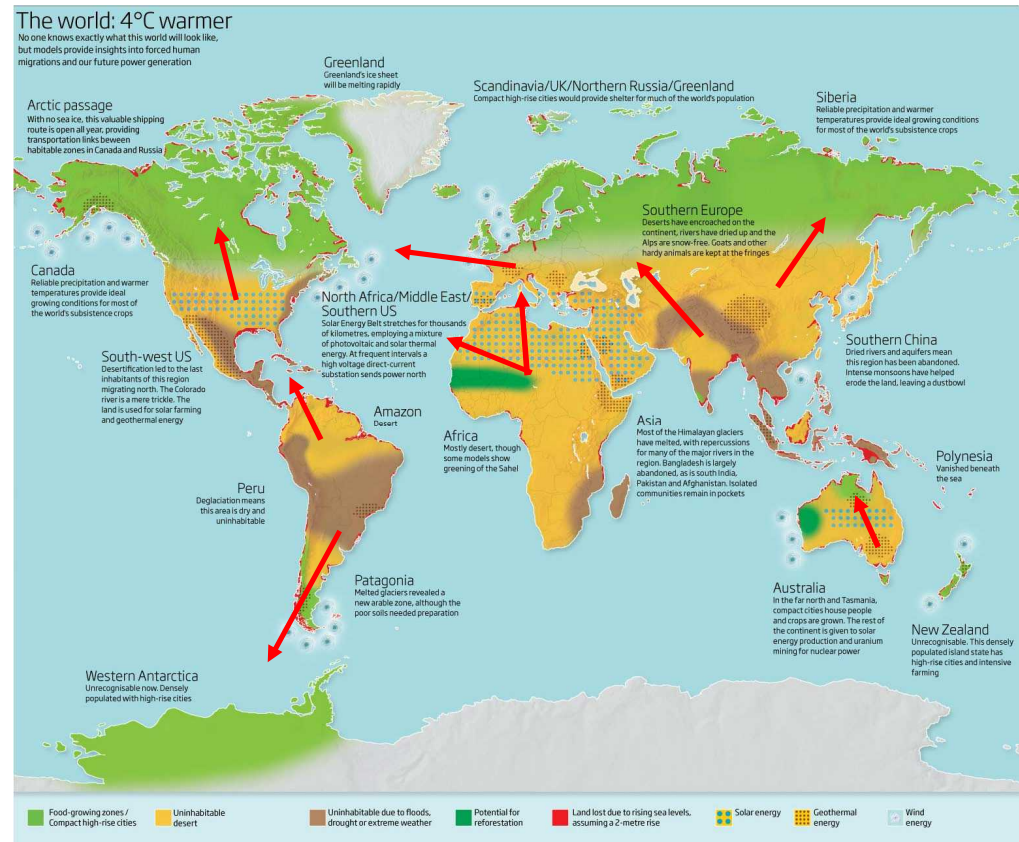
Increased floods and storm severity

US Impacts

Loss of water supplies

Significant loss of agriculture and ecosystems

Population dislocations



→ Projected population migration

Derived from: Gaia Vince, *New Scientist* issue 2697, 25 February 2009

Remaining, viable agriculture areas may not be able to accommodate expected population influx.

An Accessible Arctic Creates National Security Challenges

- The Arctic is the “New World” of the 21st Century

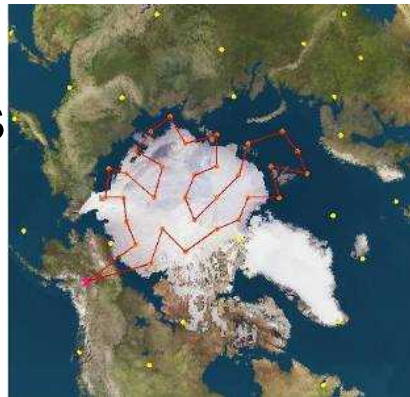
- Primary source of new oil, gas, and mineral reserves

- 25% shorter sea routes

- An economically accessible Arctic will change global power balances.

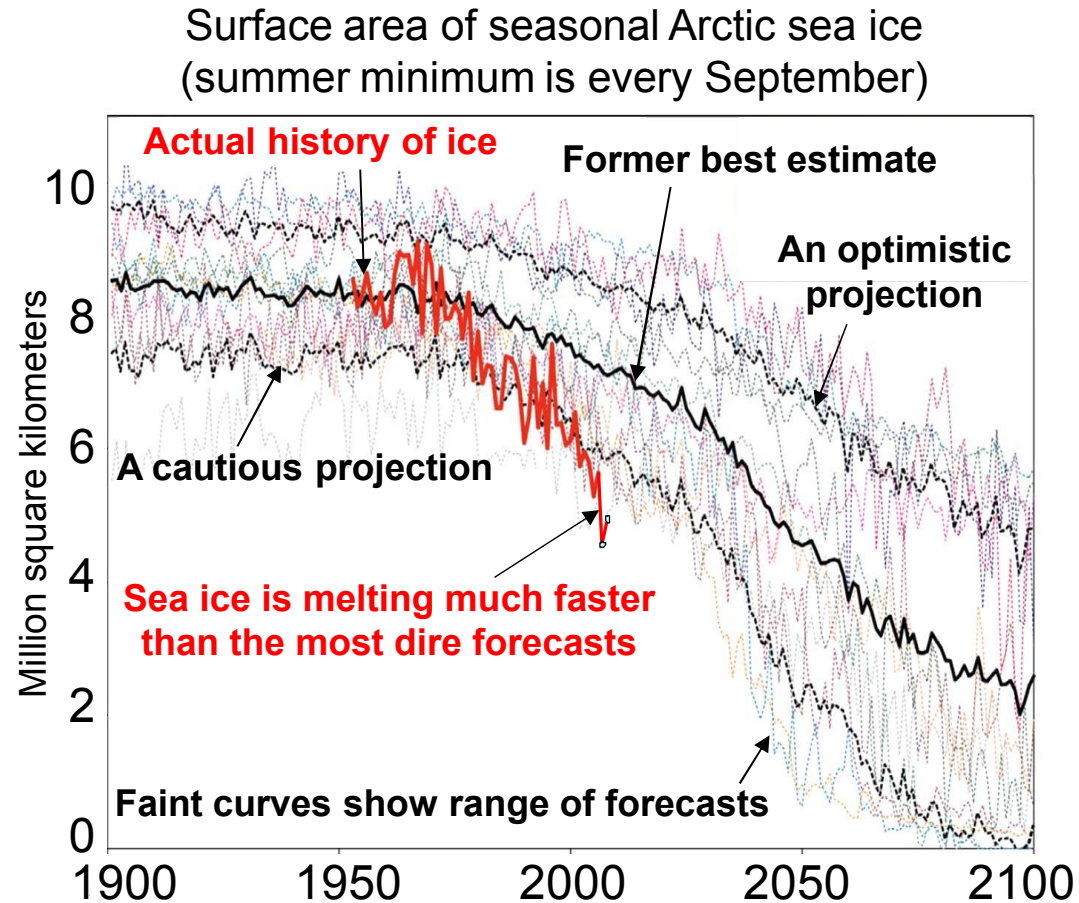
- Russia claims the Arctic as its “strategic resource base.”

- NATO disagrees with Rus



The Arctic is demonstrating the greatest change due to green house gas emissions

- The acceleration of sea ice loss is grossly underestimated by our best models
- The affects on weather or ecosystems is unknown
- Ice loss will amplify global climate change
- Is the Arctic a prelude for accelerated change elsewhere?

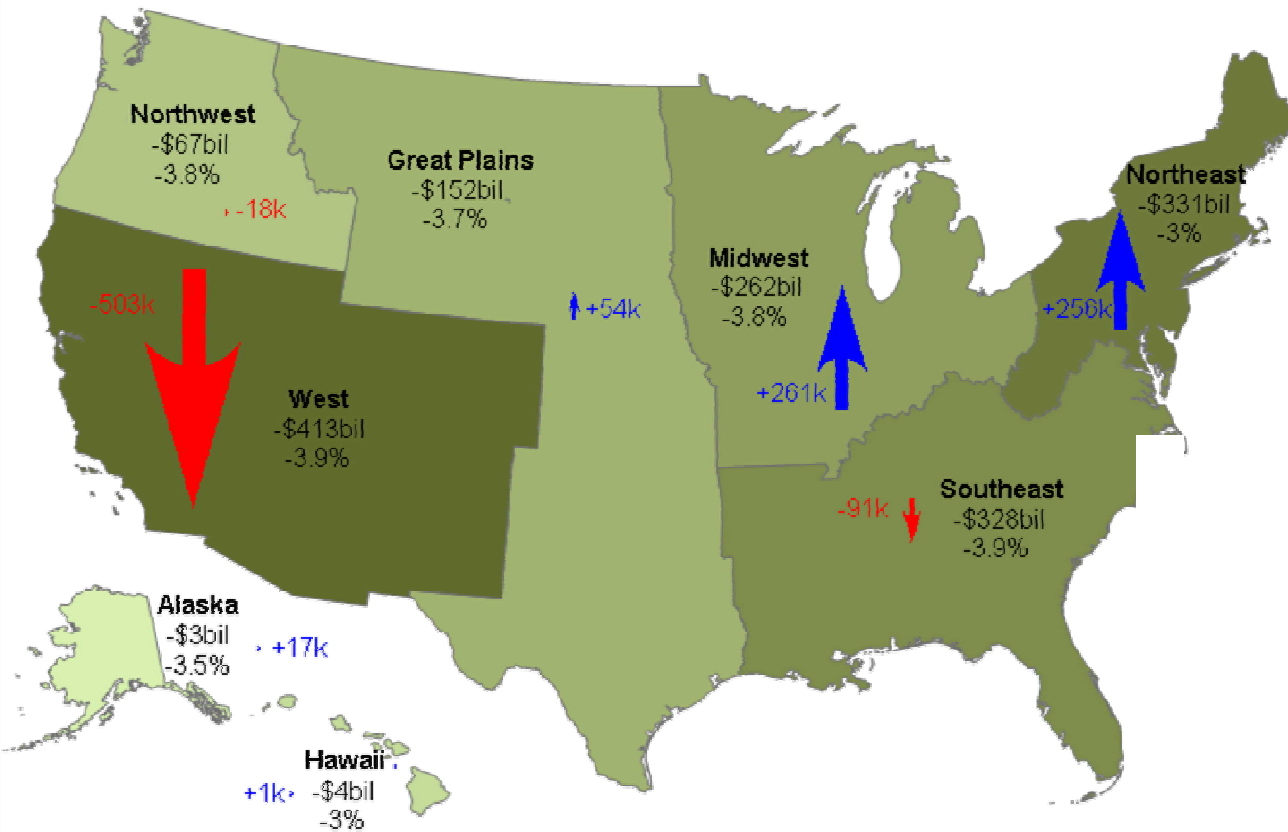


Updated from Stroeve, *et al.*, 2007

There are large uncertainties in “predicting” future climate.

Climate Models coupled to economic models can quantify human impacts

Scenario: Climate driven drought reduces agricultural production

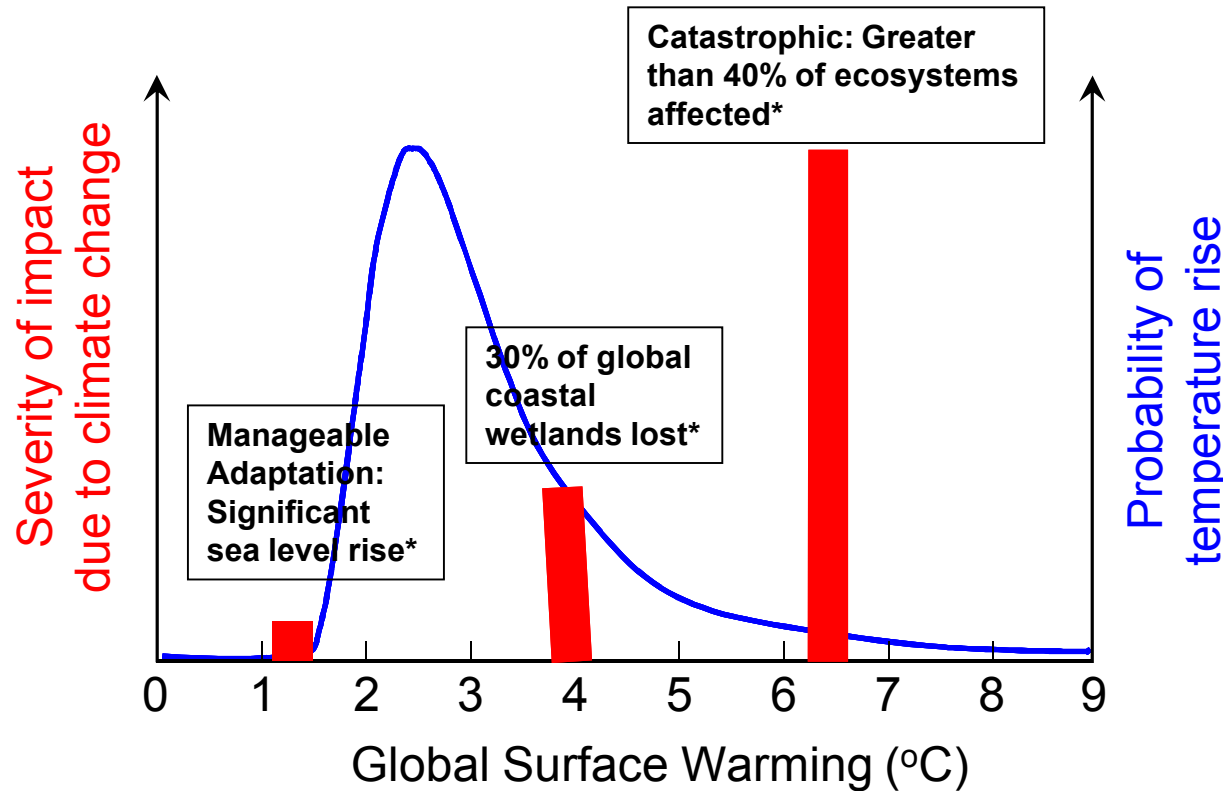


Economic losses from BAU case in 2050

- Nation loses \$35T over 40 years
- Losses are not uniform across regions
- People migrate to regions with relative economic advantage

Region	Cumulative \$ Impact
Northeast	\$7.5T
Southeast	\$7.4T
Midwest	\$5.9T
Great Plains	\$3.4T
Northwest	\$1.5T
West	\$9.3T

Although there are uncertainties with the magnitude of climate change, are we willing to take the risk of not acting?



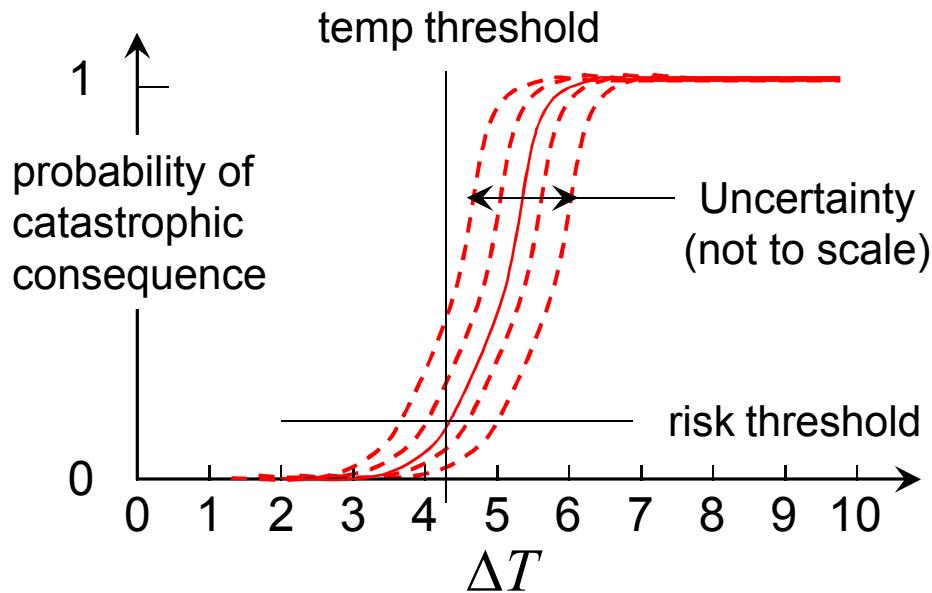
**Intergovernmental Panel on Climate Change (IPCC): Climate Change 2007: Synthesis Report*

Uncertainty in Temperature Rise – An Analogy

- At a minimum, the gun is loaded and aimed at our foot.
- Based on the uncertainty, the gun could be pointed at our head but we don't know how many bullets are in the chamber
- We need to take action and remove bullets from the gun



Although there are uncertainties with the magnitude of climate change, are we willing to take the risk of not acting?



■ Uncertainty Quantities

- Rate at which global temperature increases.
- Adaptation measures that are taken.
- Ability to control Greenhouse gas emissions.
- Response of Earth system