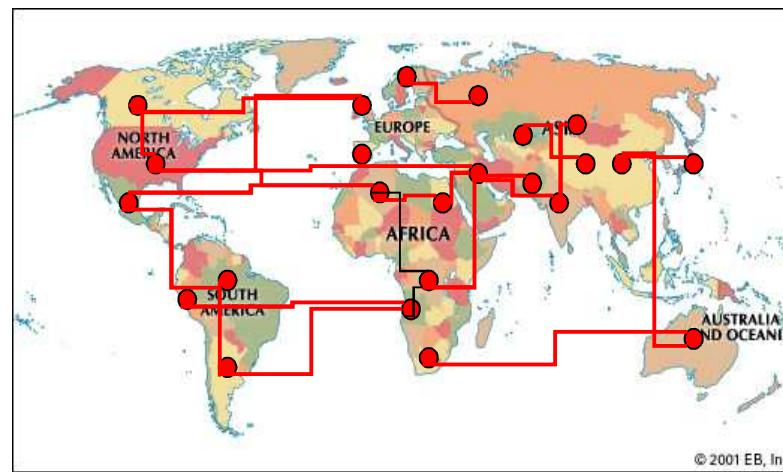


SAND2009-2608P

A Snapshot: Climate, Conflict, & Risk



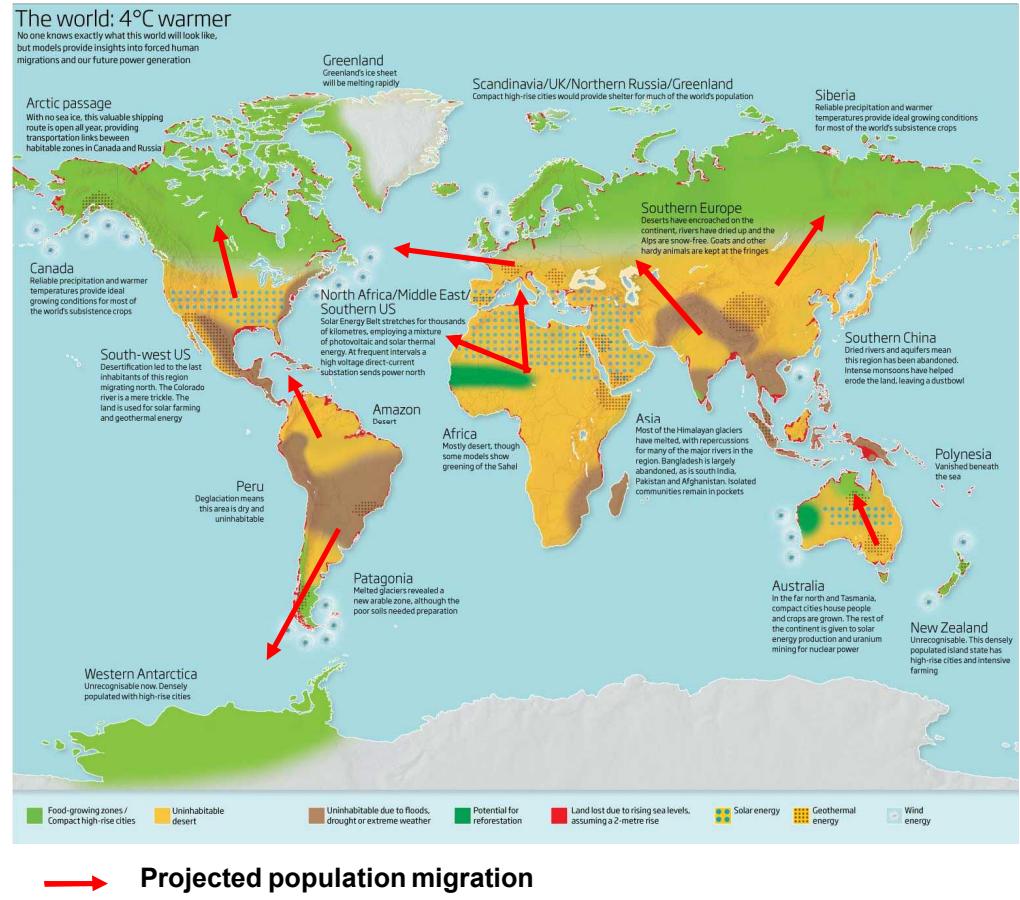
Climate change consequences are complex, interrelated and threatening.

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



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



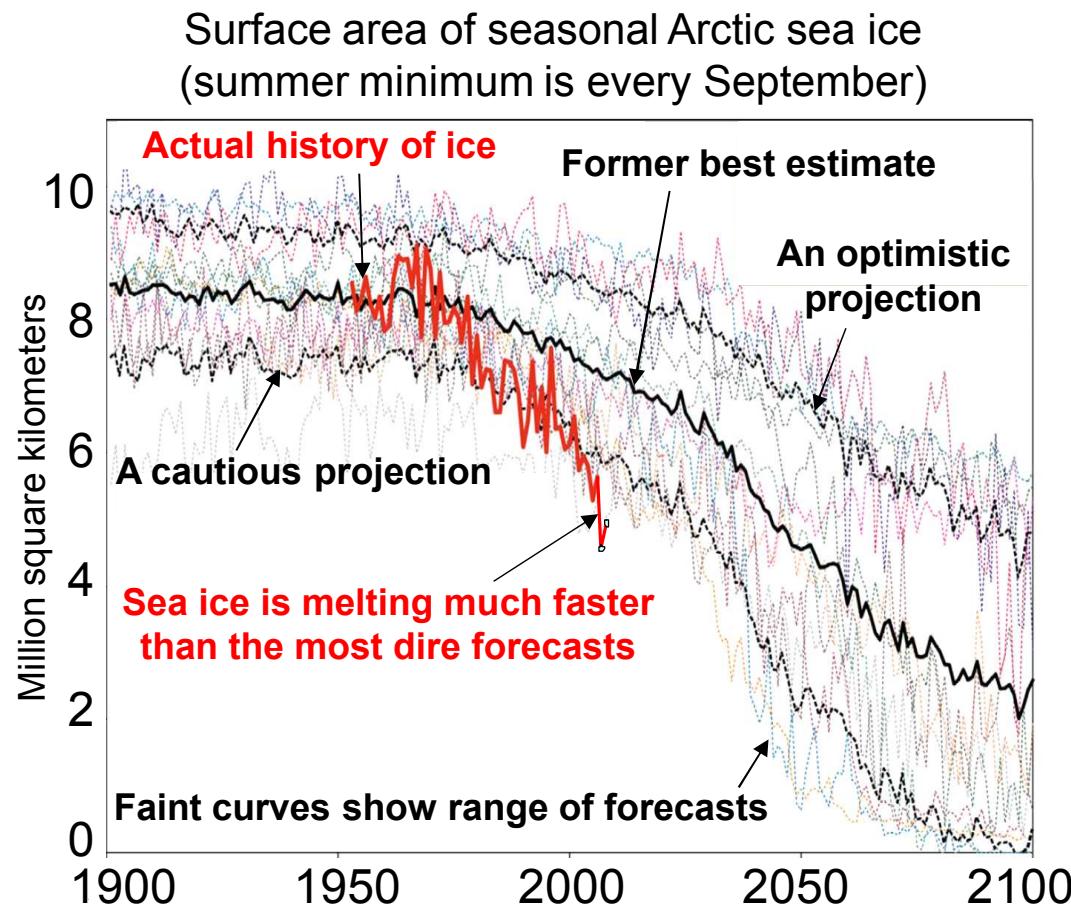
■ An economically accessible Arctic will change global power balances.

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



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?

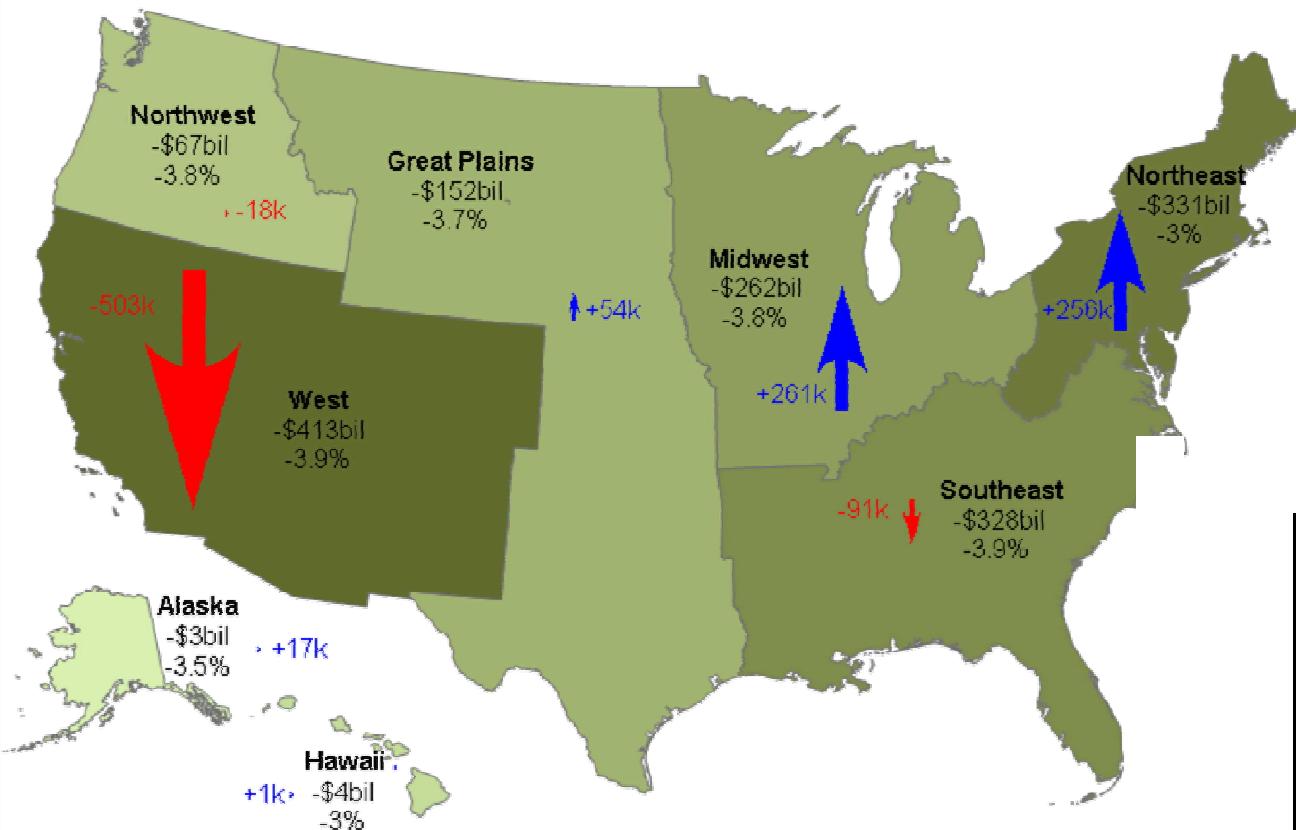


Updated from Stroeve, et al., 2007

There are large uncertainties in “predicting” future climate.

Climate Models coupled to economic models can quantify human impacts

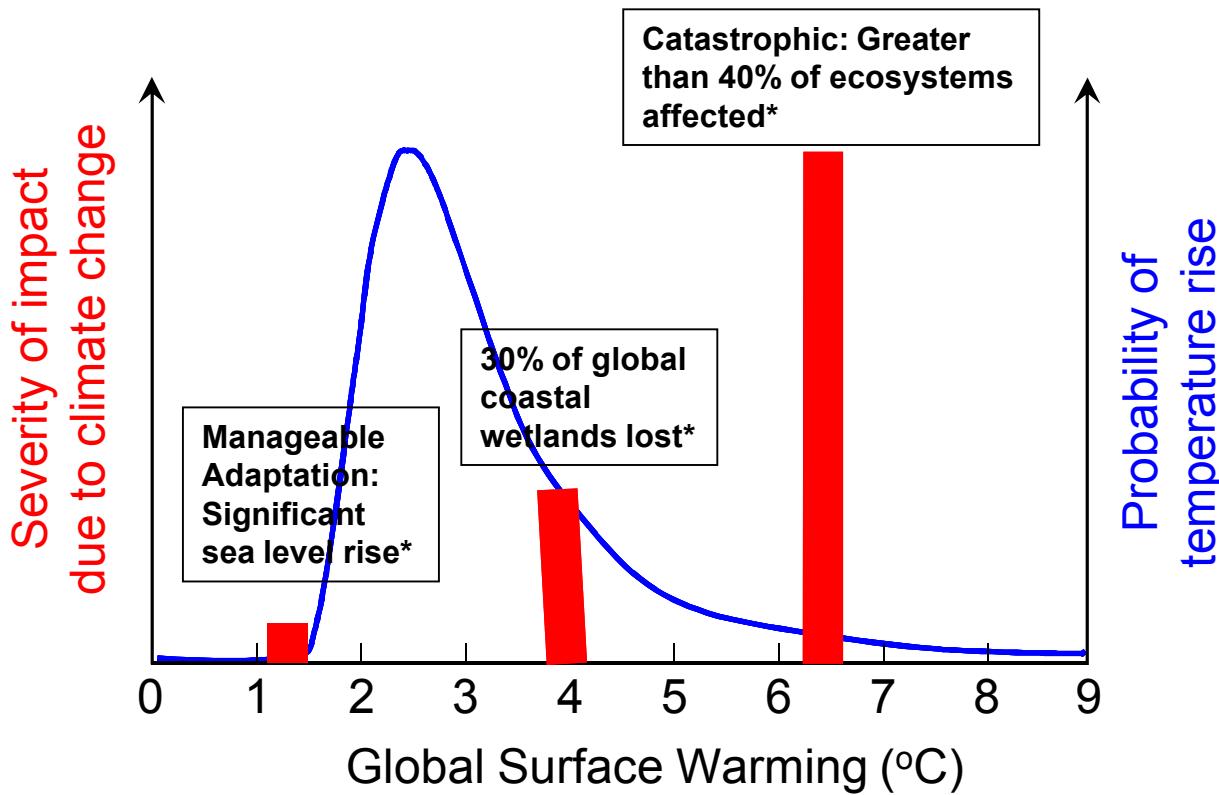
Scenario: Climate driven drought reduces agricultural production



- 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?



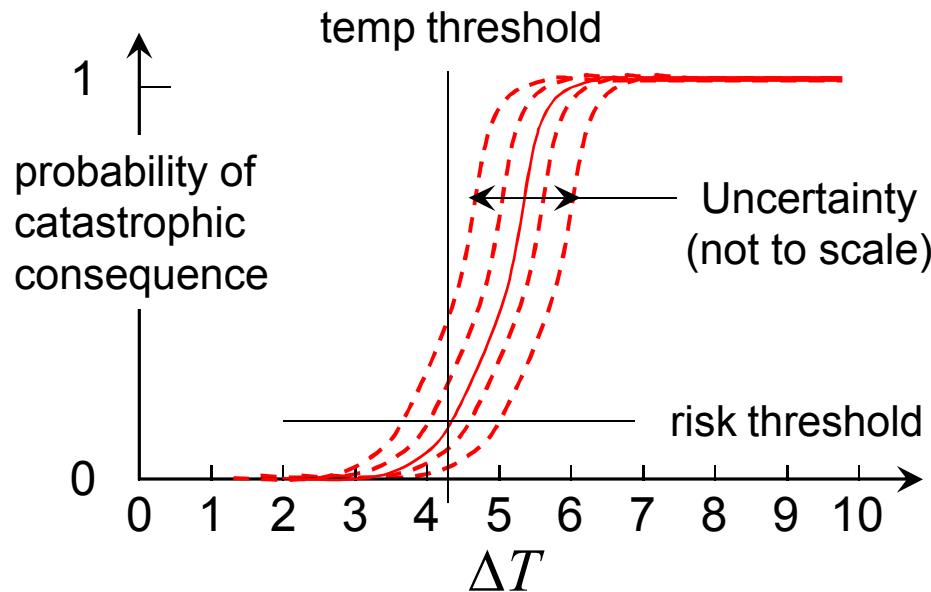
*Intergovernmental Panel on Climate Change (IPCC): Climate Change 2007: Synthesis Report

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