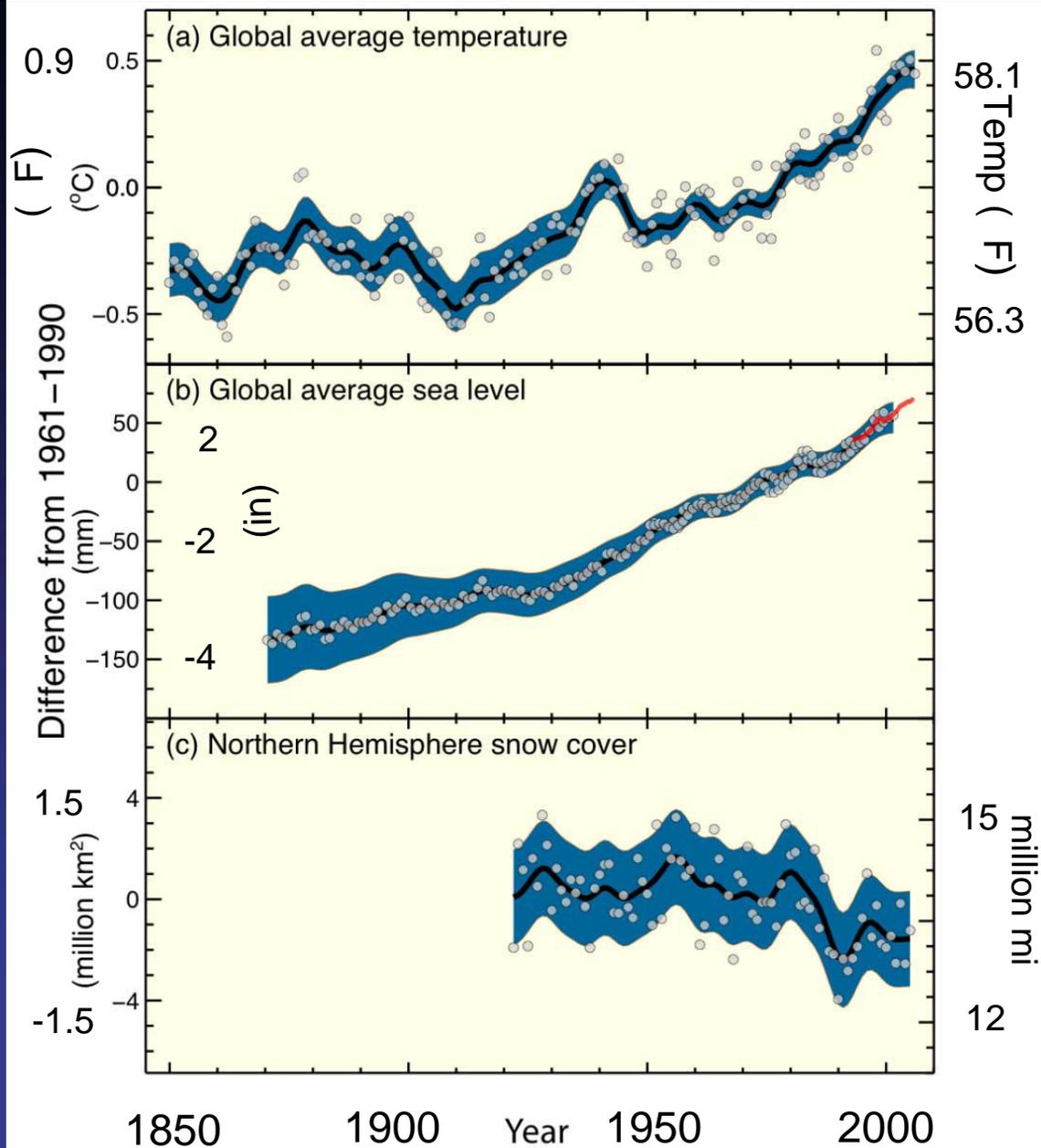


Climate Change: The Scientific Evidence

Payal Parekh

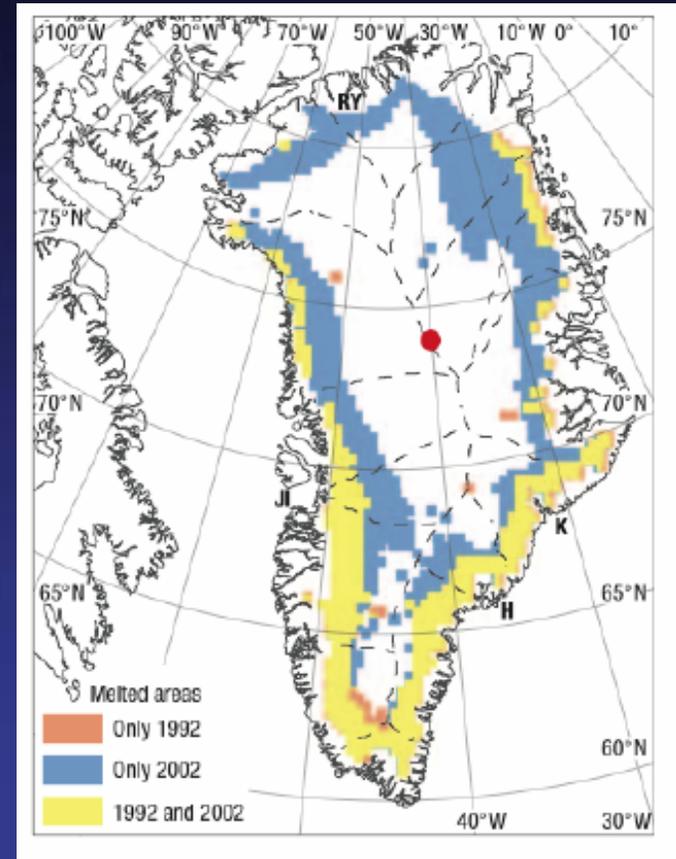
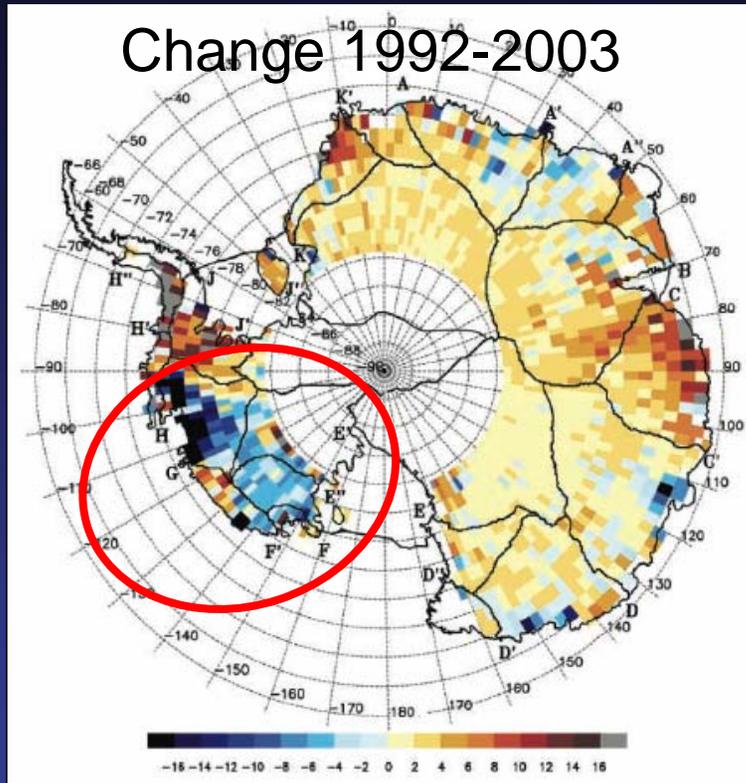
Outline

- Evidence of climate change
- Are humans responsible?
- What does the future hold?
- How can we avoid dangerous climate change?



- Temp. has already increased 0.75° C (1.35° F)
- Committed to at least 1.2 °C (2.1° F) warming.
- 1961-1992: 0.07 in/yr
- Since 1993, 0.12 in/yr
- Mountain glaciers and snow cover have declined in both hemispheres.

Melting Ice Sheets

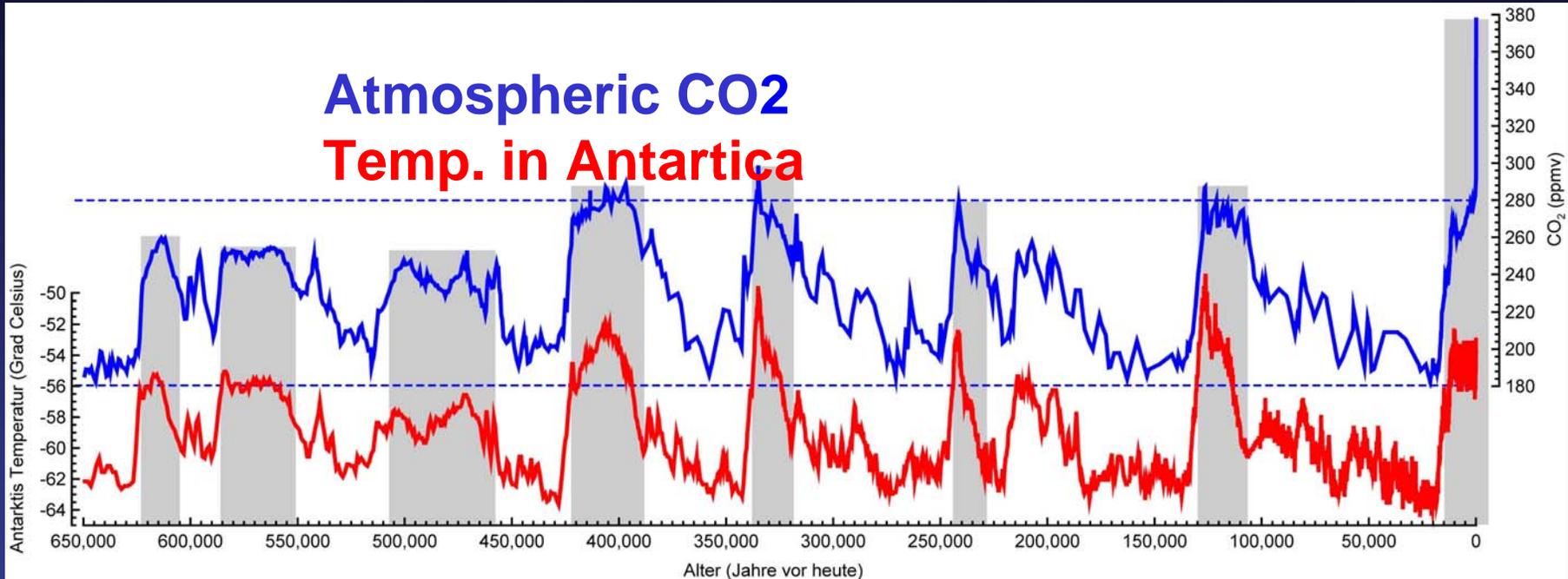


Antarctica

Davis et al. (2005), Bell, 2008

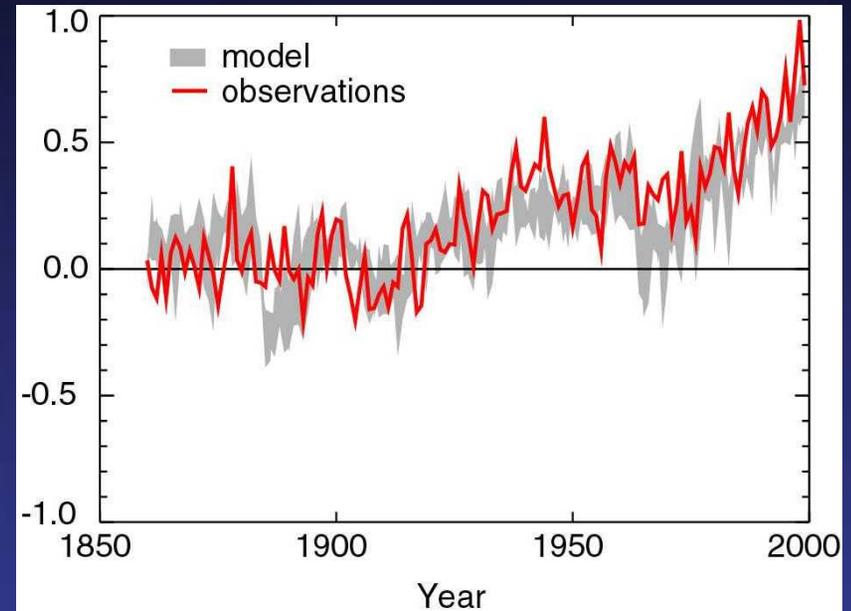
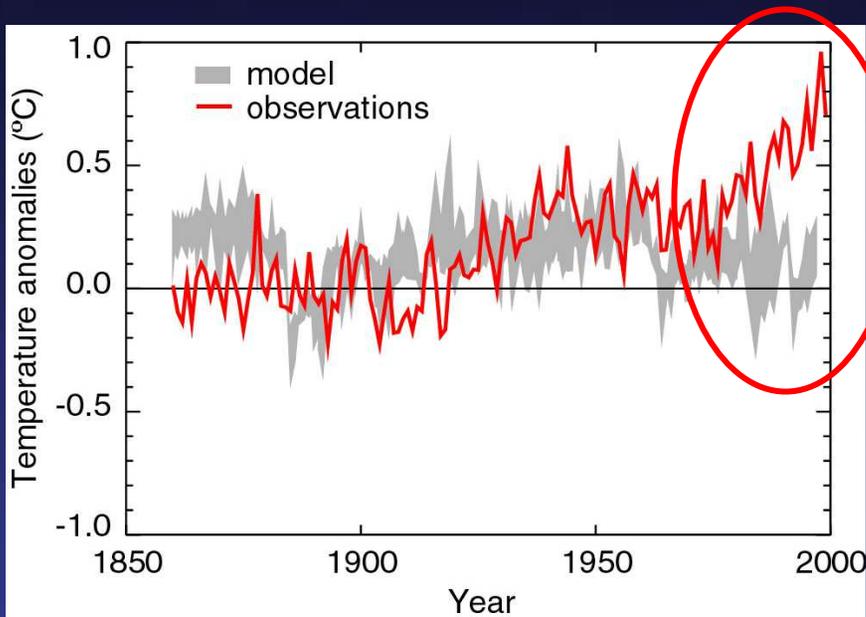
The Last 650,000 Years

Atmospheric CO₂ Temp. in Antarctica



- Ice Core Record from Antarctica
- CO₂ has never been as high as it is today
- Correlation between CO₂ and temperature

Carbon Dioxide and Temperature

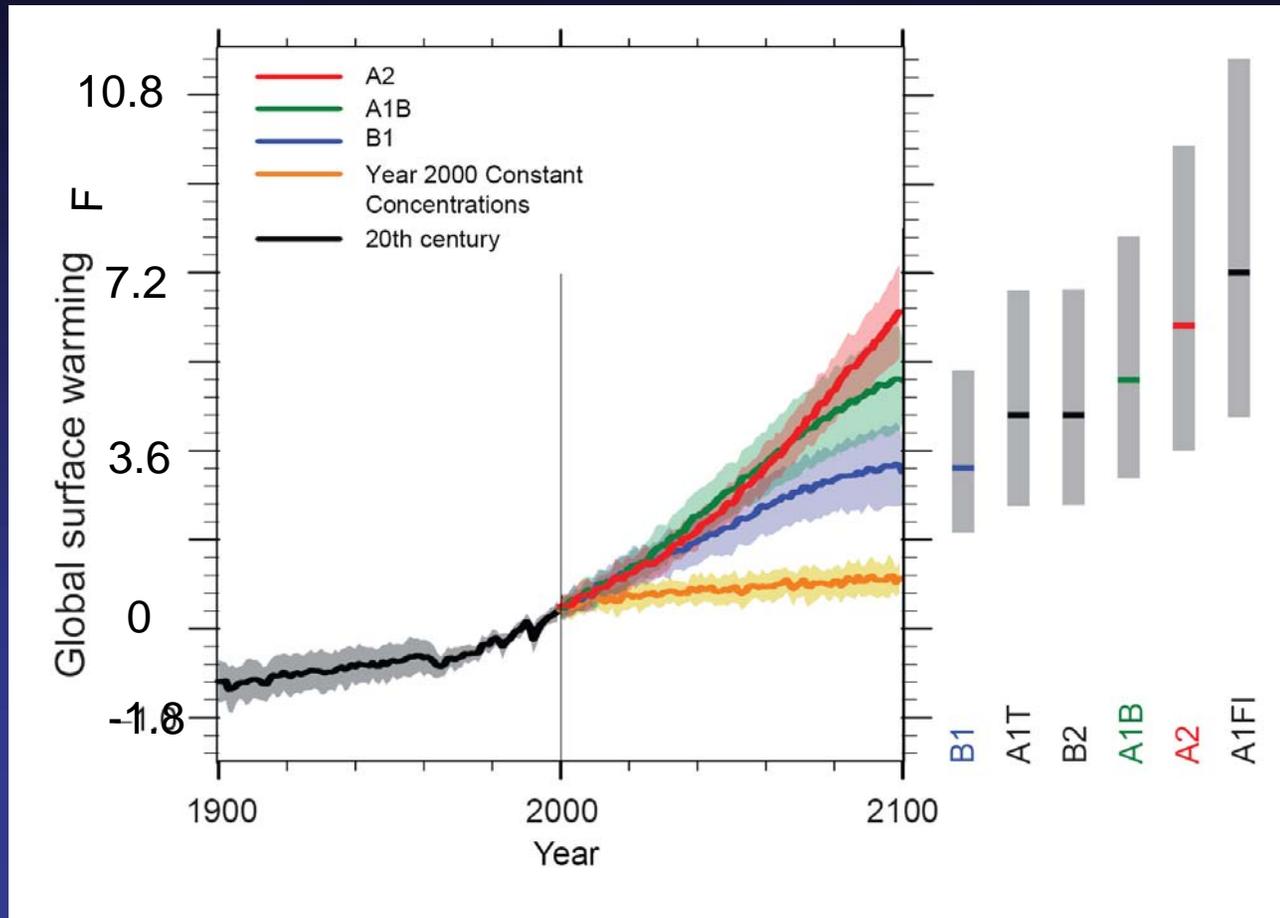


Natural variability
Sun and volcanoes

Human influences
Greenhouse gases and dust

Stott et al. (2000)

Which pathway?



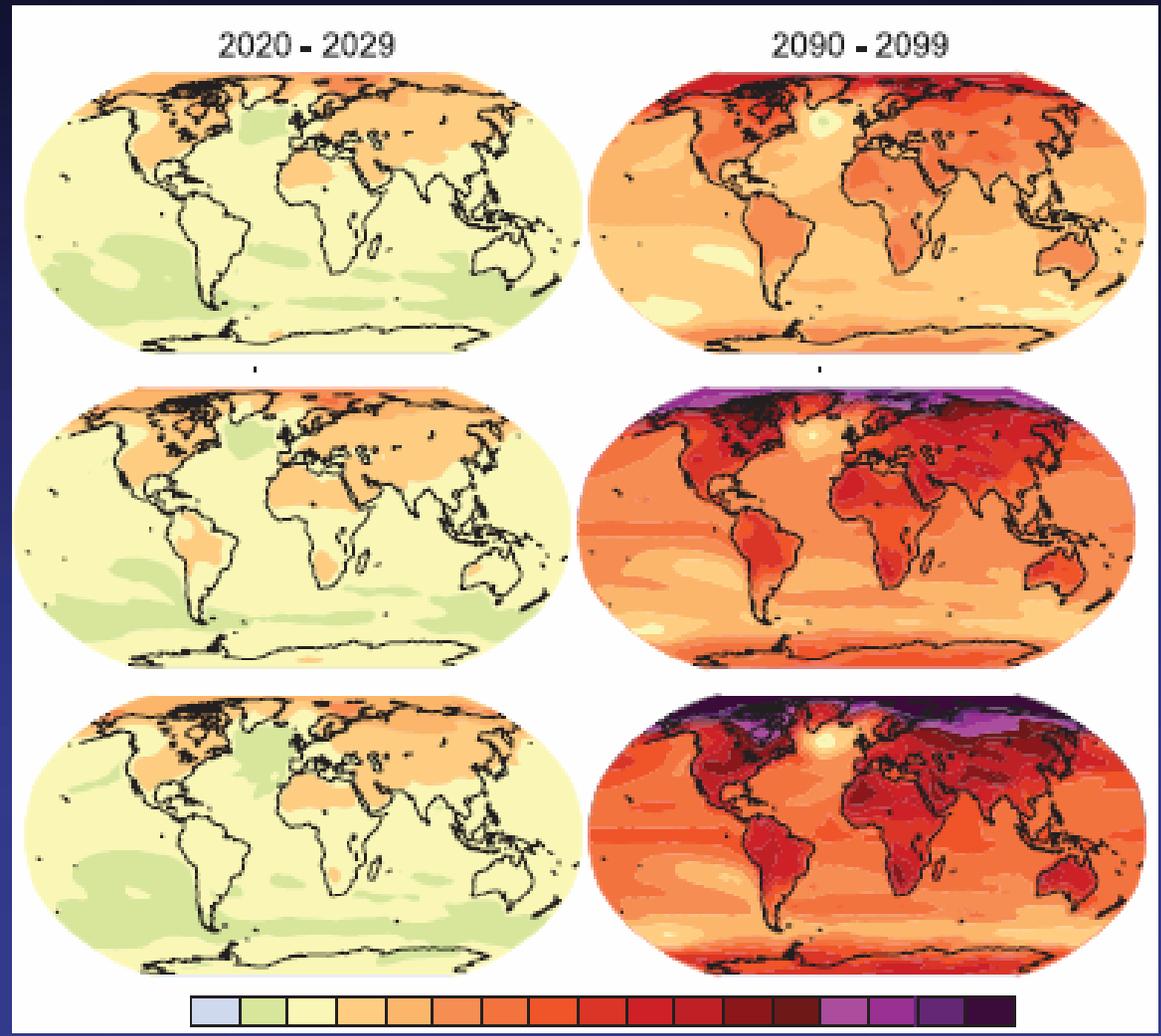
Temperature Projections

Greenhouse gas Emissions

Low
3.2° F

Medium
5° F

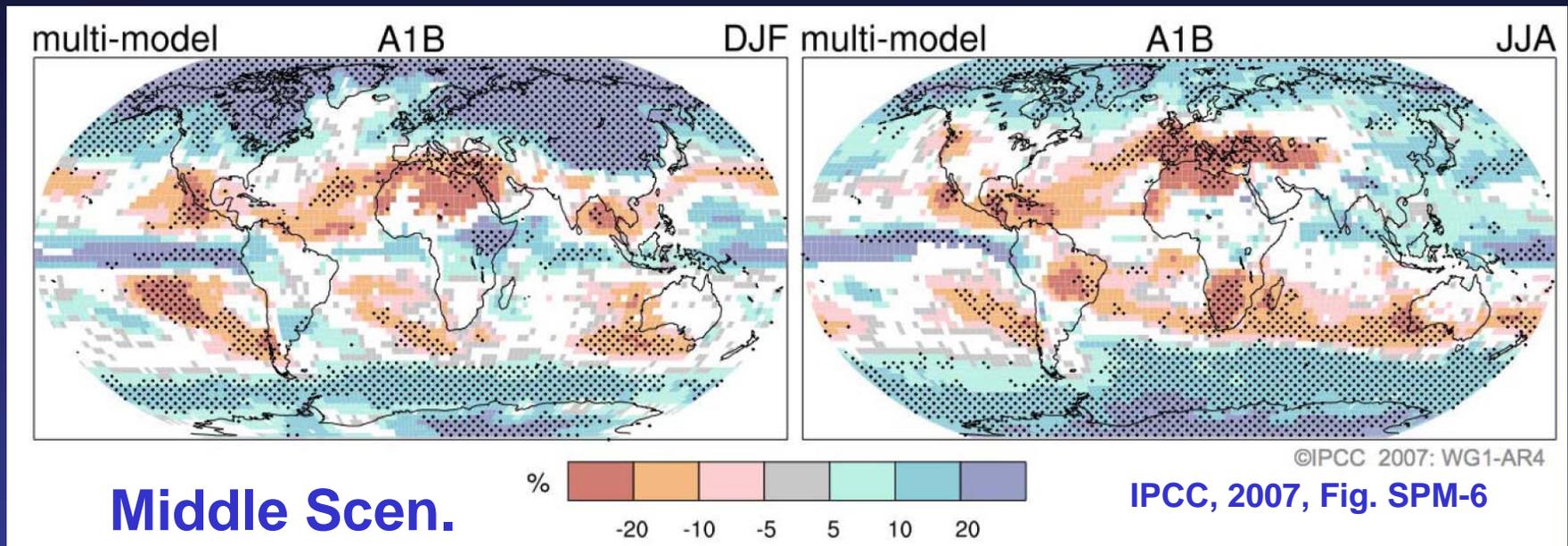
High
6.1° F



Precipitation

Winter

Summer



Drier

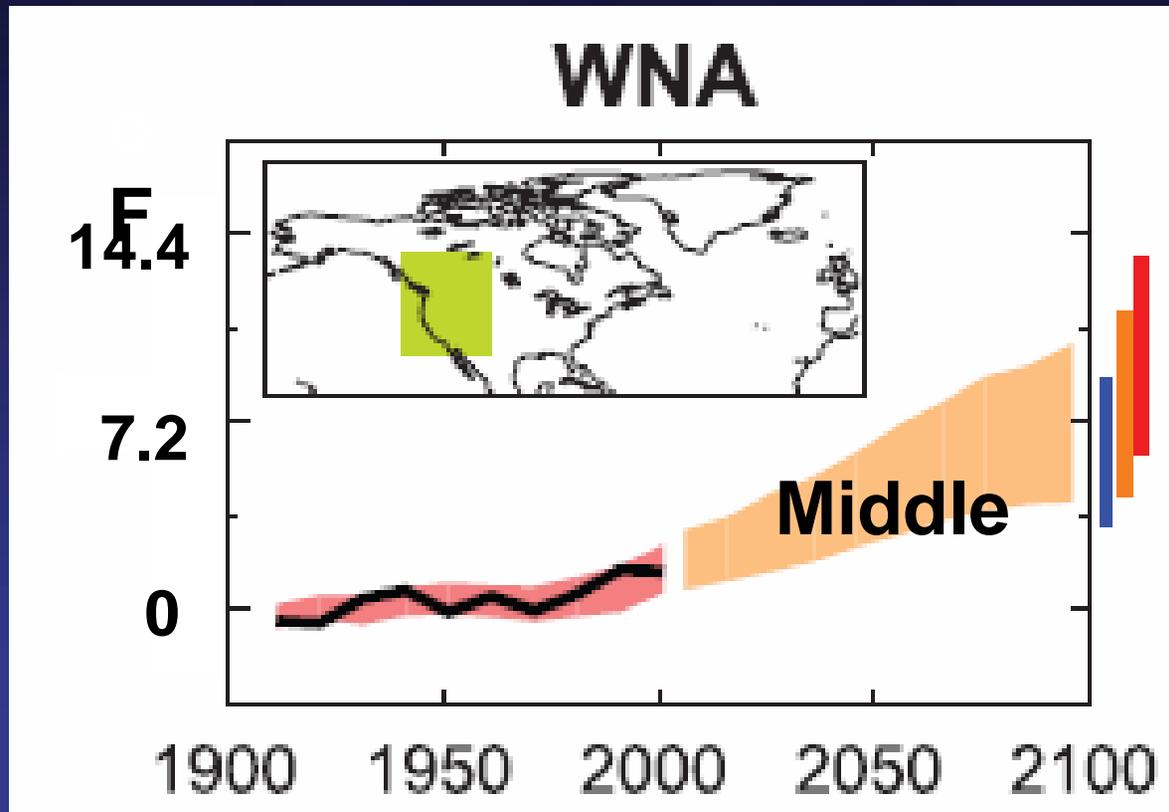
Wetter

- Rainfall increases at high latitudes
- Dry regions (Sahara) become drier

Impacts



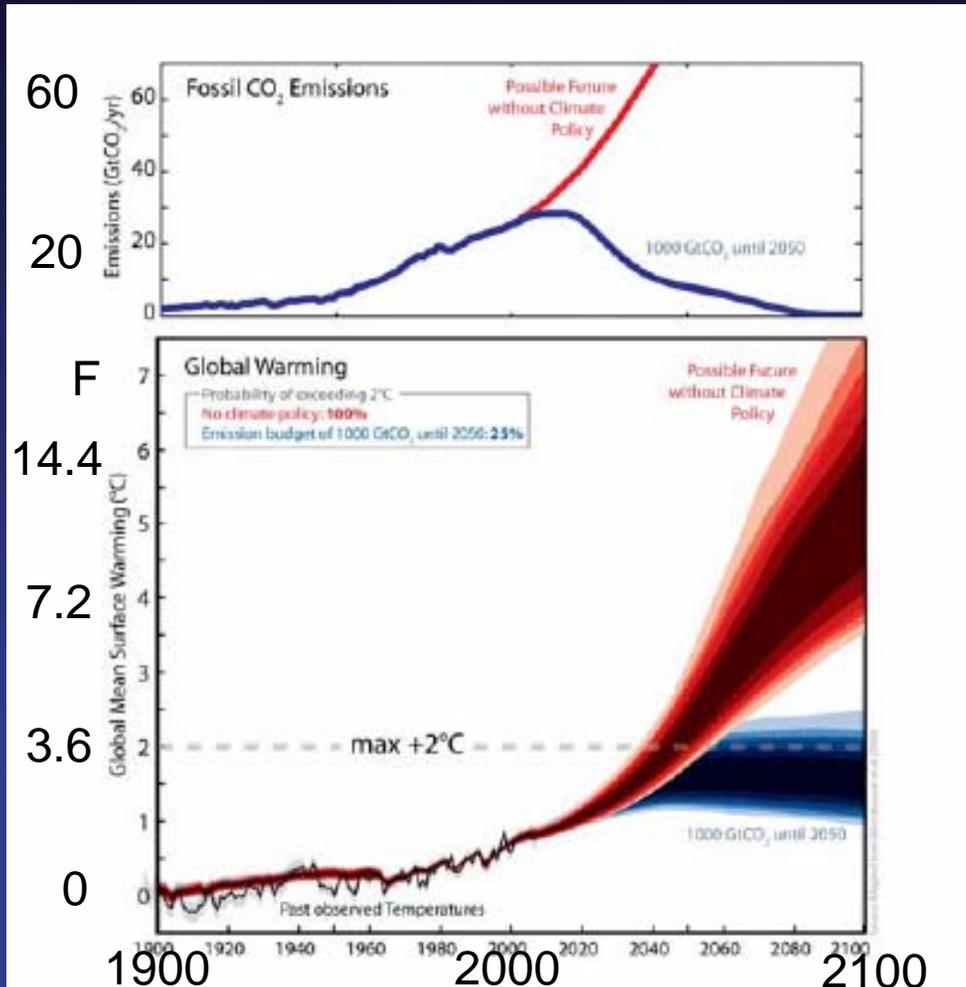
Western N. America



Impacts western N. America

- **Decreased snowpack, more winter flooding, reduced summer flows - exacerbating water shortages**
- **Increased number, intensity and duration of heat waves in urban areas**
- **Increasingly stressed coastal regions**

How much can we pollute?



- 1000 billion tonnes of CO₂ between 2000- 2050
- 75% of staying below 2 degrees C – still 1 in 4 chance of going above.
- The past nine years already polluted ~ 300 billion tons!
- 350 ppm= 750 billion tonnes
- Emissions peak 2015-2020

Conclusions

- **Climate change is happening**
- **We can expect higher temp., sea level rise, changes in rainfall, more extreme weather events**
- **By reducing greenhouse gas emissions, we can limit warming to 3.6° F.**
- **Ball is in the court of policymakers!**