

What do we know, what do we  
not know, about climate change?  
What are the potential impacts on  
Hawaii and how might we  
respond?

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# Resources on climate change impacts

- Most reliable source of information is the Intergovernmental Panel of Climate Change (IPCC).
- Their most recent reports appeared in February (WGI) and April (WGII) of this year.
- But even these reports of 2007 do not take into consideration scientific publications beyond the year 2005.
- In 2006 significant new findings were published.

# One significant threat: sea level rise

IPCC, WGI 2007 report says:

- “Continued greenhouse gas emissions at or above current rates would cause further warming and induce many changes in the global climate system during the 21st century that would *very likely* (probability >90%) be larger than those observed during the 20th century.”
- “Anthropogenic warming and sea level rise would continue for centuries due to the timescales associated with climate processes and feedbacks, even if greenhouse gas concentrations were to be stabilized.”
- Current rate of sea level rise: Approximately 1 foot per century. Model-based predictions (“excluding future rapid dynamical changes in ice flow”) range up to 2 feet per century by 2100.

# Sea level rise continued

But (IPCC WGII) says:

- “Some large-scale climate events have the potential to cause very large impacts, especially after the 21st century. Very large sea-level rises that would result from widespread deglaciation of Greenland and West Antarctic ice sheets imply major changes in coastlines and ecosystems, and inundation of low-lying areas,... . There is medium confidence (probability about 50%) that at least partial deglaciation of the Greenland ice sheet, and possibly the West Antarctic ice sheet, would occur over a period of time ranging from centuries to millennia ... causing a contribution to sea level rise of 4-6 m or more. The complete melting of the Greenland ice sheet and the West Antarctic ice sheet would lead to a contribution to sea-level rise of up to 7 m and about 5 m, respectively.”
- Observations in 2006 indicate even higher probabilities of this to happen.

# Other threats

- Coral bleaching
  - Impacts tourism, fisheries and additional unknown ramifications
- Ocean acidification
  - Negative impacts on marine shell forming organisms (eg. Coral) and their dependent species and additional unknown ramifications
- Increased dispersion of tropical diseases
- And others...

# How might we respond?

## Adaptation

Adaptation is our main counter measure

1. Increased robustness in infrastructure
2. Innovation
  - Socioeconomic adjustments

# How do we respond?

## Mitigation

Mitigation: Reduction of greenhouse gas emissions

- Global impact for a small island state with small emissions (0.3% of US) is low.
- However, the opportunity to provide a model for mitigation is very high.