



# Climate Change and Energy:

## an overview of today's workshop

### **DOCKET**

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### **Staff IEPR Workshop**

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# Objectives



- To present and discuss information available on climate change impacts to the energy system in CA
- To start discussing how climate change may affect renewable sources of energy in CA and identify areas of future work
- To discuss a proposed methodology on how climate change may affect energy infrastructures (e.g., transmission lines)

# Products

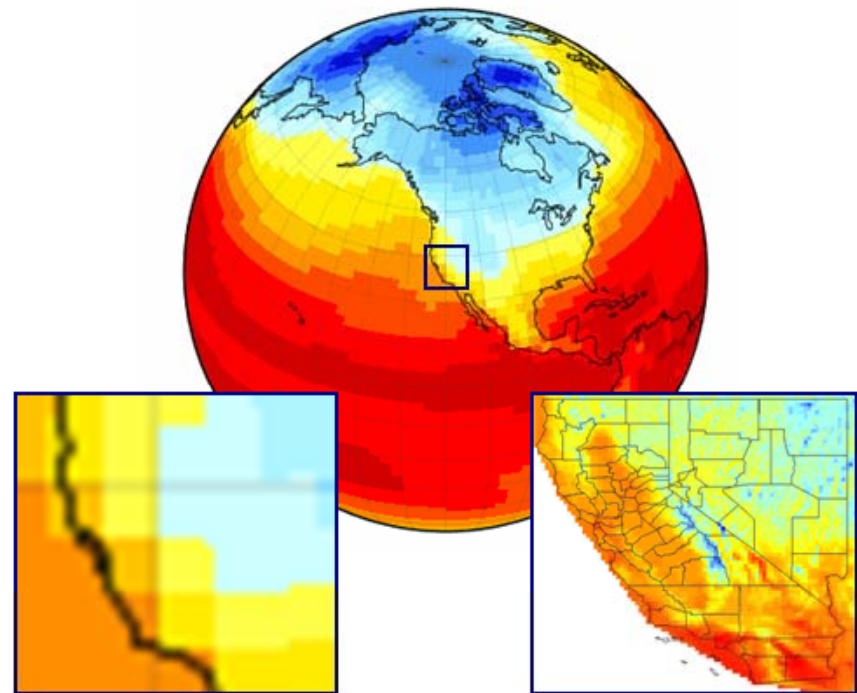


- A very enjoyable and informative workshop!
- Two white papers to inform the preparation of the 2009 IEPR (August/September 09)
  - Climate change and energy demand and generation (hydropower and renewables)
  - Potential impacts of climate change on energy infrastructures (contract with LBNL)

# Relevant Past PIER Studies



- Climate Monitoring, Analysis, and Modeling
- Energy Demand
  - Mendelsohn 2003
  - Franco and Sanstad 2006
  - Auffhammer 2009
- Hydropower generation
  - Aspen 2005
  - Lund et al., 2006 and 2009
  - Dracup et al., 2006 and 2009



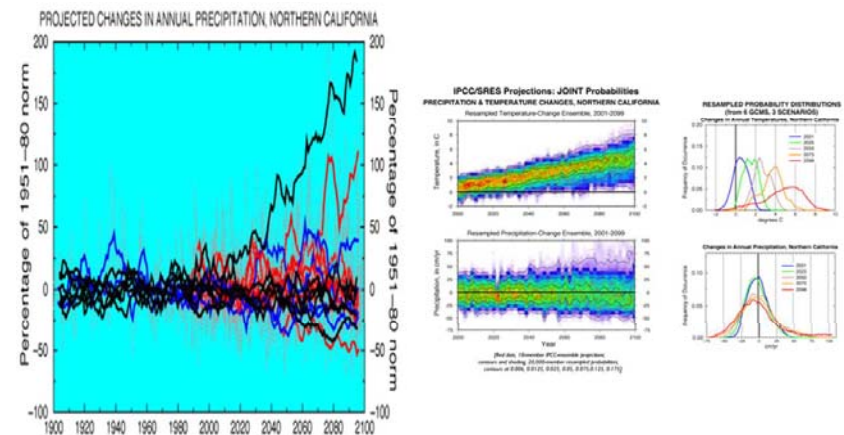
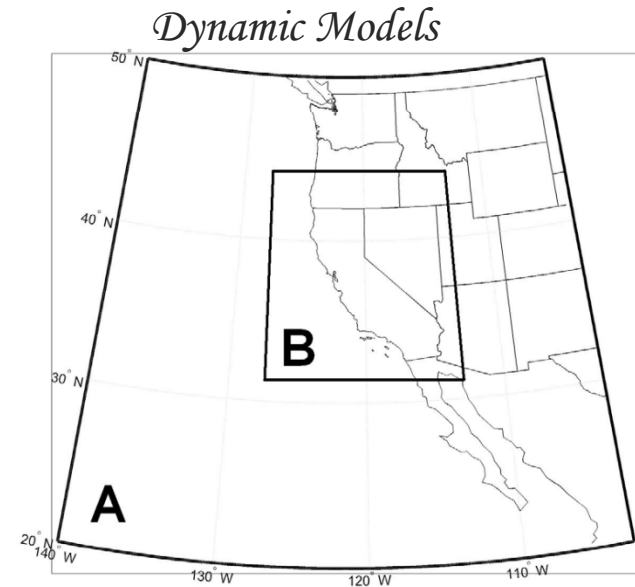
*Statistical Downscaling*

*Only temperature and Precipitation*

# On-going and Future PIER Studies



- Probabilistic climate projections for CA (Scripps, LBNL, UCSC, and LLNL)
- Climate change and energy infrastructures (vulnerability) – LBNL
- Potential impacts of climate change on renewable sources of energy (TBD)



Source: Dettinger. PIER report

# Overall Questions



- How would climate change impact electricity demand and by when?
- How would changes in runoff affect hydropower generation?
- Has the already experienced warming in the historical period affected electricity consumption in California?
- Would climate change affect bio-energy generation via impacts to crops and vegetation patterns?
- Should the outputs from regional climate models be used to estimate changes in wind and solar resources under climate change?
- How would the increased risk of forest fires, flooding and other climate extremes affect the reliability of the electricity system?