

# The impact of anthropogenic CO<sub>2</sub> fluxes on atmospheric CO<sub>2</sub> in CAM4.1

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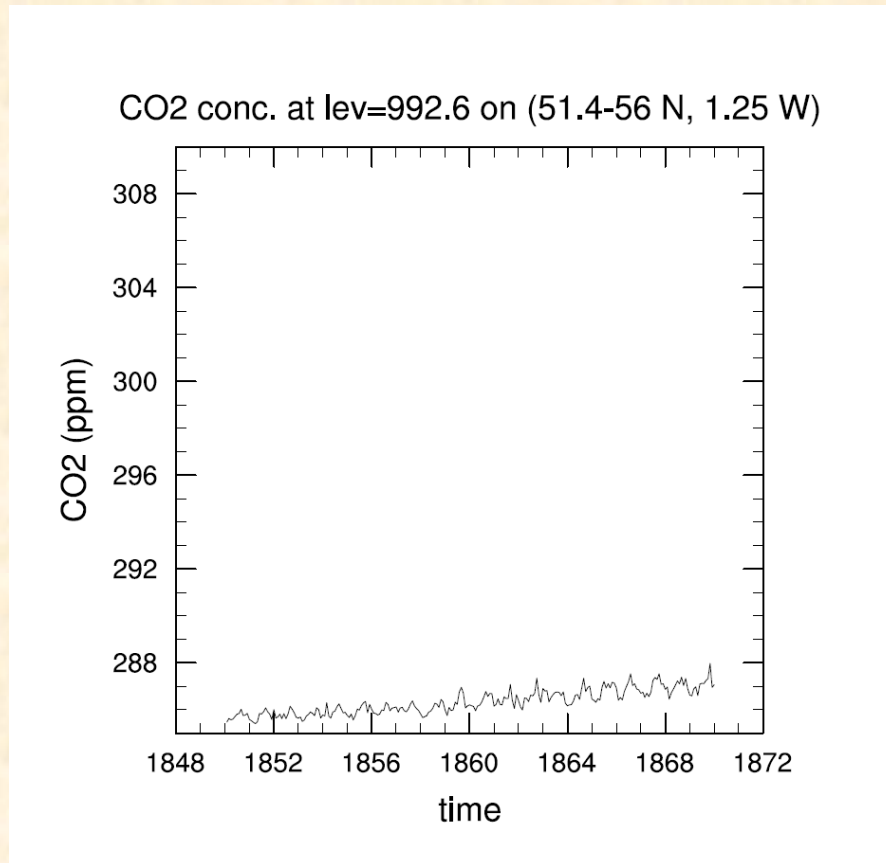
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**CCSM Workshop**

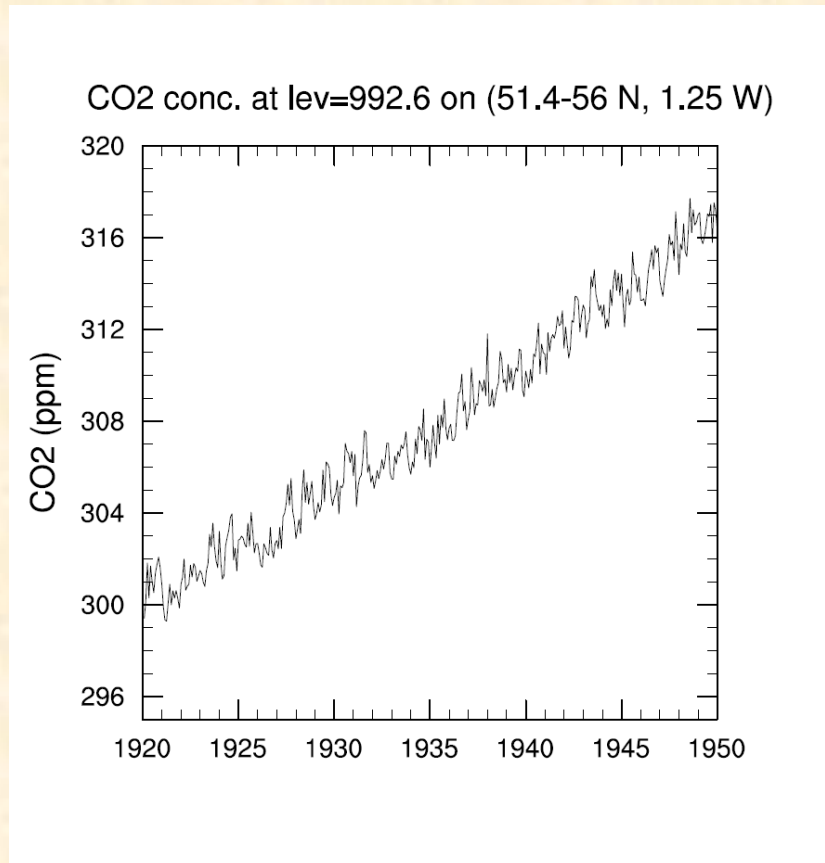
**Breckenridge, CO**

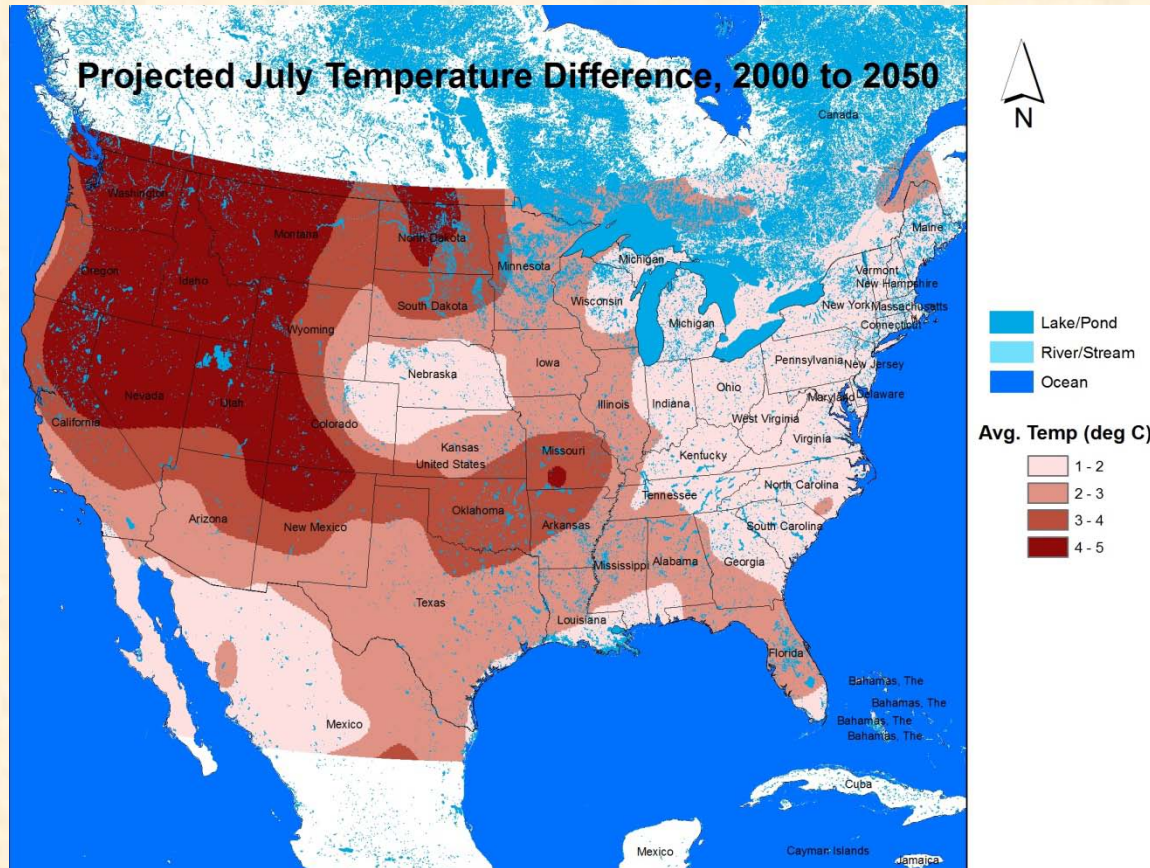
**June 30, 2010**

# 1848-1870



# 1920-1950

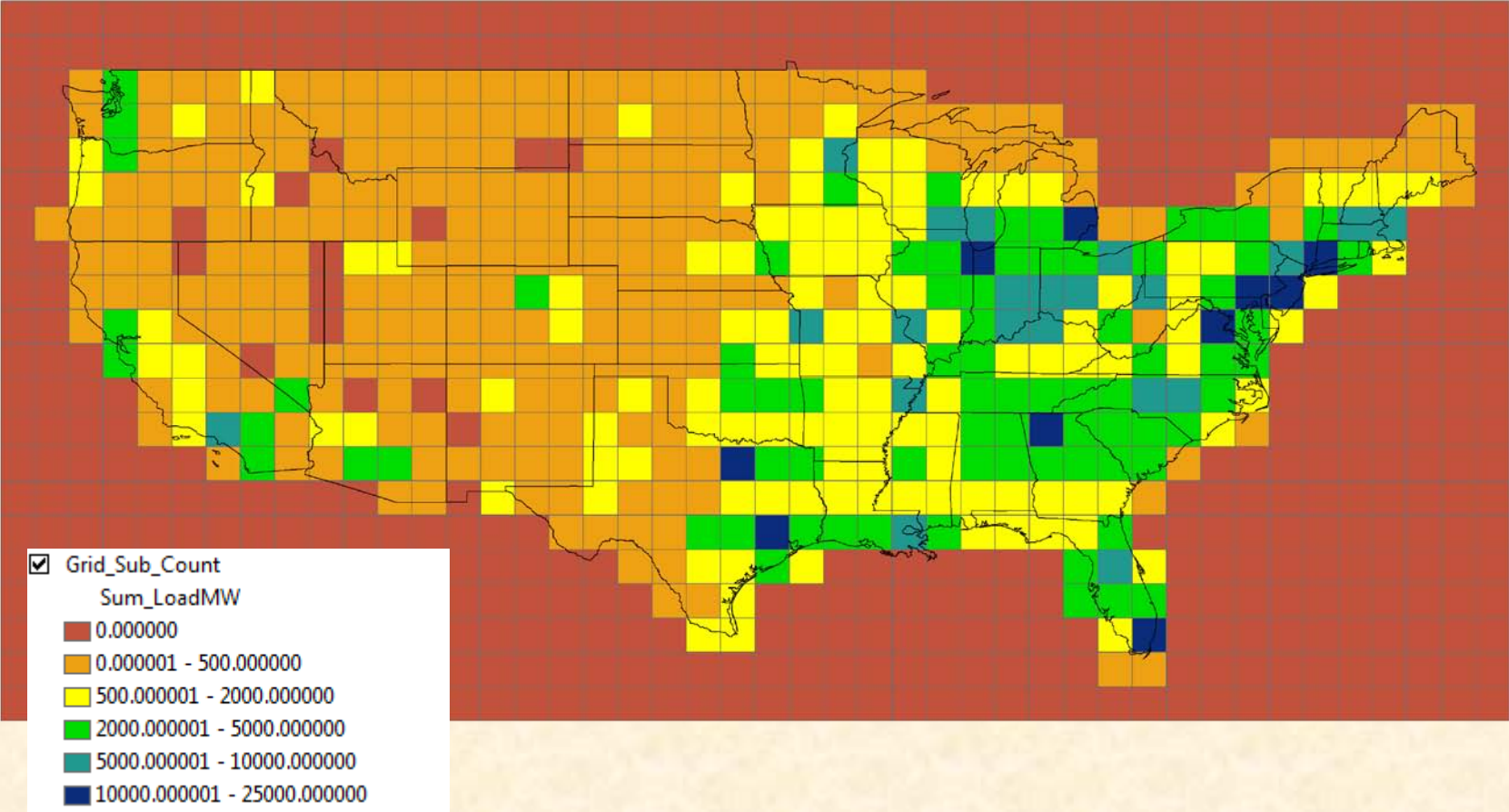




# Climate change impacts on Energy Infrastructure

- **26,500 power plants (T85 grid at the moment....)**
- **Ensembles of heat waves 2000-2050-2100**
- **Populations shifts**
- **How does energy requirements change?**
- **Positive feedback from energy-climate-energy**
- **How would different energy generation portfolios alter energy requirements and CO<sub>2</sub> emission?**

# Total Substations Capacity per Climate Grid (MW)



# Summary

- **Seasonal cycle of atmospheric CO<sub>2</sub> is significantly impacted by monthly anthropogenic CO<sub>2</sub> fluxes (1-4 ppm)**
- **Implications for inverse model estimates of terrestrial biosphere sinks**
- **Increasing impacts from 1850-2010**
- **Fully integrated energy feedback models**

i.e. Erickson III, D. J., D. Jamison, M. Allen, A. Ganguly, F. Hoffman, S. Pawson, L. Ott, E. Neilson, "Data Mining Geophysical Content from Satellites and Global Climate Models," Data Mining Workshops, 2009. ICDMW '09. IEEE International Conference on Data Mining, vol., no., pp. 214-216, 6-9 Dec. (2009).