Climate Change Impacts and Adaptation in Southern California

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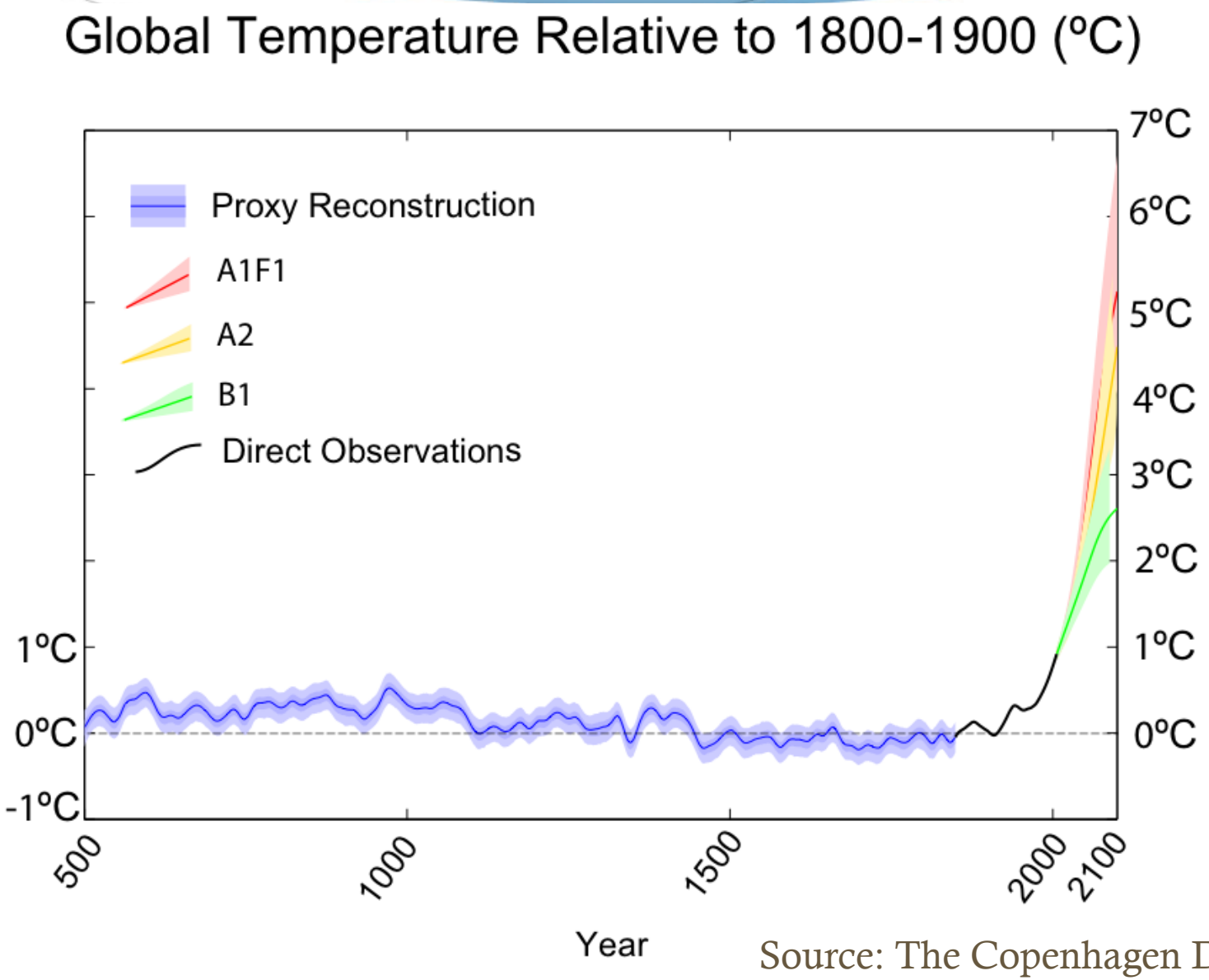
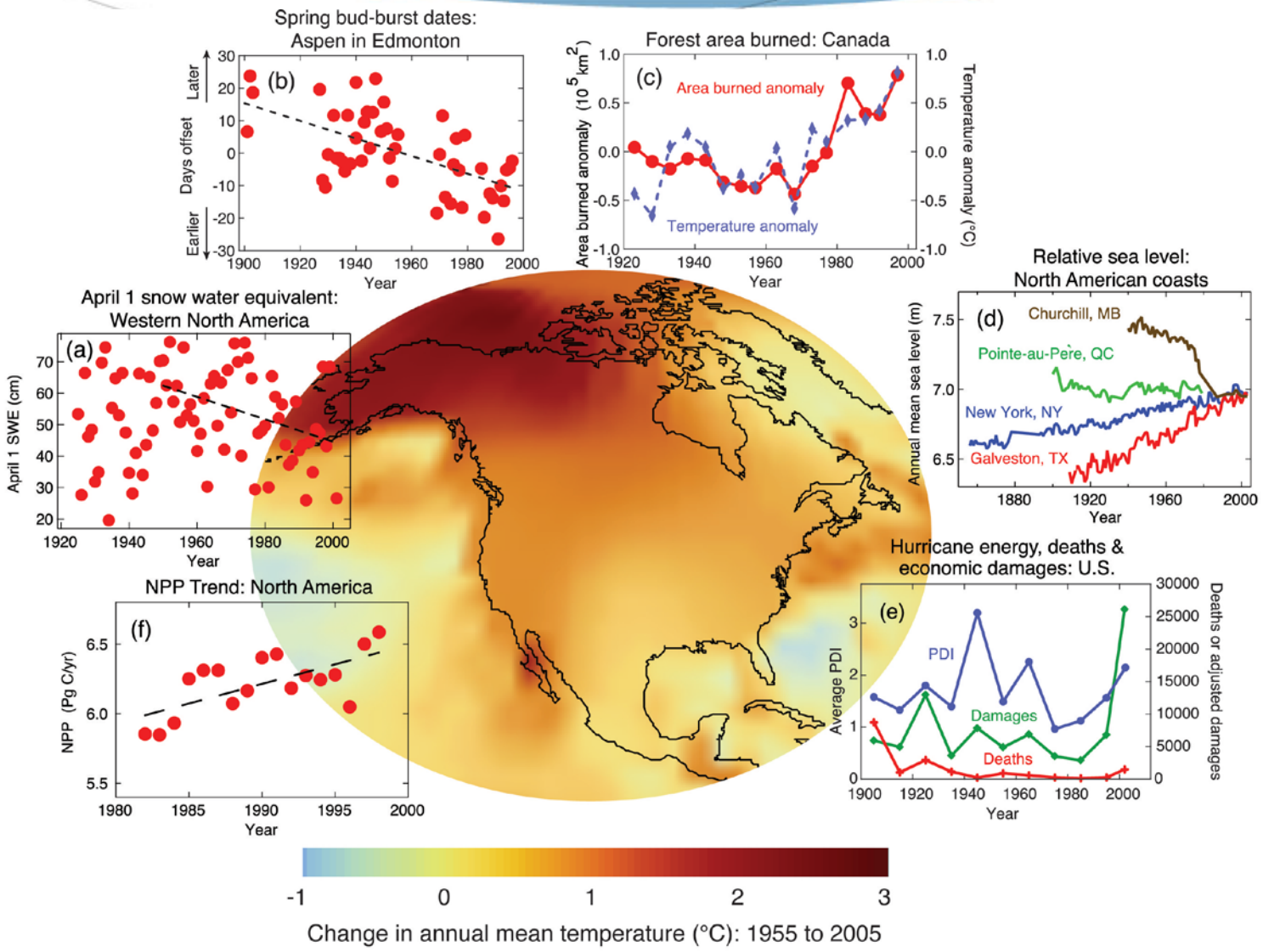
Past and Future Warming



Source: The Copenhagen Diagnosis

Changes in Temperature since 1955

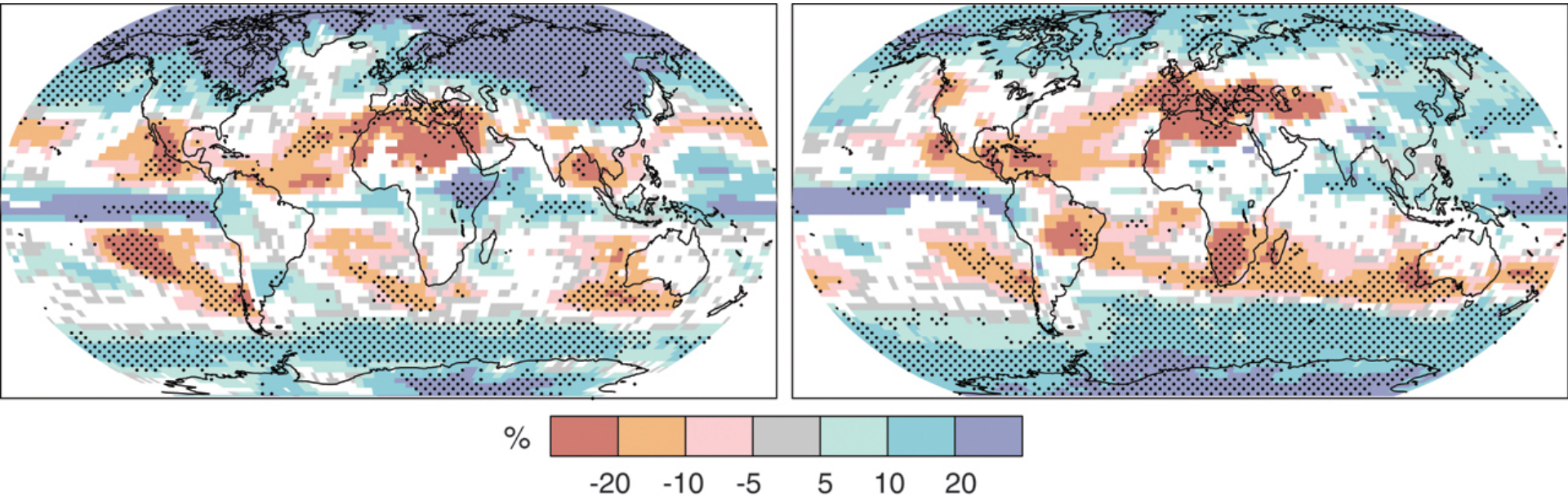


Source: IPCC 2007

Changes in Precipitation in 2100

Winter

Summer



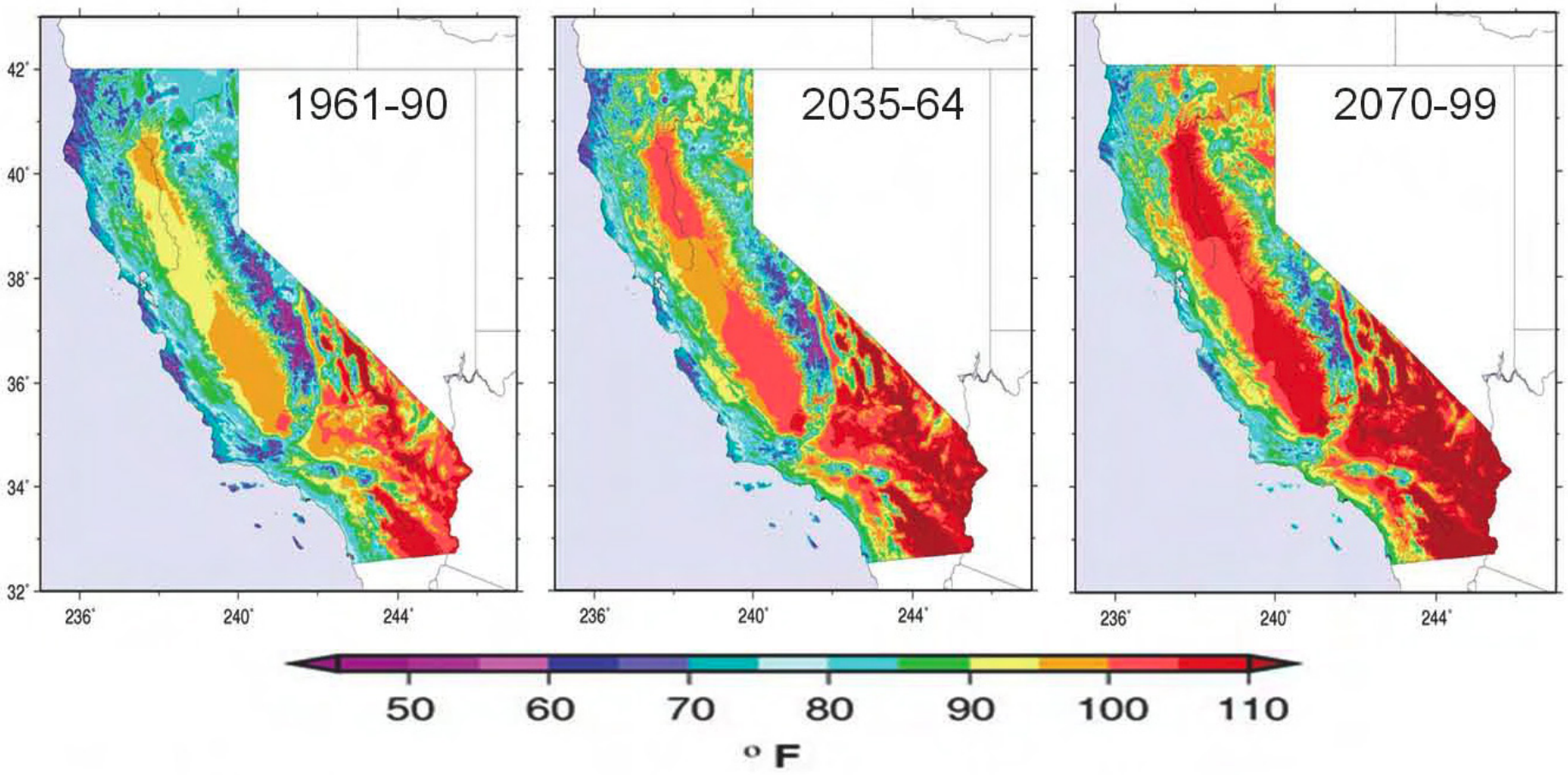
Source: IPCC 2007

Consequences

- Public Health
  - Diseases
  - Air and water pollution
- Biodiversity and Habitat
  - Invasive species
  - Species extinction
  - Habitat fragmentation
- Ocean and Coastal Resources
  - Sea level rise
  - Ocean acidification
- Forestry
  - Wildfire
  - Invasive species (bark beetle)
- Water Management
  - Water resources
  - Water quality
  - Timing and location of precipitation
  - Exttreme precipitation and flooding
- Agriculture
  - Loss of productivity
  - Loss of water
- Transportation and Energy Infrastructure
  - Energy demand (A/C)
  - Roads and rails

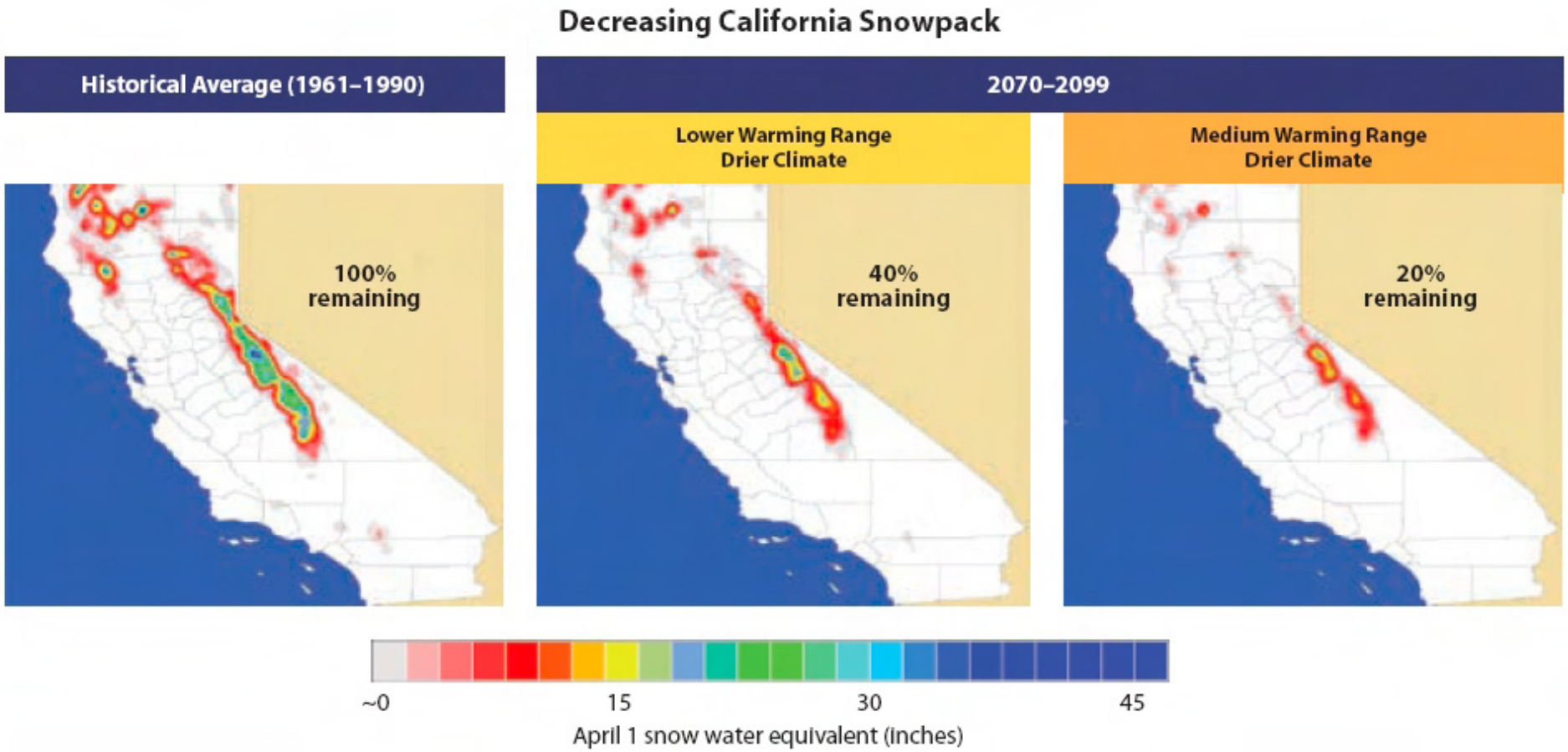
Warming

Figure 1. California Historical & Projected July Temperature Increase 1961-2099

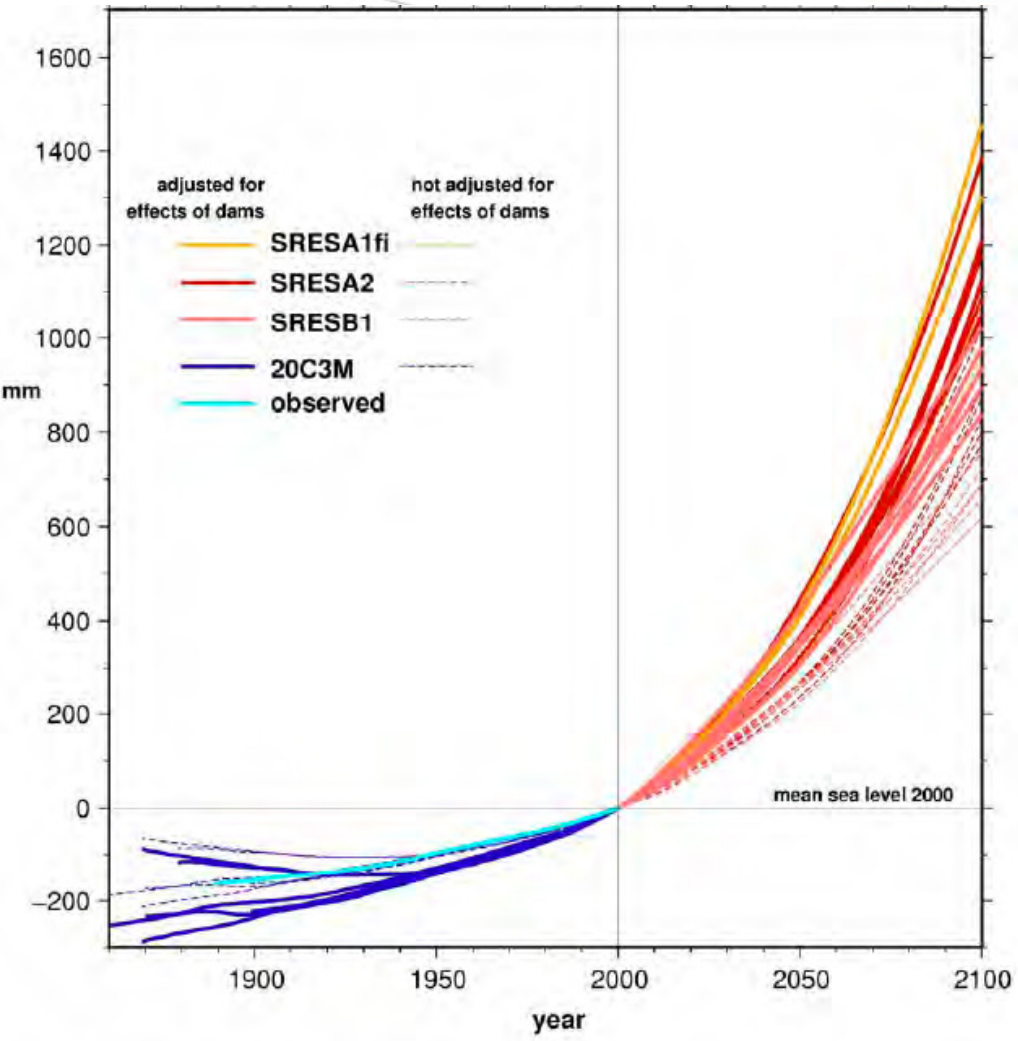


Source: Dan Cayan et al. 2009.

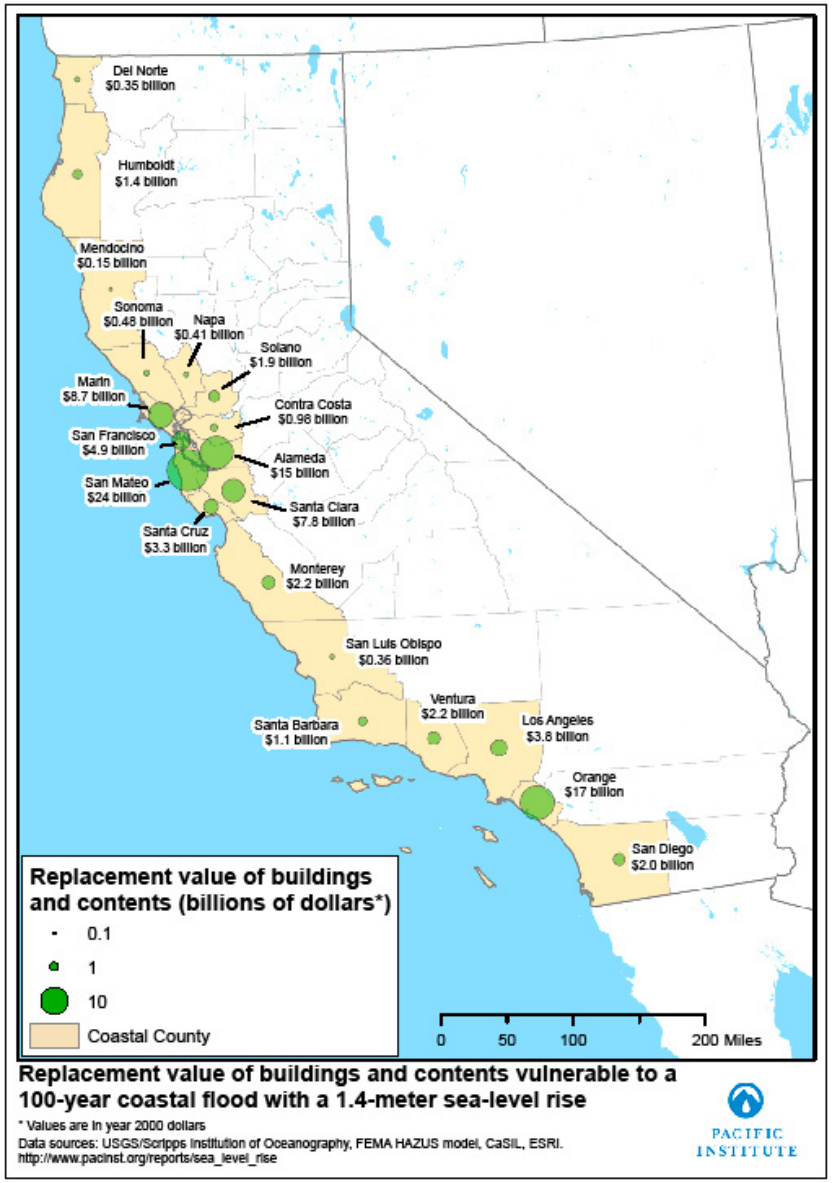
California Snow Pack



Sea Level Rise in California



CNRM CM3 -- GFDL CM2.1 -- MIROC3.2 (med)
MPI ECHAM5 -- NCAR CCSM3 -- NCAR PCM1



Replacement value of buildings and contents vulnerable to a 100-year coastal flood with a 1.4-meter sea-level rise

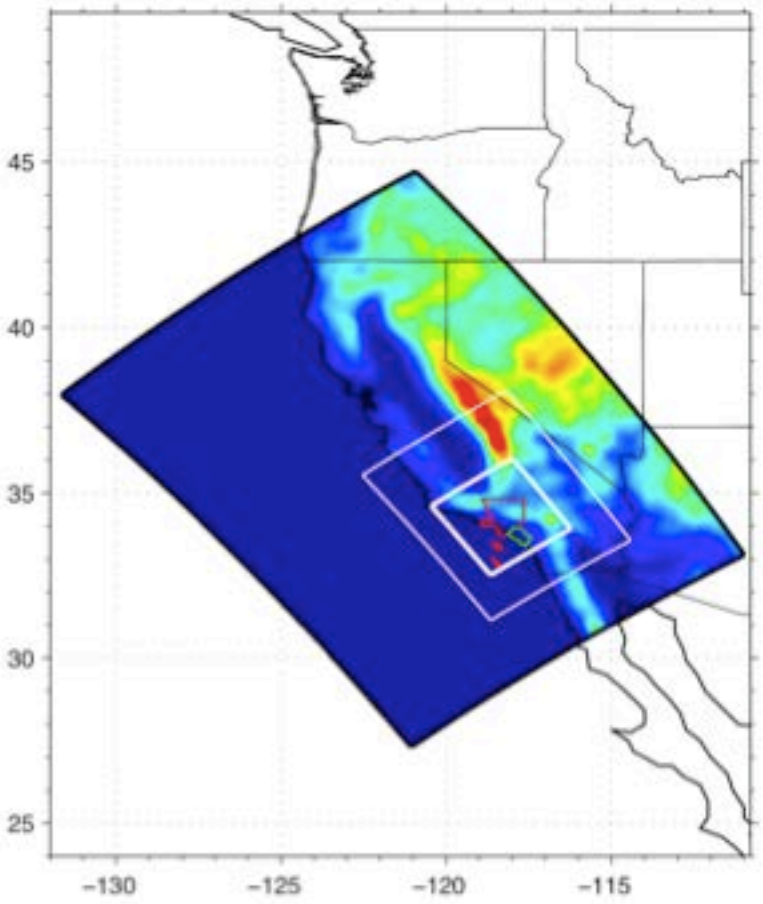
* Values are in year 2000 dollars

Data sources: USGS/Scripps Institution of Oceanography, FEMA HAZUS model, CaSIL, ESRI.
http://www.pacinst.org/reports/sea_level_rise

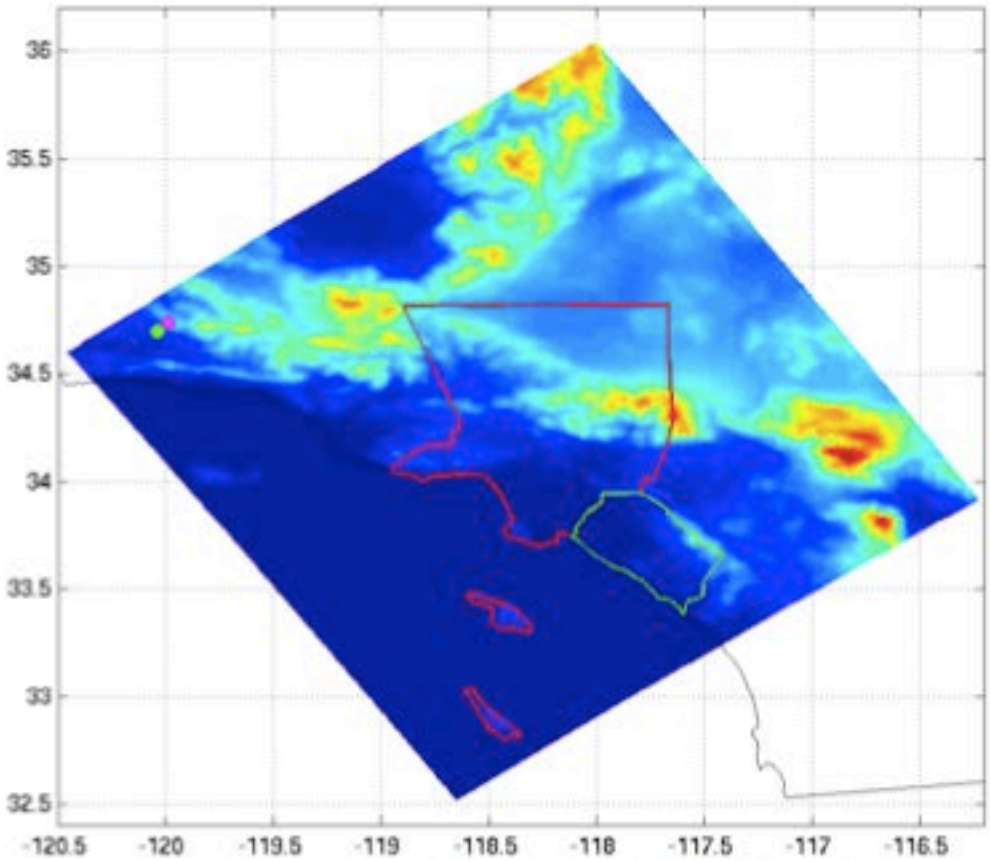
PACIFIC INSTITUTE

California Fire Risk

Topography

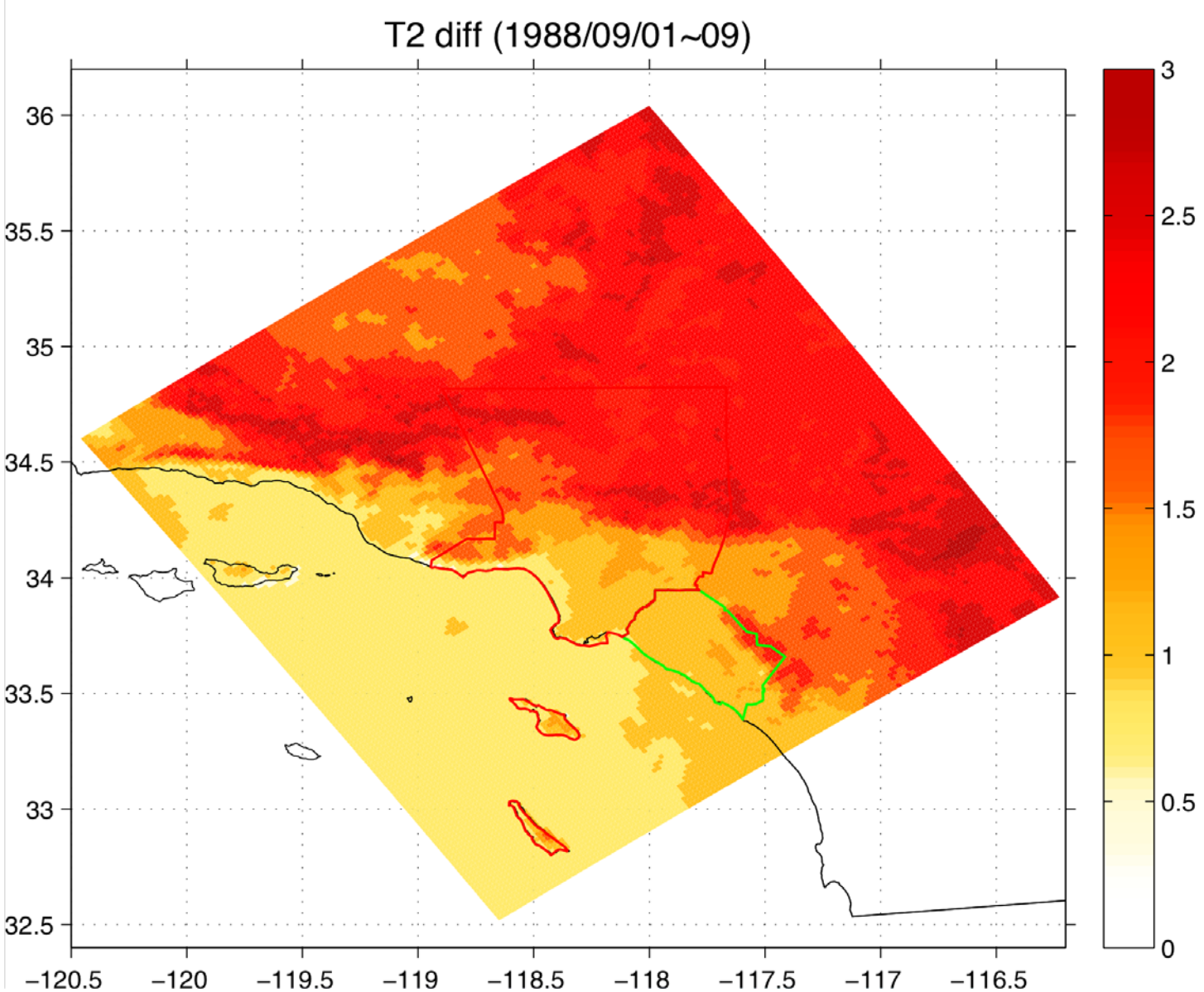


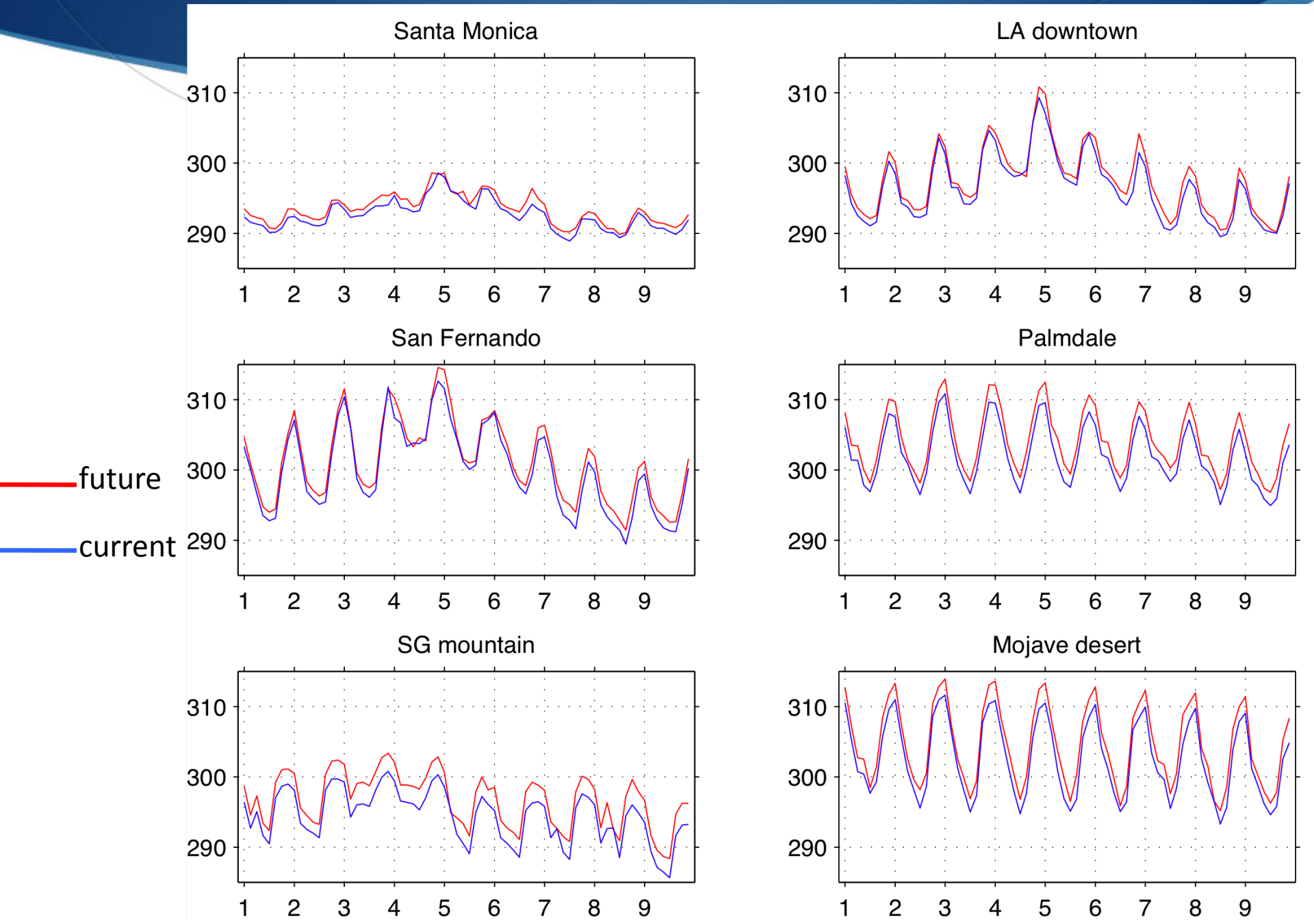
Topography Domain 1 (18 km) &
nested domain 2 (6km) and 3 (2km)



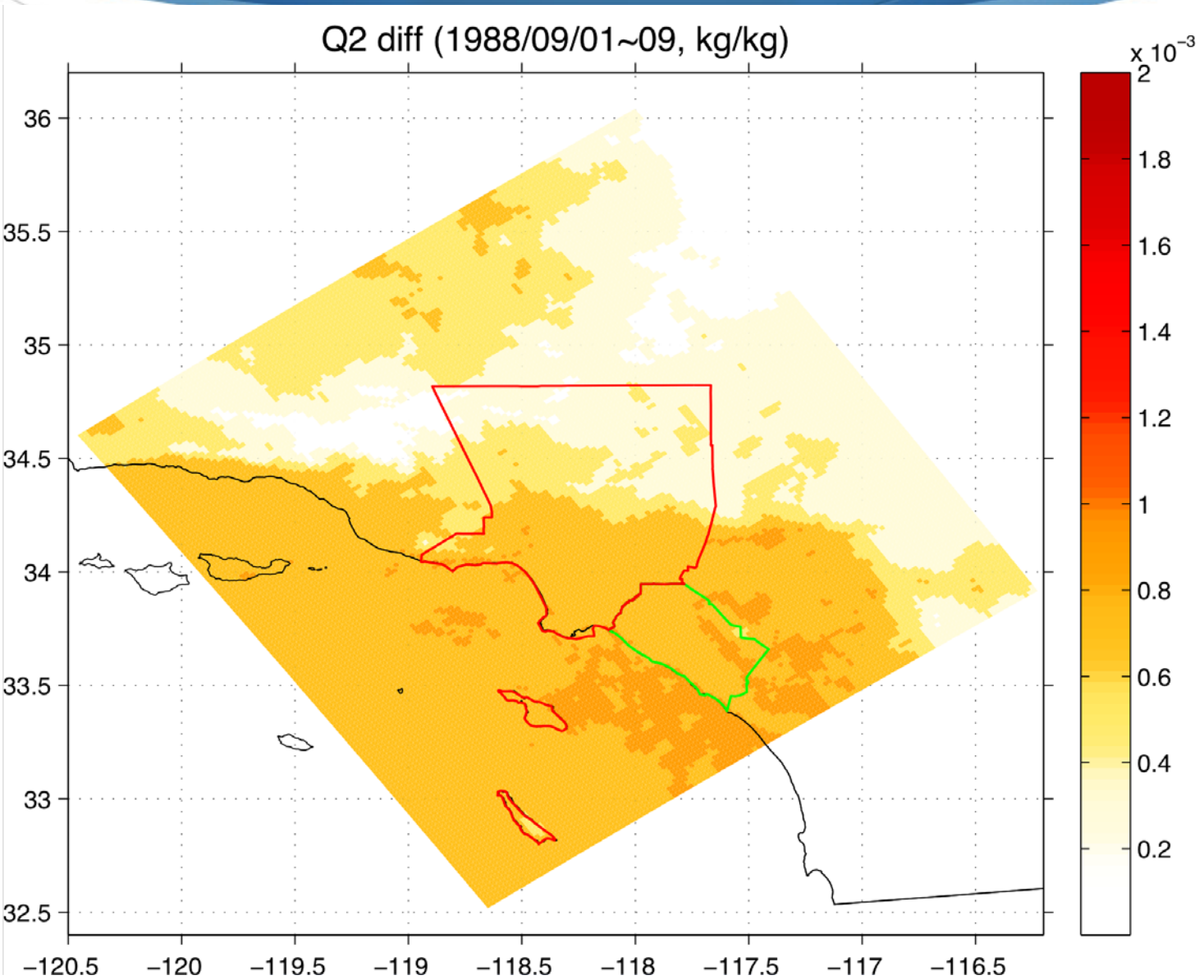
Topography Domain 3 (2 km)

Temperature Change in Sept. 2048



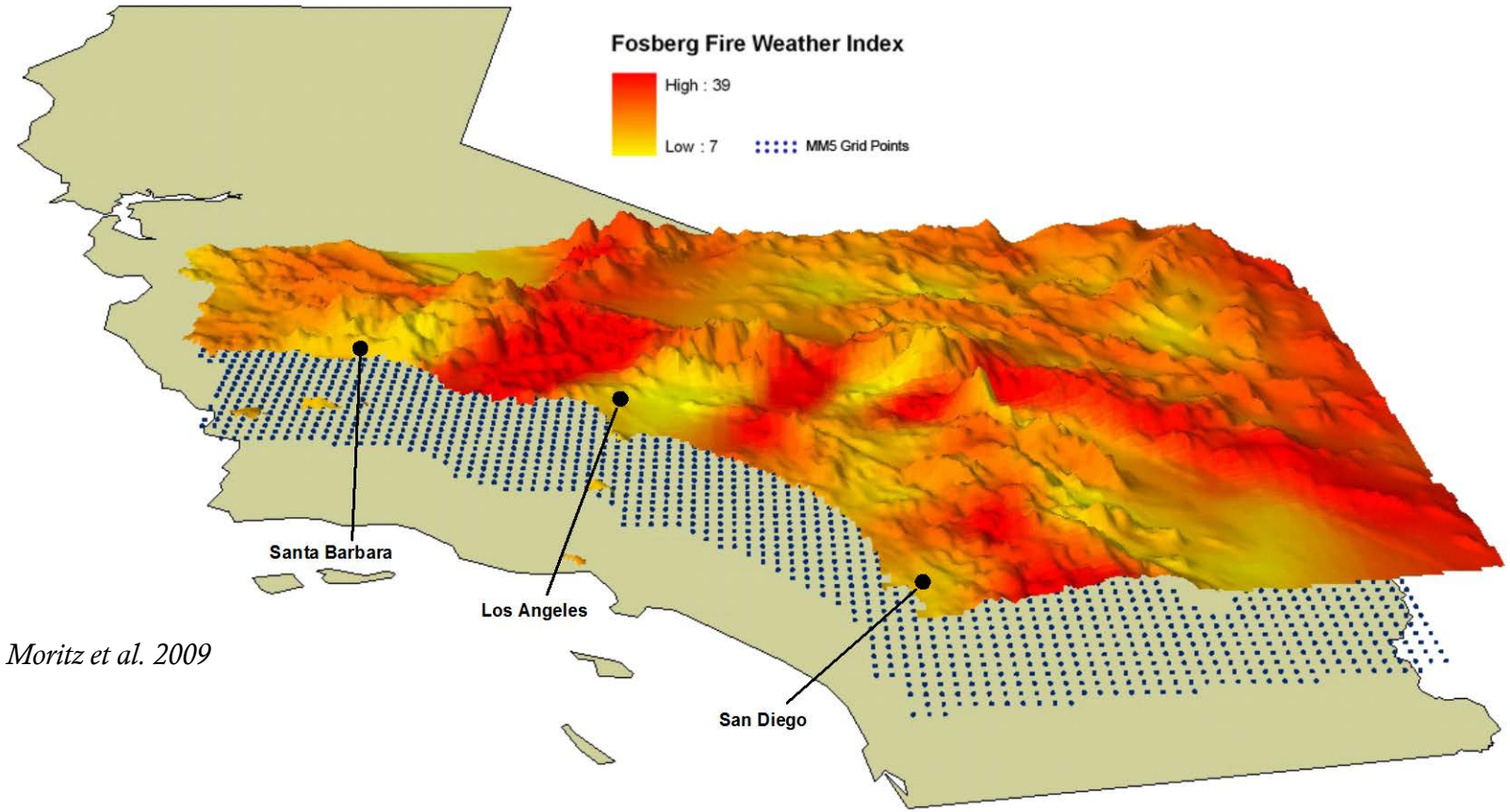

Santa Monica
LA downtown
San Fernando
Palmdale
SG mountain
Mojave desert
310
300
290
1 2 3 4 5 6 7 8 9
future
current

Specific Humidity in Sept. 2048



Southern California Fires on October 27, 2003

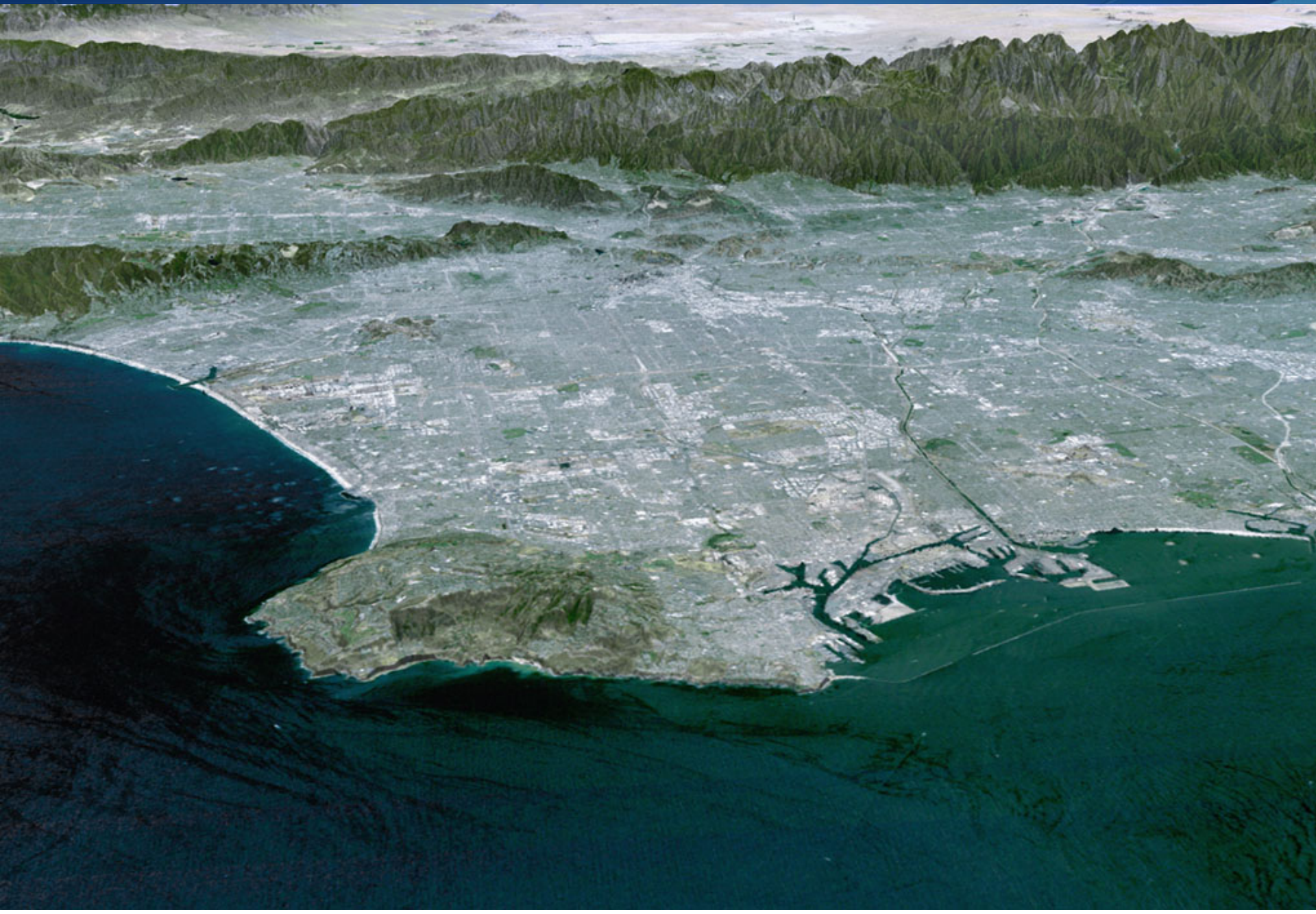
The Santa Anas and Fire



Moritz et al. 2009

Modeling fire behavior in response to a changed climate.

Enhanced fire risk is clearly seen in passes where Santa Ana flows are channeled.



LARC

Los Angeles Regional Collaborative for Climate Action and Sustainability

The purpose of this collaboration is to share information, foster partnerships, and develop system-wide strategies to address climate change and promote a green economy through sustainable communities.

Goals

- Climate action
- Promote a green economy
- Build sustainable communities

Methods

- Coordination
- Planning
- Resources
- Engagement

Regional Coordination

Blueprint for Our Metropolis

The Los Angeles Regional Sustainability and Climate Action Plan

- Successful climate action actually requires a comprehensive sustainability plan

- The regional Blueprint will:
  1) Establish baselines of current greenhouse gas emission levels
  2) Identify a full range of measures for reducing greenhouse gas emissions
  3) Identify the impacts of climate change on communities within Southern California
  4) Identify a full range of measures for adapting to climate change
  5) Provide strategies to help meet these goals