## GCM selections for California 2008 Assessment

<table>
<thead>
<tr>
<th>Model</th>
<th>country</th>
<th>Res</th>
<th>Mon</th>
<th>Day-p</th>
<th>Day-f</th>
<th>6hrly</th>
<th>A2&amp;B1</th>
<th>M-sim</th>
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<tbody>
<tr>
<td>GFDL-CM2.1</td>
<td>USA</td>
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<td>UKMO-HadGEM1</td>
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</table>

**Res:** resolution  
**Mon:** monthly data  
**Day-p:** some daily data  
**Day-f:** full daily data  
**6hrly:** 6-hourly data  
**A2&B1:** climate change  
**M-sim:** multiple simulations
Temperature changes near Sacramento

nocal temp diff (1961–1990 clim)

2045–2054 minus clim  2085–2094 minus clim

DJF

B1  A2

JJA

1: GFDL CM2.1  2: NCAR PCM1  3: MIROC3.2
4: NCAR CCSM3  5: MPI ECHAM5  6: CNRM CM3.0
Temperature changes ocean to land; southern California

JJA temp anom

° C

1 2 3 4 5 6 7

southern calif transect

L to R models are: NCAR PCM1, NCAR CCSM3, MPI ECHAM5, CNRM CM3, GFDL CM2.1, MIROC3.2 med
water year precip anoms (1961–1990 clim); nocal
from 6 IPCC AR4 global climate models, SRES A2, B1
mid and late century precipitation changes
In the Sacramento area
Monthly precipitation
NCAR CCSM3

3 sites:
Sacramento
northwest Colorado
San Diego
Sea-surface temperature in the Niño3.4 region
Correlation between Nino3.4 SST and annual precipitation

Historical (20C3M) period 1900-1999
Time series of annual precipitation
3 locations:
Sacramento
northwest Colorado
San Diego

Solid black line: historical median (1961-1990)
Dashed black line: value of 25th percentile

• Dots show years where precipitation is below the 25th percentile
• Dots scale upwards for consecutive dry years

Bars show counts of years with precipitation below the 25th percentile over an 11-year centered period (SRESA2 is shown by a line)
Temperature Change  6 GCMs X 2 Emissions Scenarios used in California Vulnerability and Adaptation Assessment  IPCC 4th

CMIP3 CVAA simulations, Jul tempDM (deg K), Sacramento, CA
(1961-1990 Historical Mean Removed)

(solid line = 11-yr smoothed median of simulation)
Temperature Change  14 GCMs X 2 Emissions Scenarios
IPCC 4th Assessment models

CMIP3 simulations, Jul tempDM (deg K), Sacramento, CA
(1961-1990 Historical Mean Removed)

(solid line = 11-yr smoothed median of simulation)
Temperature Change  14 GCMs X 3 new Emissions Scenarios
IPCC 5th Assessment models

CMIP5 simulations, Jul tempDM (deg K), Sacramento, CA
(1961-1990 Historical Mean Removed)

(solid line = 11-yr smoothed median of simulation)
Precipitation Change  6 GCMs X 2 Emissions Scenarios used in California Vulnerability and Adaptation Assessment  IPCC 4th

CMIP3 (6 CVAA models), simulation medians, Sacramento, CA  
(1961-1990 Historical Mean Removed)

Ann PPT (percent of historical mean)

-50  -25  0  25  50  75

CMIP3 SRESA2  CMIP3 SRESB1  CMIP3 Historical
Precipitation Change  14 GCMs X 2 Emissions Scenarios
IPCC 4th Assessment models

CMIP3 (14 models), simulation medians, Sacramento, CA
(1961-1990 Historical Mean Removed)
Precipitation Change  14 GCMs X 3 new Emissions Scenarios
IPCC 5th Assessment models

CMIP5 (14 models), simulation medians, Sacramento, CA
(1961-1990 Historical Mean Removed)
DATA

Nominally, we will analyze the following periods

<table>
<thead>
<tr>
<th>Period</th>
<th>Years</th>
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<tbody>
<tr>
<td>20C3M</td>
<td>1961-1990*</td>
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<tr>
<td>SRESA2</td>
<td>2005-2034</td>
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<td>SRESB1</td>
<td>2035-2064</td>
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<td>2070-2099</td>
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</tbody>
</table>

*in keeping with the 2006 California assessment

Stabilization scenarios being discussed but not available, probably not til 2010 Assessment

We now have data from the 6 global models
- monthly
- daily
- 6-hourly
for the historical (20C3M) and two climate change simulations (sresA2, sresB1)

Downscaled (12km) data
- monthly
- daily
is being prepared
Some simulations are ready and data from the previous assessment is available

Ed Maurer is providing monthly data
From a new suite of downscaling:

Data Requests - contact Mary Tyree
  • mtyree@ucsd.edu
  • (858) 822-1625