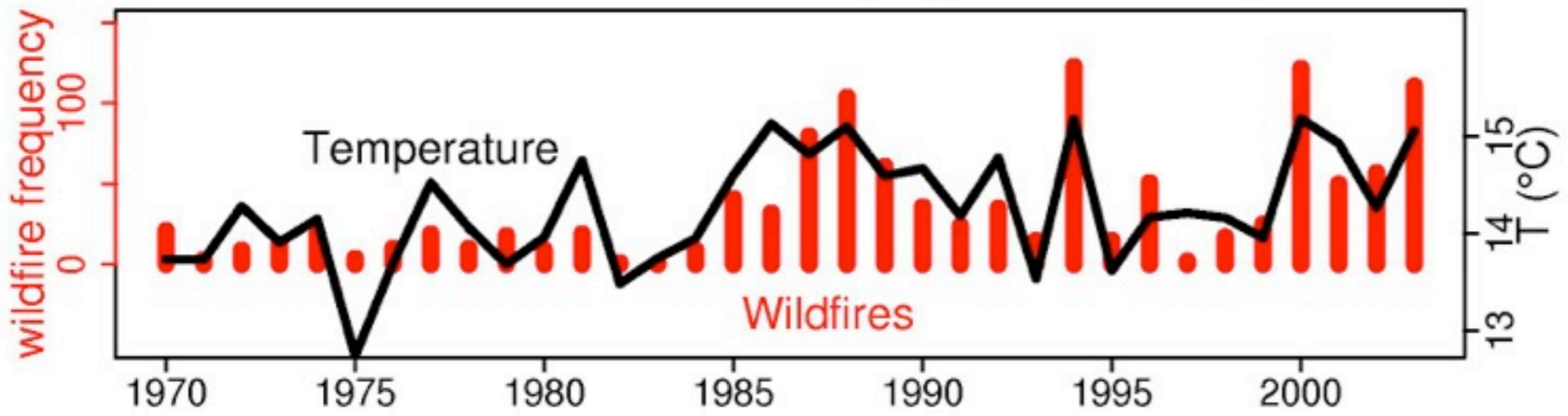
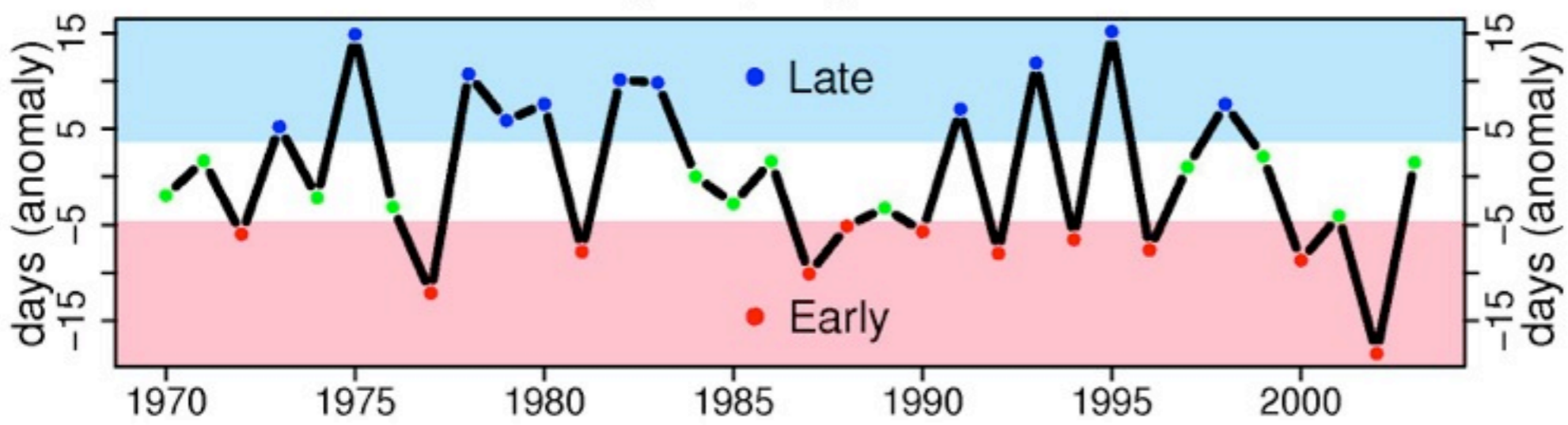


[http://ulmo.ucmerced.edu/
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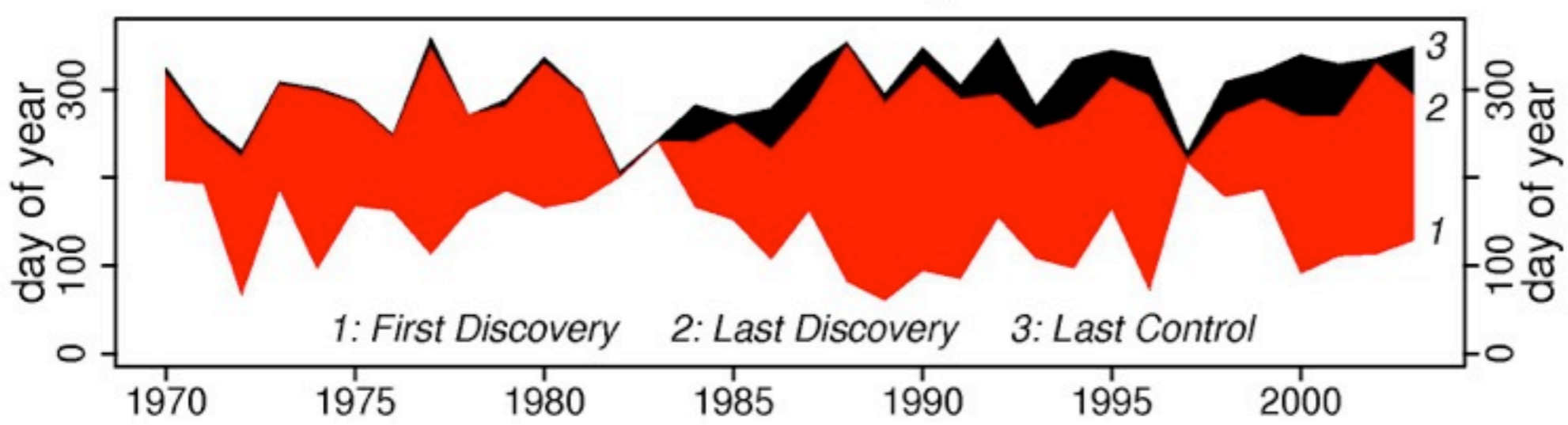
Western US Forest Wildfires and Spring–Summer Temperature



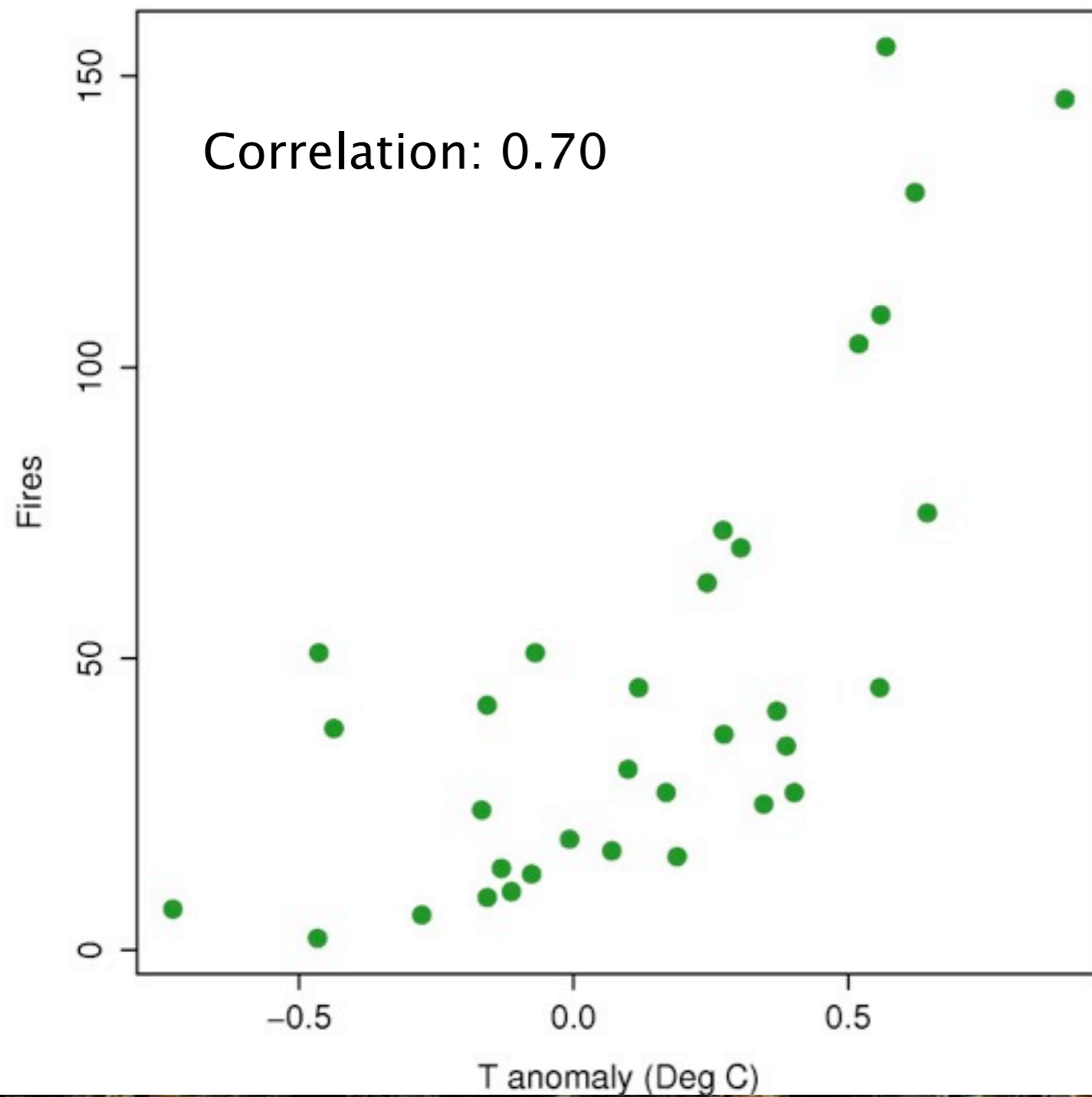
Timing of Spring Snowmelt



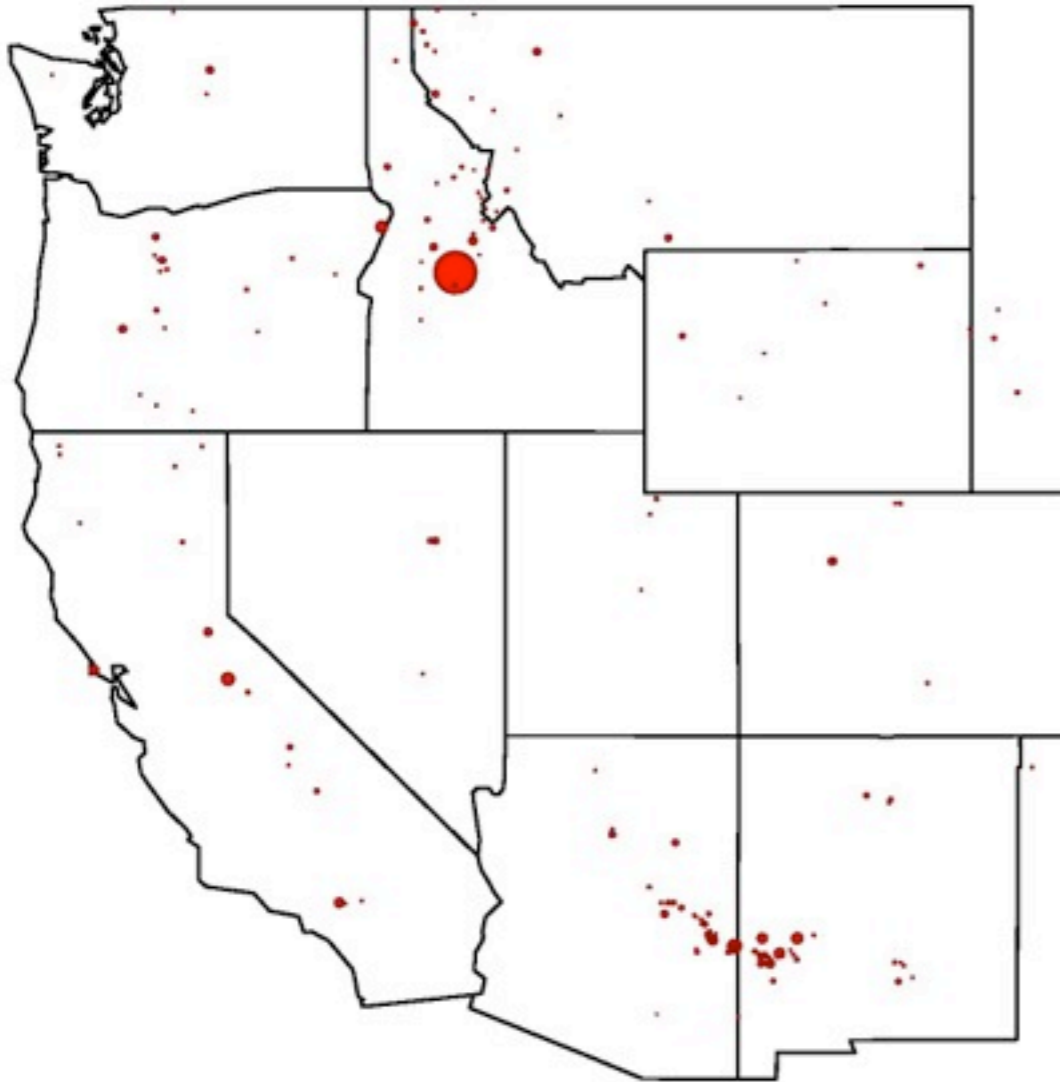
Fire Season Length



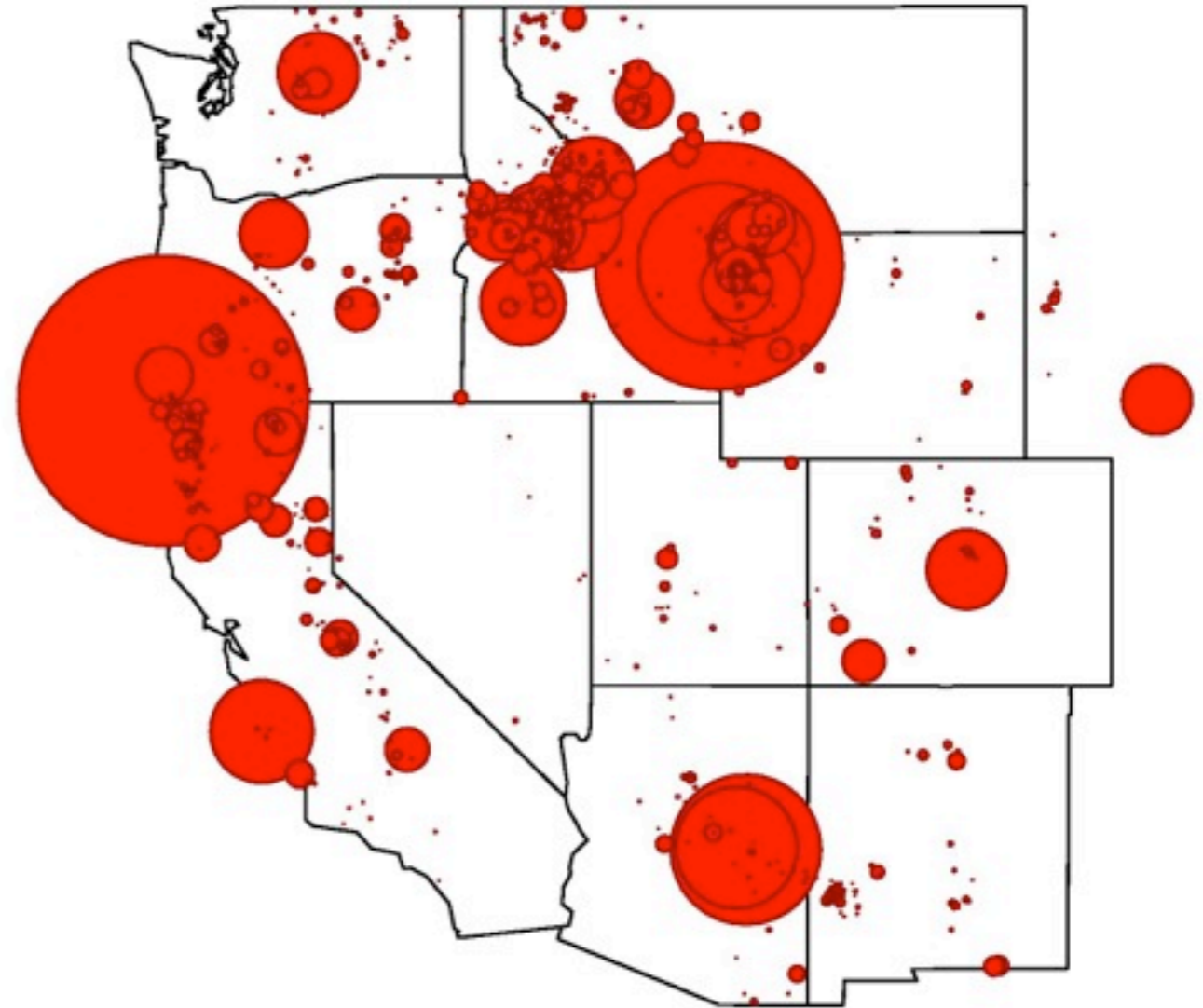
Forest Fires & Temperature



Late Snowmelt Years

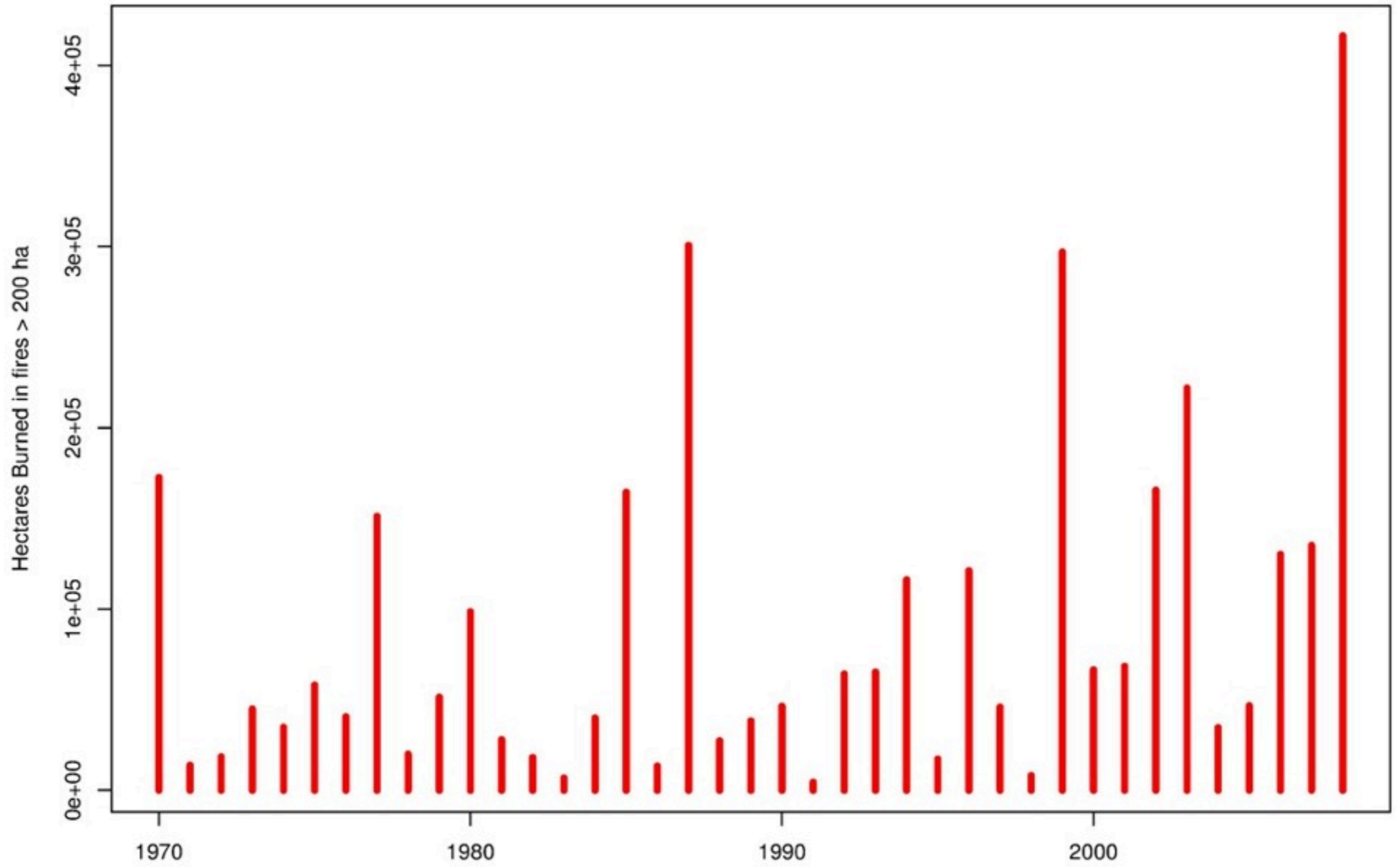


Early Snowmelt Years

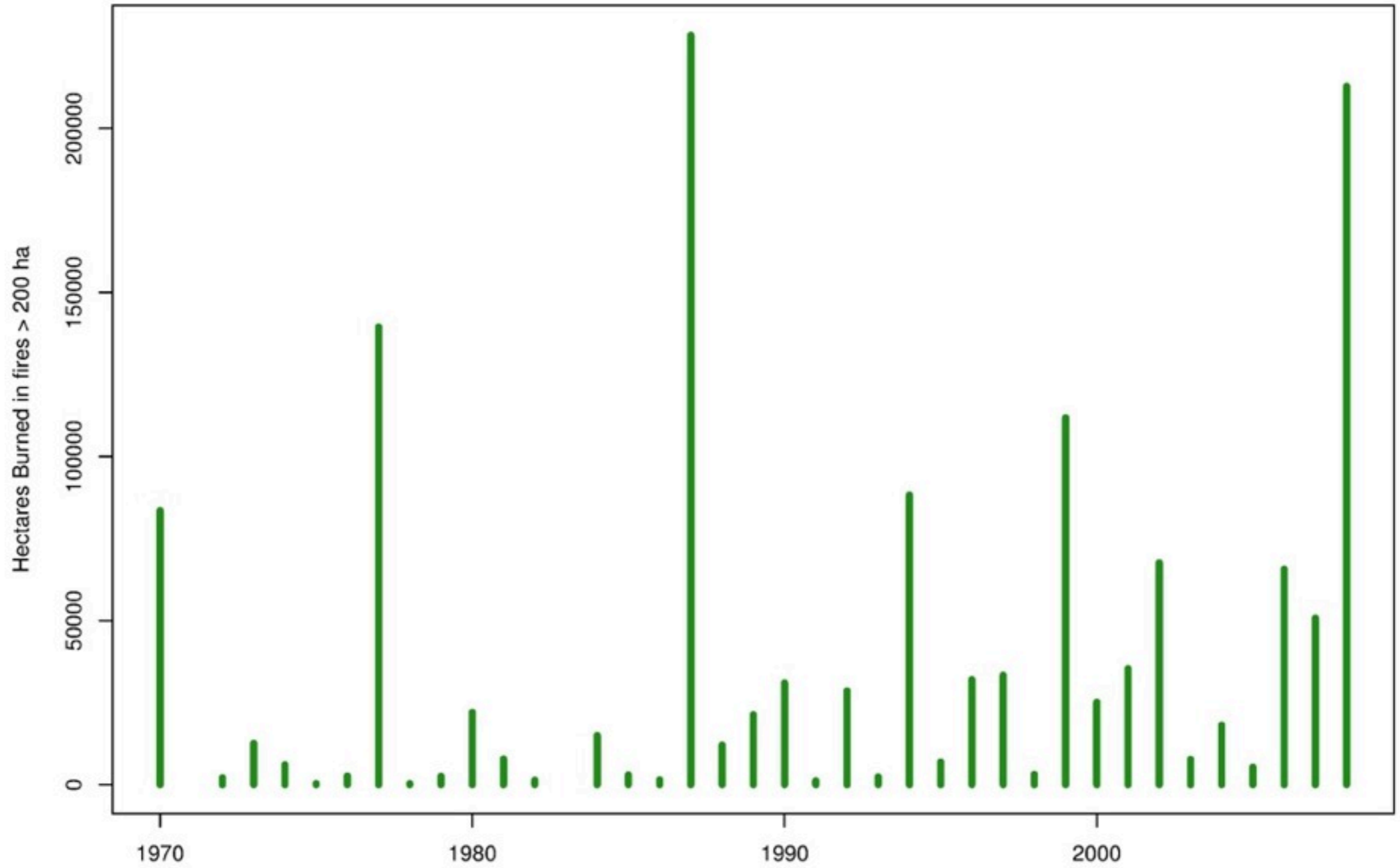


1972 – 2003, NPS, USFS & BIA Fires over 1000 acres

BIA, USFS and NPS Area Burned in California



BIA, USFS and NPS Forest Area Burned in California



Emissions Scenarios

sresA2

sresB1

**Where do we summarize Variability?
vs
Where can we assess the effects of Policy?**

Climate Models

cnrmcm3

gfdlcm21

ncarpcm1

Downscaling Methods

Constructed
Analog

BCSD

BCCA

Hydrologic Modeling

VIC simulation

Fire & Veg Change

statistical
modeling

dynamic
modeling

Development Scenarios

Lo/mid/hi
Population growth

Clustering/
footprint

Impacts

Burned Area
Property Losses
Suppression Costs
Emissions
Ecosystem Services

Table 3 Summary of scenarios

Emissions	Model	Urban Threshold (households/km ²)	Growth Rate & Allocation	Period
SRES A2	CNRM CM3	147	LOW, LOW	2020
SRES B1	GFDL CM2.1	1,000	MID, MID	2050
	NCAR PCM1		HIH, HIH	2085

Climatic Change (2011) 109 (Suppl 1):S445–S463

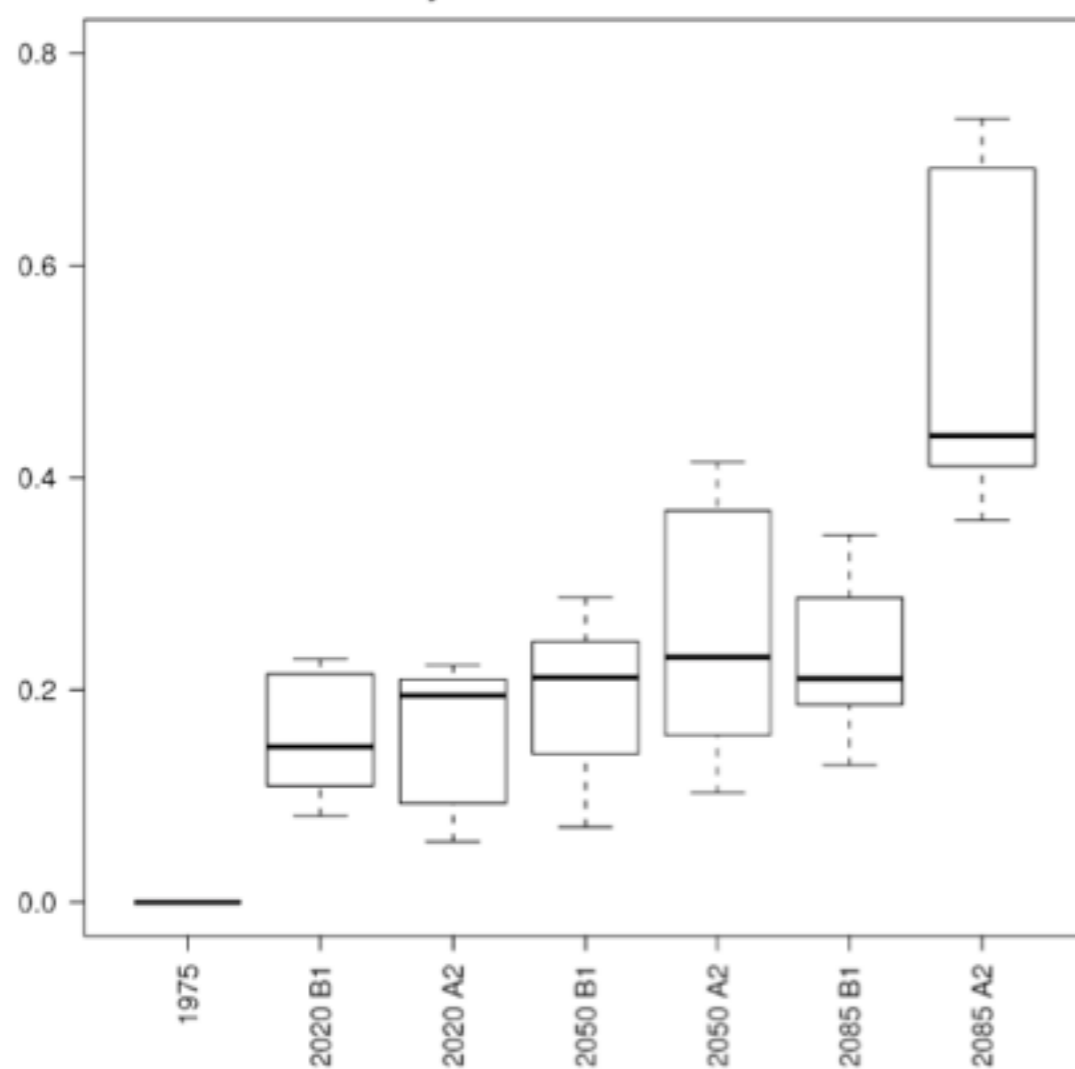
**Change in Mean Expected Burned Area
by Emissions Scenario**

Table 3 Summary of scenarios

Emissions	Model	Urban Threshold (households/km ²)	Growth Rate & Allocation	Period
SRES A2	CNRM CM3	147	LOW, LOW	2020
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Emissions:

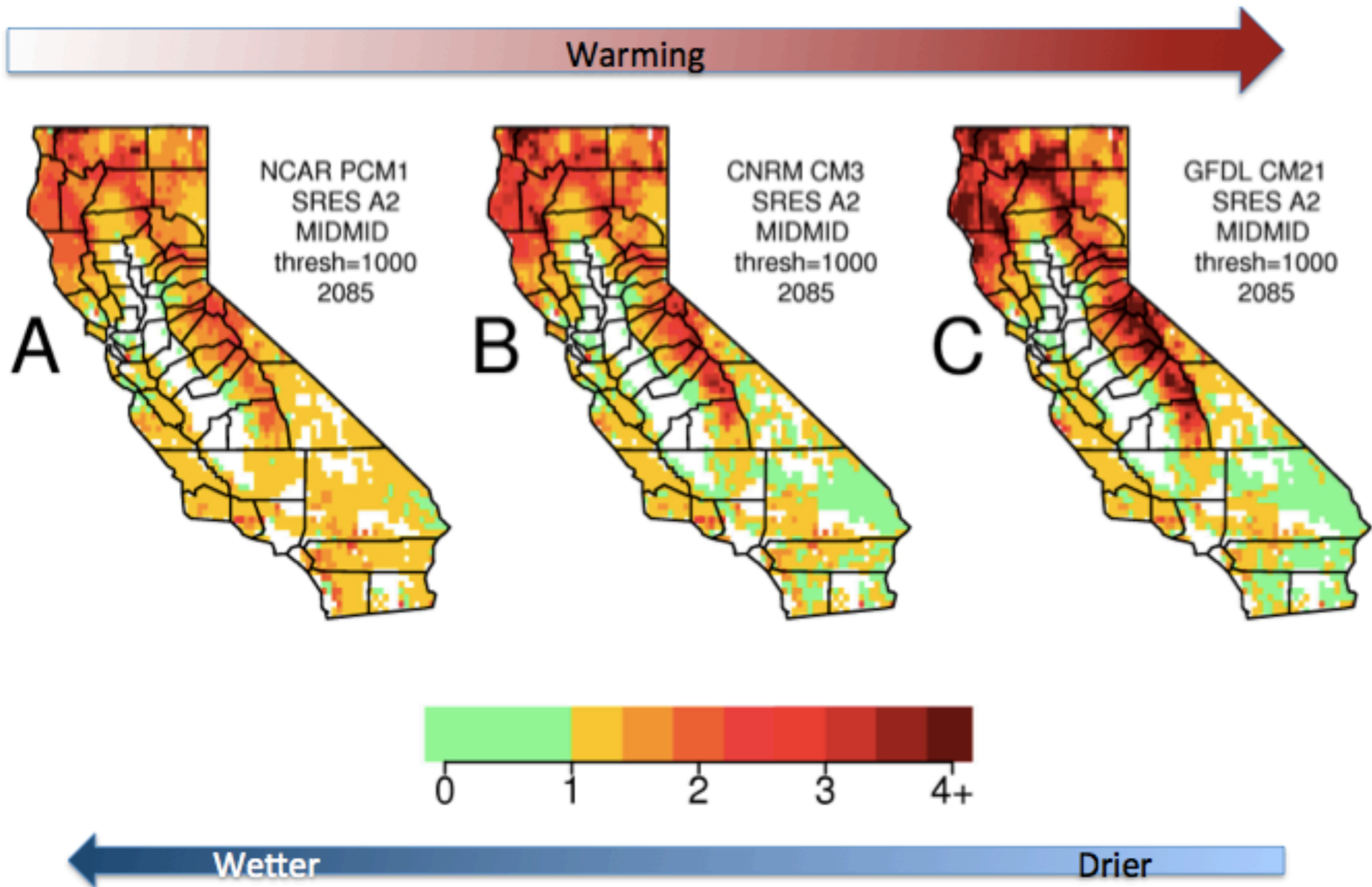
Severity (low, med, high)

additional growth scenarios
(UPLAN vs ICLUS)

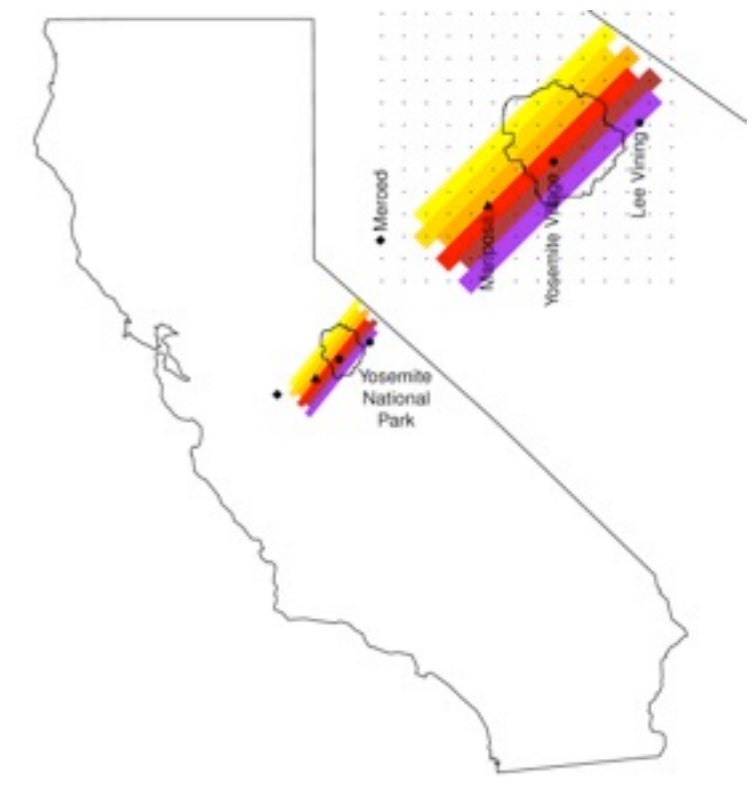
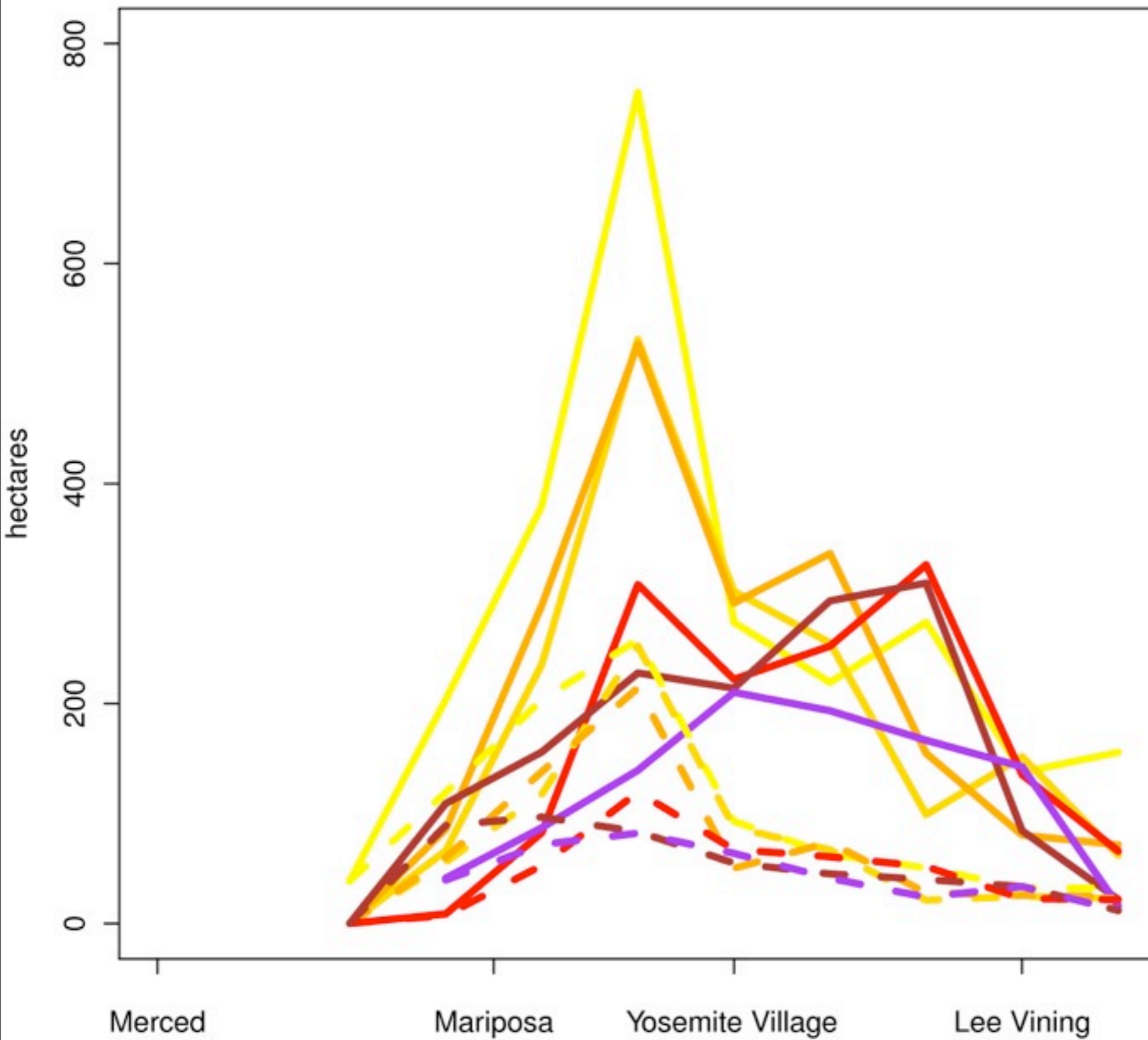
additional growth parameters

full factorial of scenarios

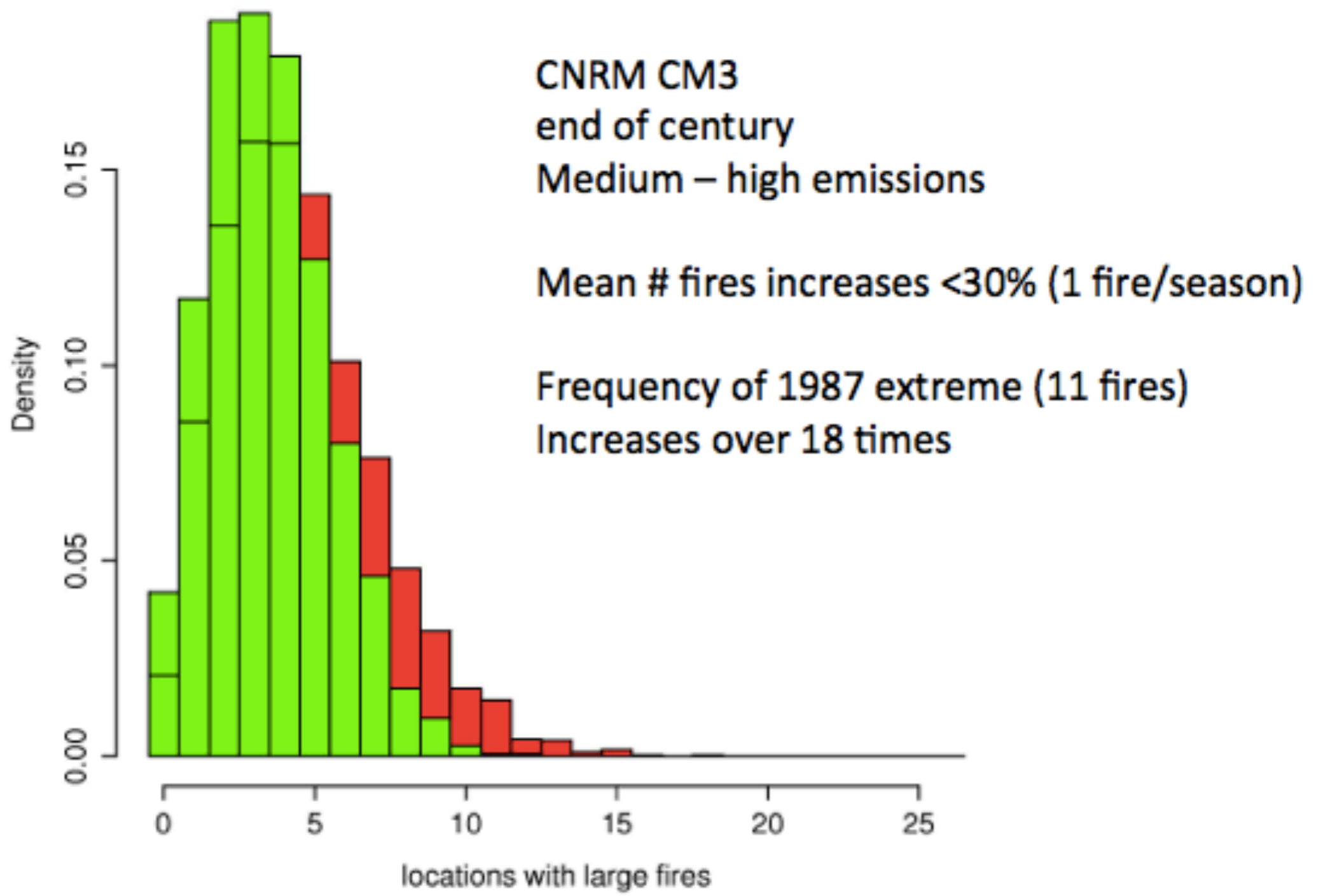
Projected Changes in Burned Area



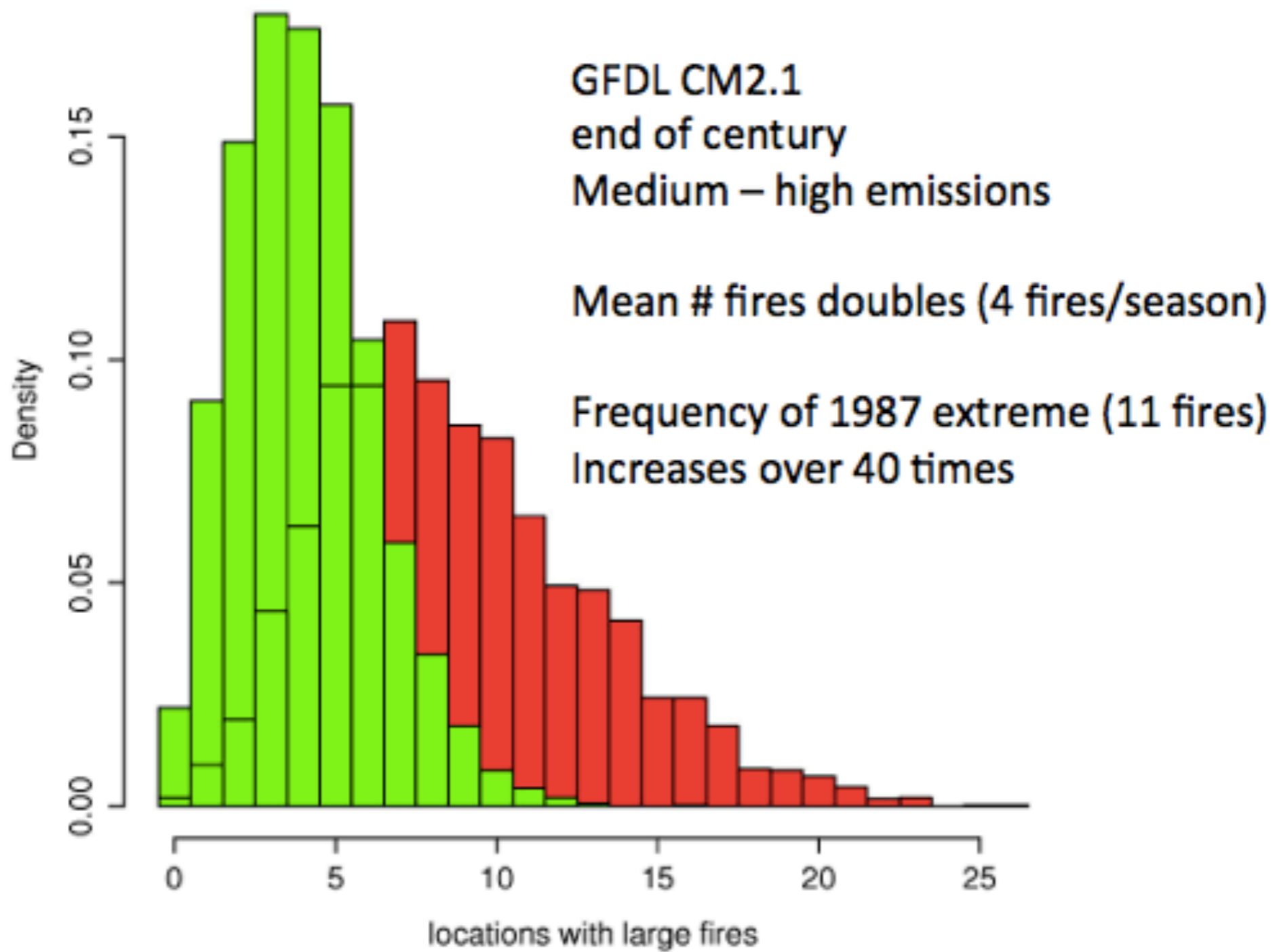
Average Annual Burned Area: 1975 vs 2085



Southern Sierra Summer Fire Frequency



Southern Sierra Summer Fire Frequency



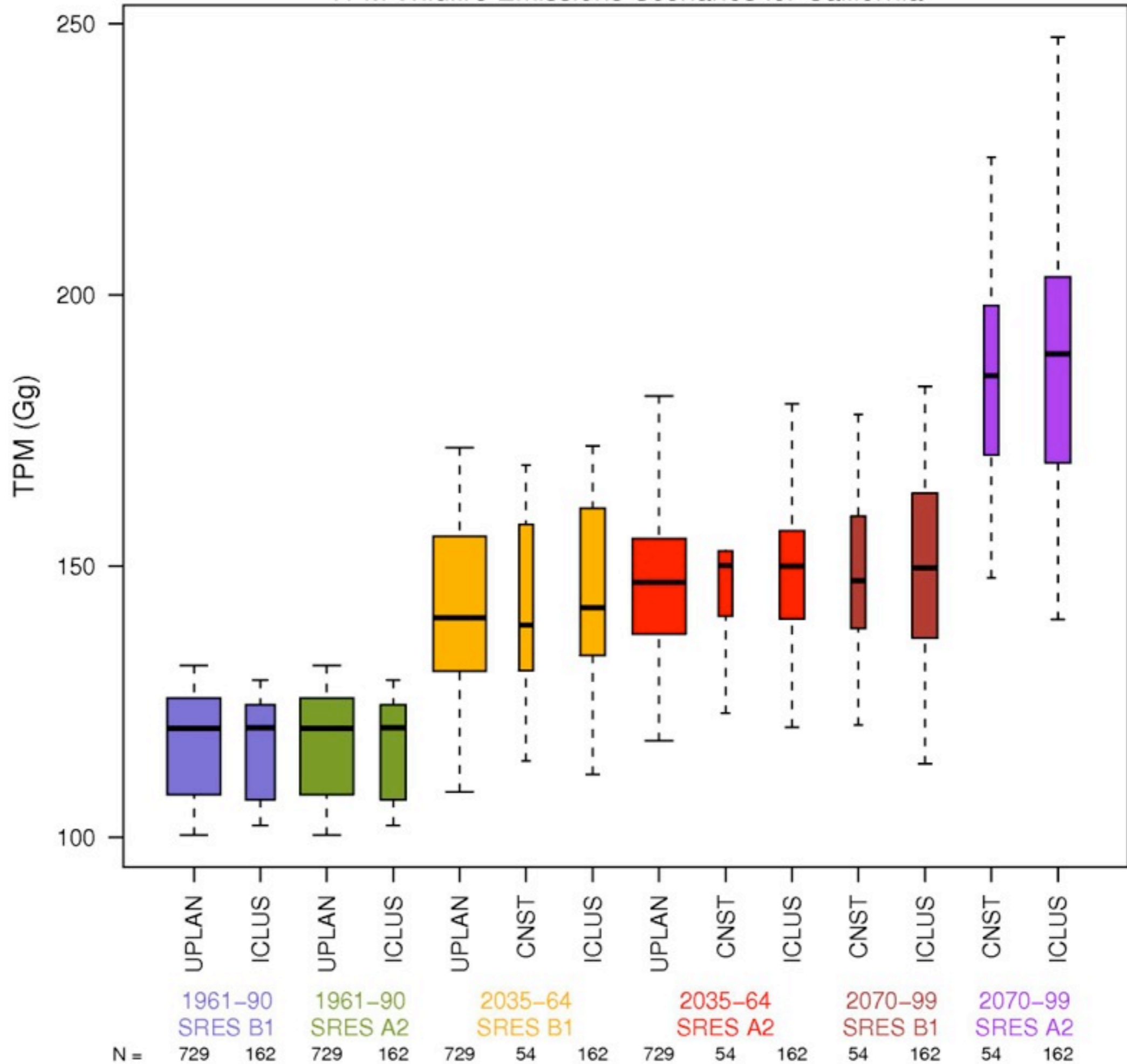
GFDL CM2.1
end of century
Medium – high emissions

Mean # fires doubles (4 fires/season)

Frequency of 1987 extreme (11 fires)
Increases over 40 times



TPM Wildfire Emissions Scenarios for California



N =

1961-90
SRES B1

1961-90
SRES A2

2035-64
SRES B1

2035-64
SRES A2

2070-99
SRES B1

2070-99
SRES A2

729

162

729

162

729

54

162

729

54

162

54

162

54

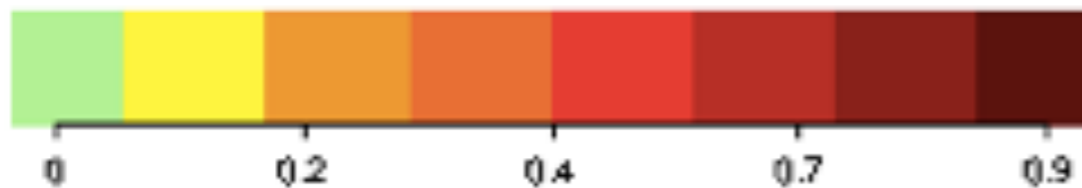
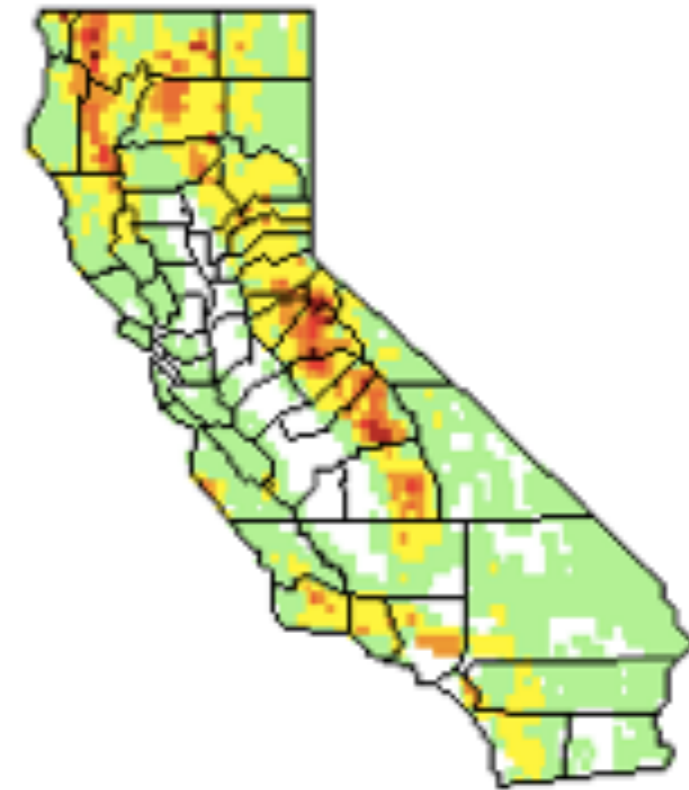
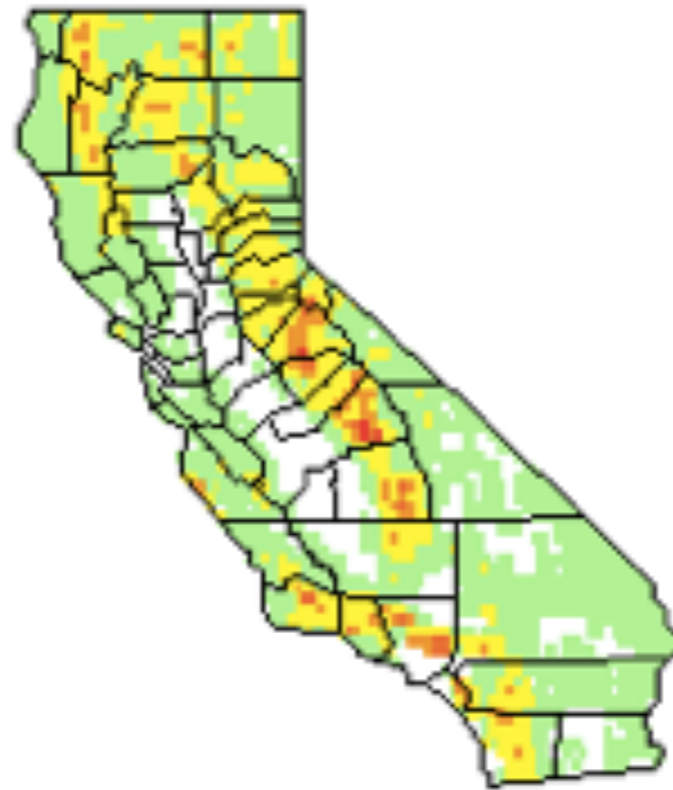
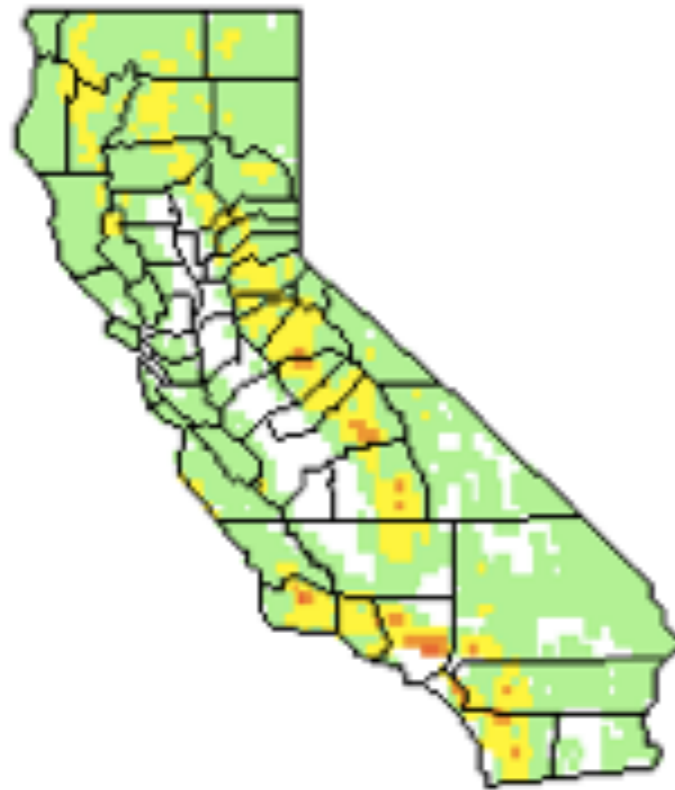
162

Average annual wildfire PM 2.5 Emissions

Historic

Low Warming

Moderate Warming



The Fire INventory from NCAR (FINN): a high resolution global model to estimate the emissions from open burning

C. Wiedinmyer¹, S. K. Akagi², R. J. Yokelson³, L. K. Emmons¹, J. A. Al-Saadi³, J. J. Orlando¹, and A. J. Soja⁴

¹National Center for Atmospheric Research, Boulder, CO, USA

²University of Montana, Department of Chemistry, Missoula, MT, USA

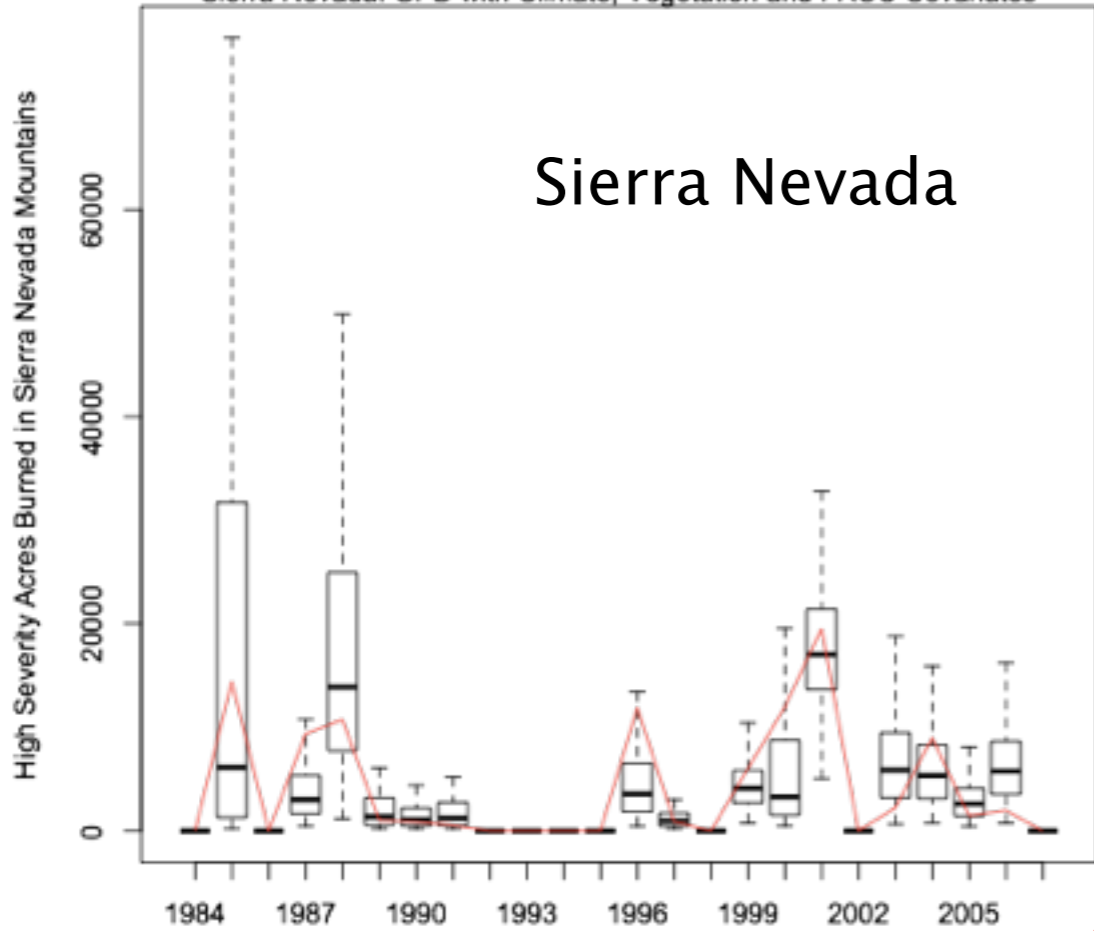
³NASA Headquarters, Washington DC, USA

⁴National Institute of Aerospace, NASA Langley Research Center, Hampton, VA, USA

Received: 3 December 2010 – Published in Geosci. Model Dev. Discuss.: 23 December 2010

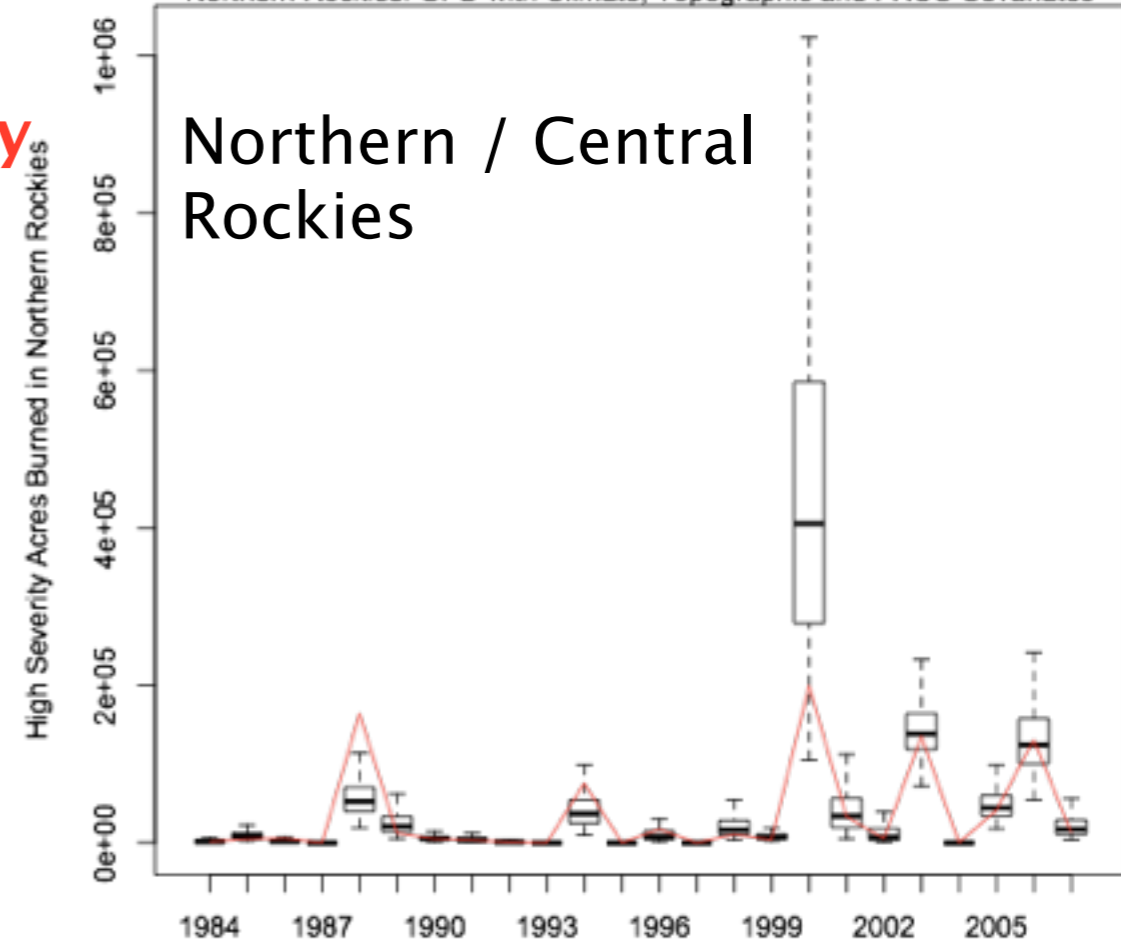
Revised: 28 June 2011 – Accepted: 5 July 2011 – Published: 20 July 2011

Sierra Nevada: GPD with Climate, Vegetation and FRCC Covariates

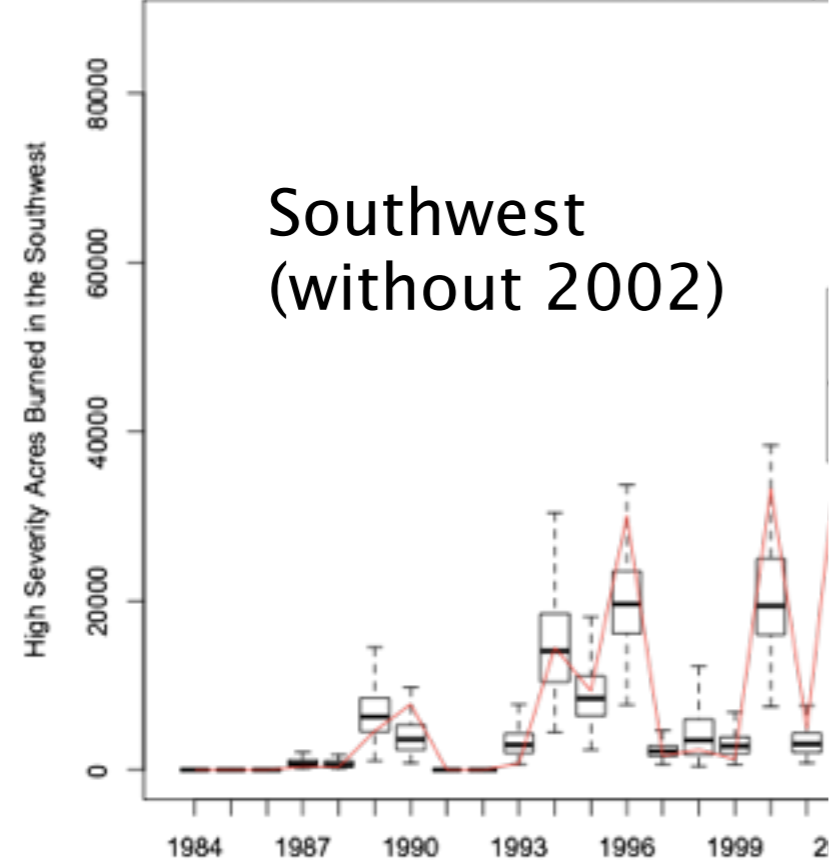


High Severity Burned Area

Northern Rockies: GPD with Climate, Topographic and FRCC Covariates

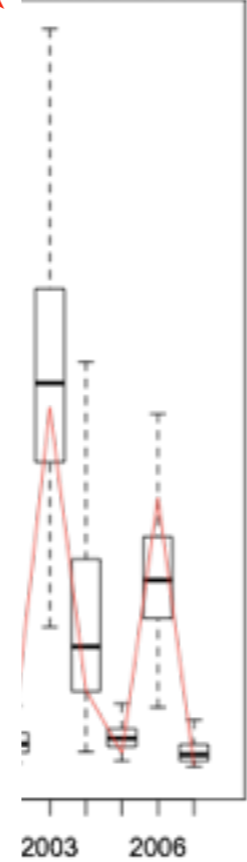


Southwest: GPD with Climate and FRCC Covariates, 1

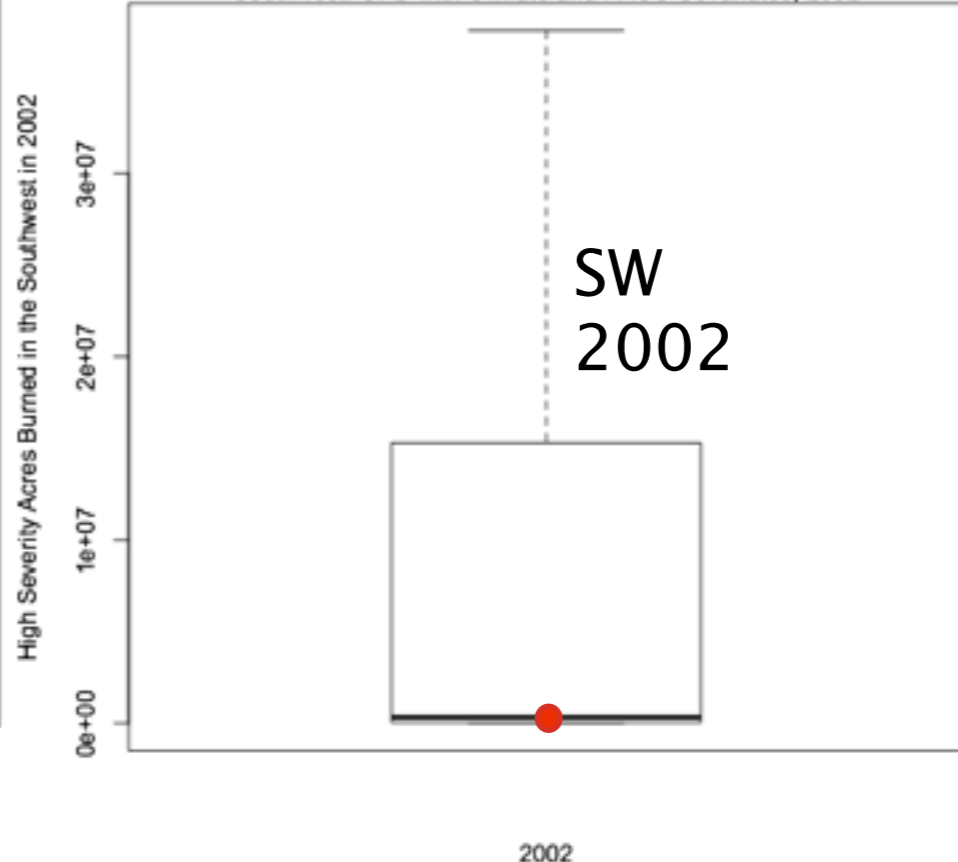


2002

without 2002



Southwest: GPD with Climate and FRCC Covariates, 2002



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pdffiles/
11CC_Westerlingetal.pdf](http://ulmo.ucmerced.edu/pdffiles/11CC_Westerlingetal.pdf)