

The History of the South Fork of the American River Watershed

South Fork American Cohesive Strategy
June 24, 2016

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- Central Sierra Province Ecologist
- USDA Forest Service



HISTORY

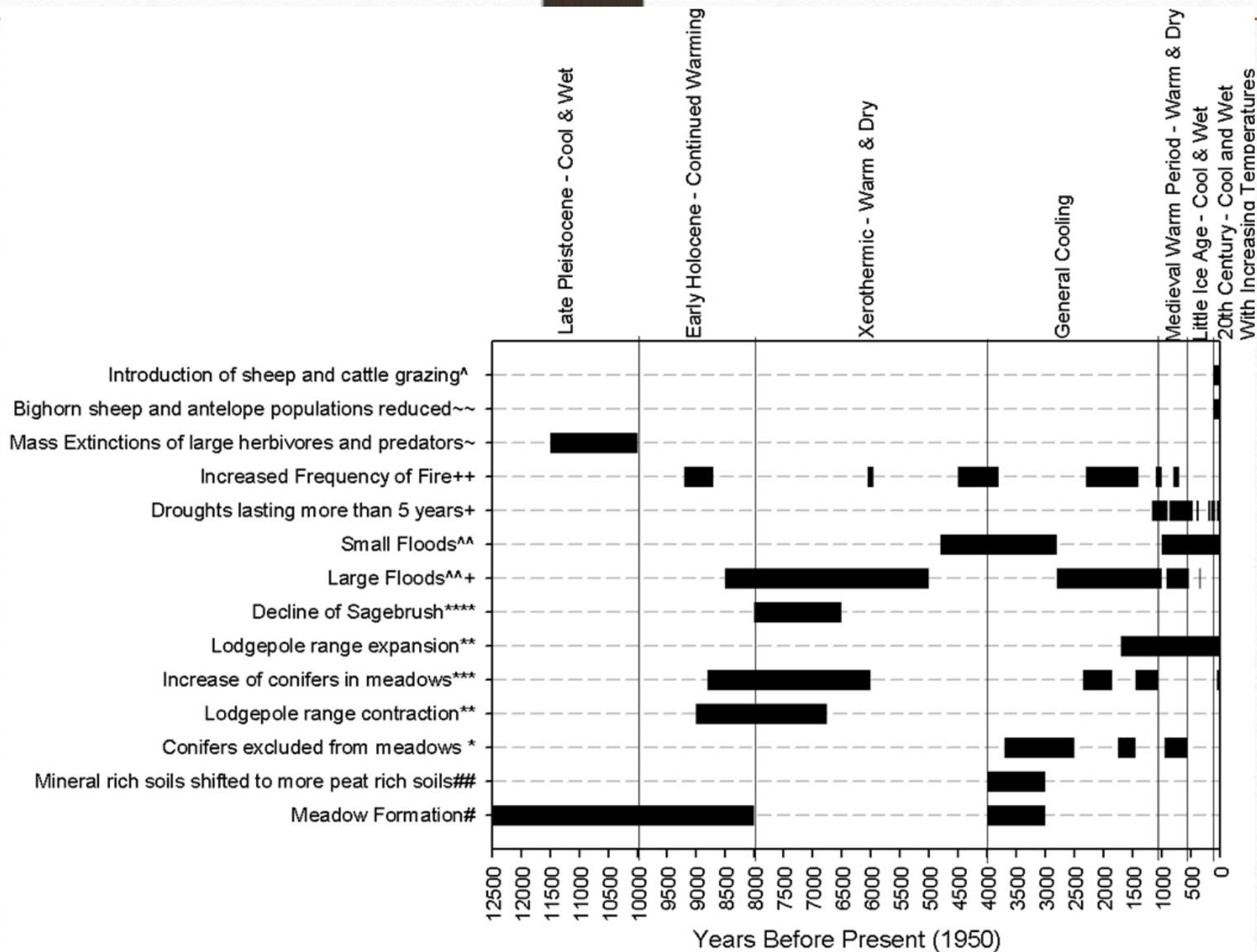
“THE region embraced in this title covers a magnificent stretch of forest in the central Sierra Nevada Mountains which, for natural beauty, is probably not surpassed elsewhere in the state. The general nature of the country is not of that extreme rugged type of which Yosemite Valley or the Kings River Canyon farther south in the mountain chain are examples, but attains its sublimity by gradual rises.” – Barlow, 1901



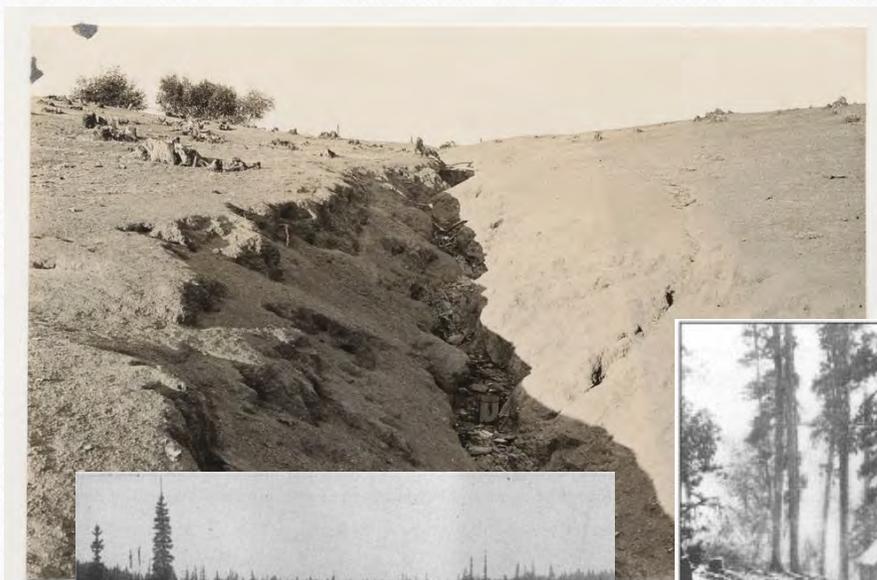
Wieslander, 1930



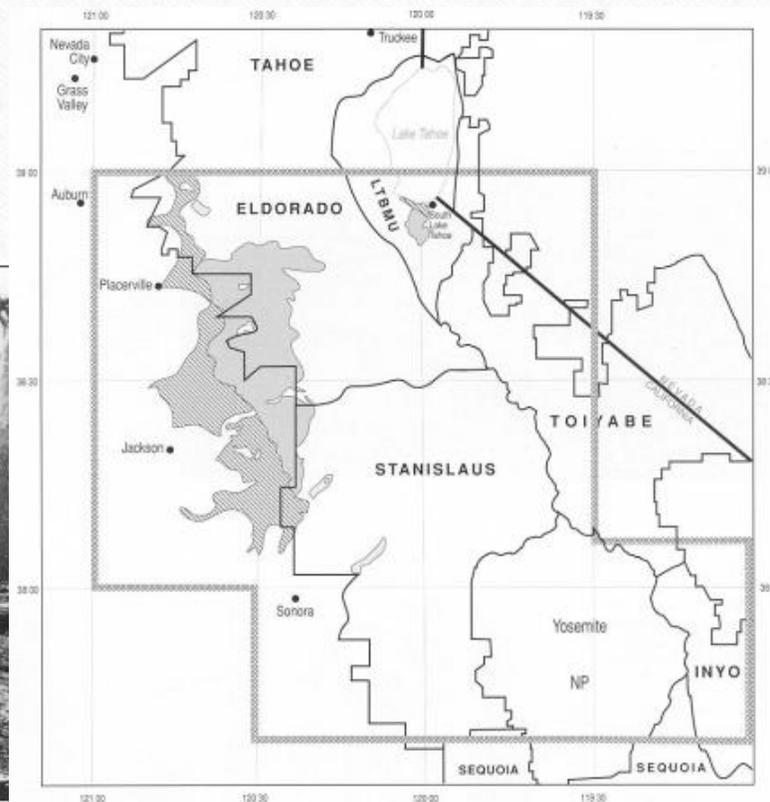
HISTORY



HISTORY



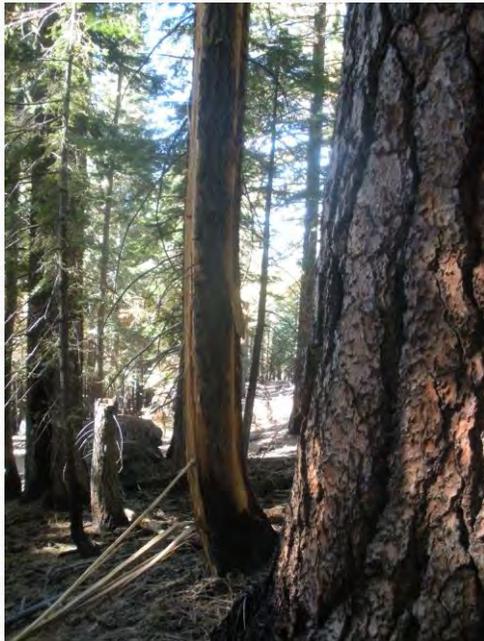
Wieslander, 1930, Near Kingville Ponderosa pine site (index 60) cleared and grazed by goats. Note stumps of interior live oak, also active erosion.



CURRENT



Freds Fire



Caples Creek



King Fire

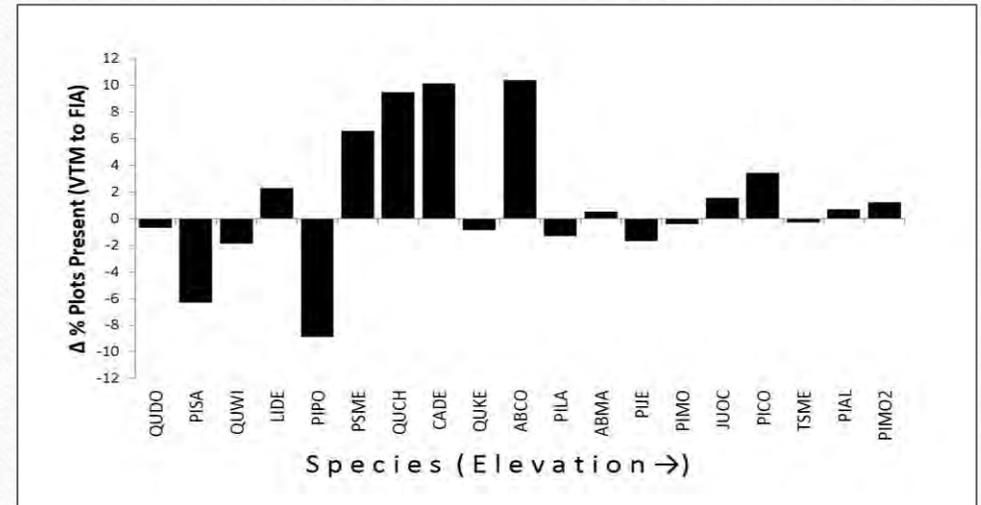


COMPOSITION

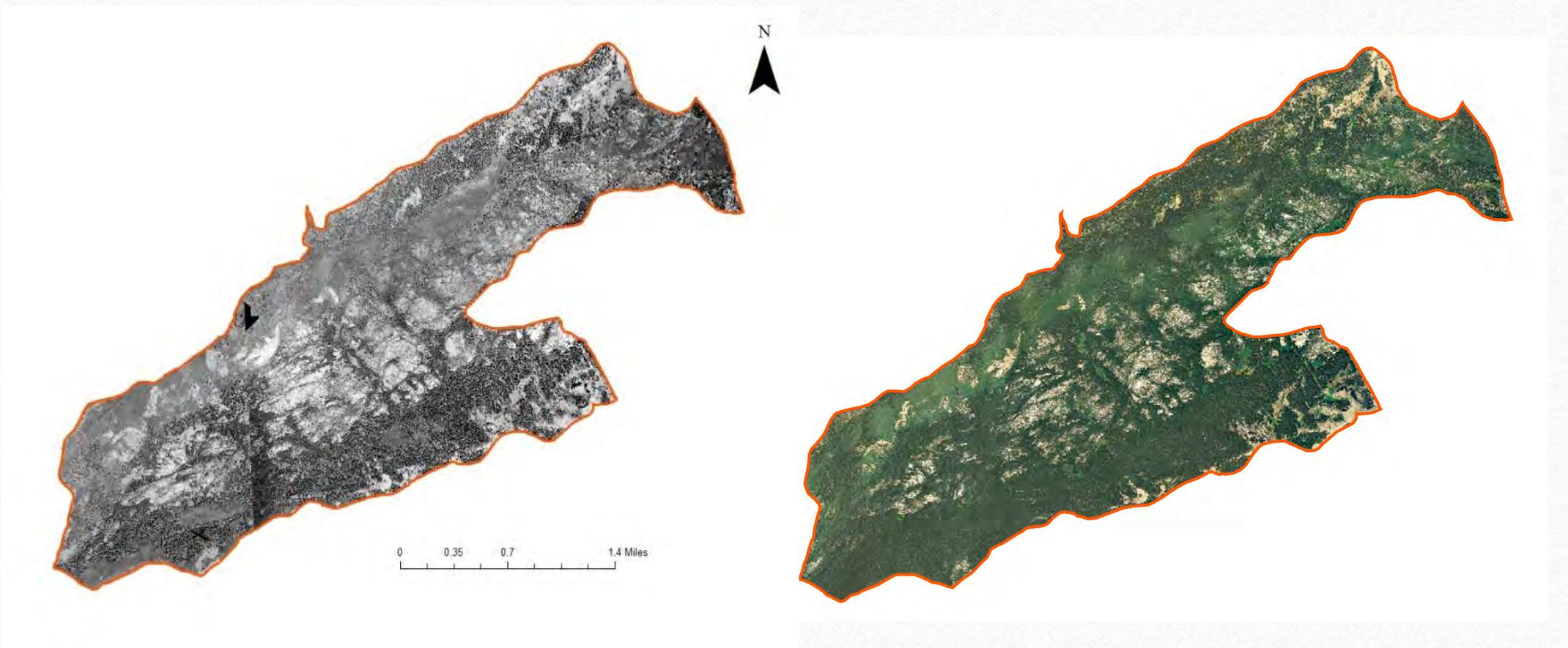


Same locality as #265655 but southerly slope. Selectively logged Ponderosa pine, White fir, Incense cedar type. *Ceanothus integerrimus* and *Chamaebatia foliolosa* present.

- Major shift from dominance of shade intolerant species to dominance of shade tolerant species
- Shifts have been largely driven by fire exclusion and early timber practices



COMPOSITION



STRUCTURE



Pinus ponderosa, *Pinus lambertiana* virgin timber near Michigan, California logging camp. Reproduction mostly *Abies concolor*, T 12 N R 13 E Sec 22, Elevation 4800

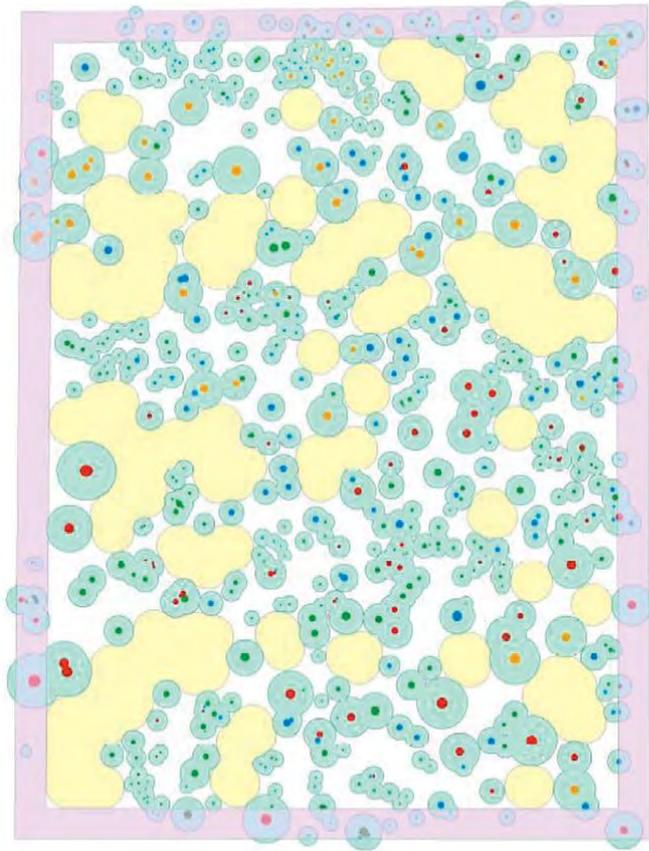


Three photos from the same location: (a) the uncut stand in May 1929, with a 74-inch sugar pine surrounded by young white firs; (b) October 1929, after logging by the light-cutting method, in which just the largest pines were removed; and (c) in 2007 (in this photo, note the person standing on what remains of the tree stump, and the lack of understory vegetation compared with 1929 conditions).

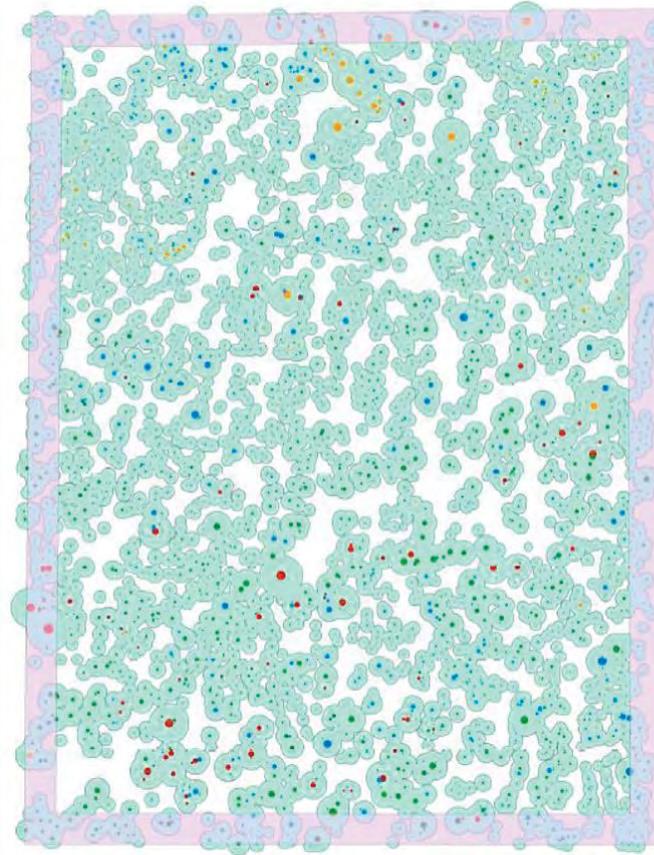
Knapp, 2013, Stanislaus Experimental Forest



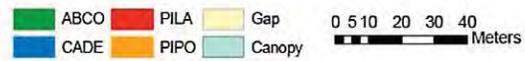
STRUCTURE



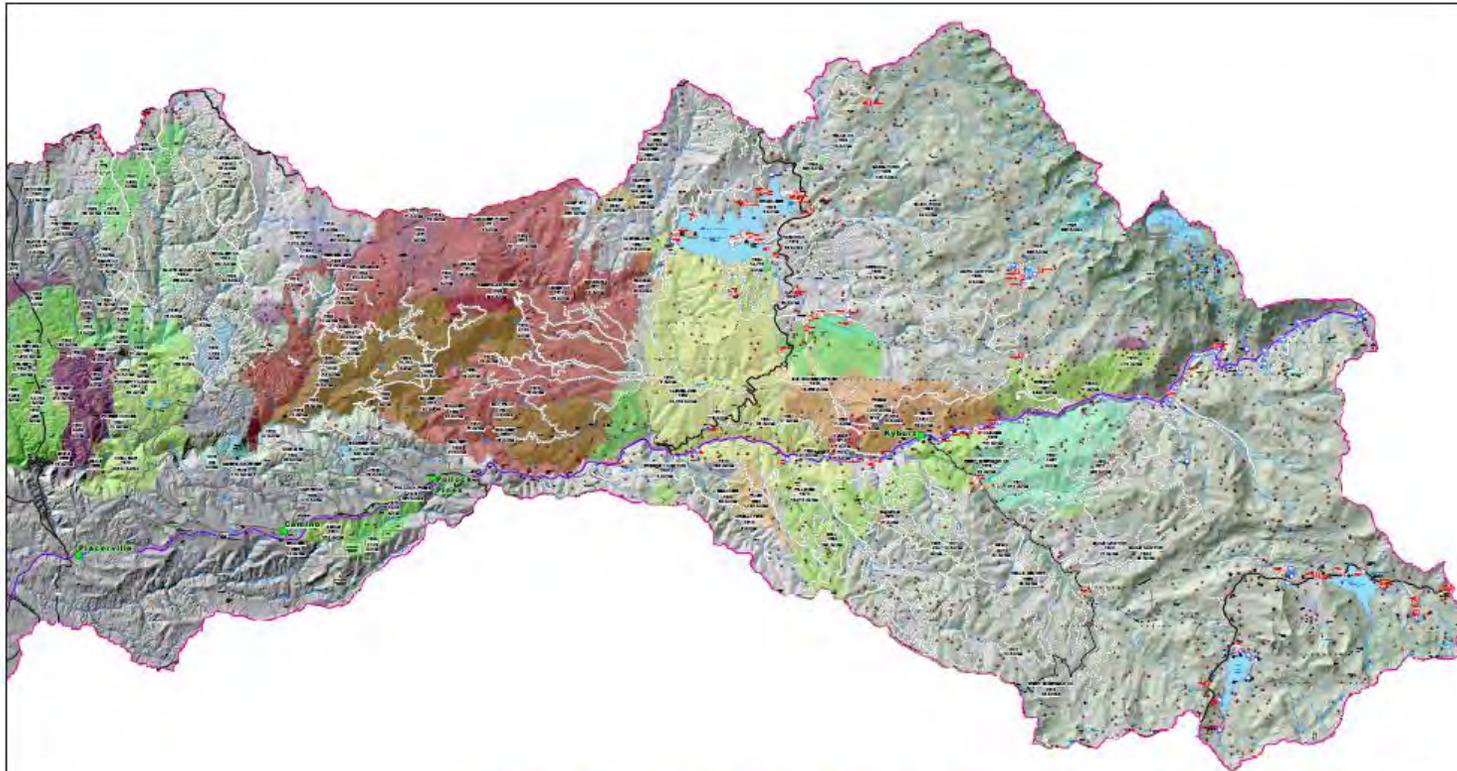
1929



2008



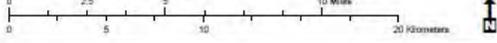
FUNCTION




U.S. Department of Agriculture
Eldorado National Forest
Amador RD
Pacific RD
Pleaserville RD
Georgetown RD

2014 King	2008 WOODS	1983 WALL	1981 WARDEN	1981 VOLLEY HILL	1987 POWER HOUR	1981 CAMP #1	1981	1981 DARY CANYON #1	1981
2013 Folsom	2004 PRINCE	1984 WOODS	1978 CHILI BEE	1981	1988 CAMP #2	1982 TRUSS CANYON	1981	1981	1981
2013 Red	2003 TRILLI J	1984 HOLBY	1975	1981	1988 CAMP #3	1982 TRUSS CANYON	1981	1981	1981
2012 HATCH	2002 TRILLI J	1984 CHADOCK	1977	1981	1988 MILLER L&P	1982	1981	1981	1981
2011 Rughoff	2002 MT. HILL	1984	1978	1981	1988 WEAVER CR	1982	1981	1981	1981
2011 Swales	2002 BUCHANAN	1982 BERRY	1978 BULLOCK	1981	1988 WEAVER L&P	1982	1981	1981	1981
2011 Long	2002 KOBAN	1982 CLEVELAND	1978 WEAVER CORRAL	1981	1988 WEAVER VALLEY	1982	1981	1981	1981
2011 Shawna	2002 MUSH	1982	1978	1981	1988 WEAVER VALLEY	1982	1981	1981	1981
2011 Sheep	2002 BELTON	1982	1978	1981	1988 WEAVER VALLEY	1982	1981	1981	1981
2011 Pate	2002 ALBERT	1982	1978	1981	1988 WEAVER VALLEY	1982	1981	1981	1981
2008 BULLOCK	2002 CARSON	1982	1978	1981	1988 WEAVER VALLEY	1982	1981	1981	1981
2008 NUB	2002 MALTIC	1984 BEAN	1978	1981	1988 WEAVER VALLEY	1982	1981	1981	1981
2008 CAMP #2	1988 BUCKLE	1984	1978	1981	1988 WEAVER VALLEY	1982	1981	1981	1981
2007 ANDERSON	1988 JONES	1987	1978	1981	1988 WEAVER VALLEY	1982	1981	1981	1981
2008 M&P	1987 RY FLOYD	1984 BAKER	1984 BLACK ROCK	1981	1988 WEAVER VALLEY	1982	1981	1981	1981
2008 COFFMAN	1988 SILVER	1984	1981	1981	1988 WEAVER VALLEY	1982	1981	1981	1981
2008 IT	1984 VIKING	1984	1981	1981	1988 WEAVER VALLEY	1982	1981	1981	1981

South Fork American River Watershed (HUC 8) Cohesive Strategy Landscape Project Fire History



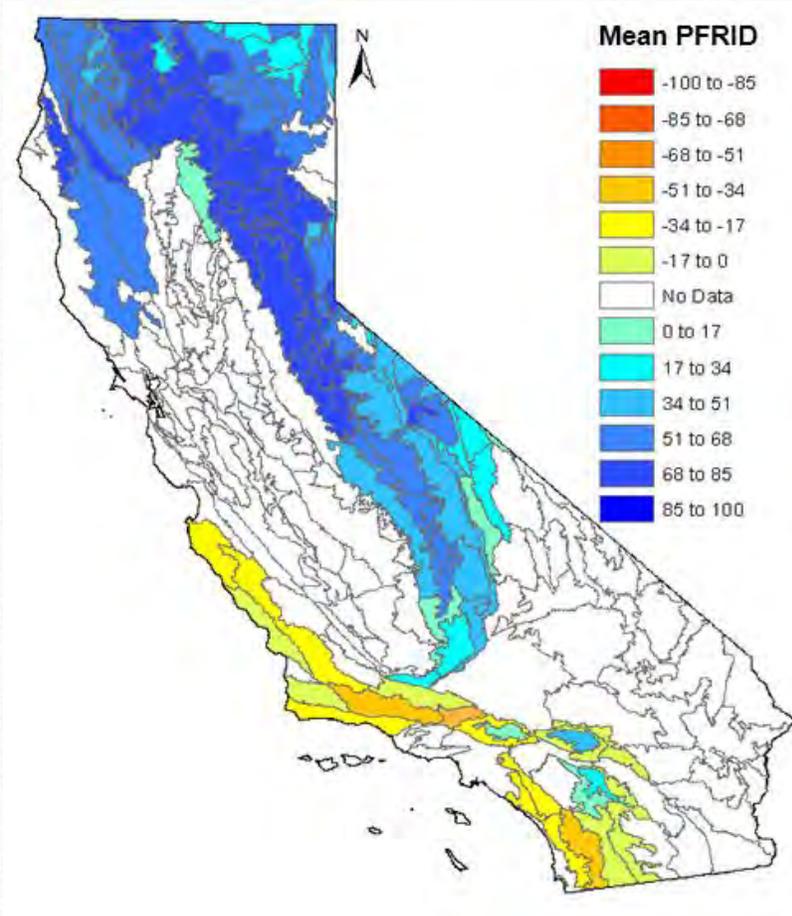
2013 Motor Vehicle Use Map

1 Road Open to All Vehicle Traveling	Pin Triangle
2 Road Open to Select Vehicle Traveling	South Fork American River Watershed (HUC 8)
3 Road Open to Highway Legal Vehicle Only Traveling	Ranger District Boundary
4 Road Open to Highway Legal Vehicle Only Traveling	Local Road Boundary
10 State or US Highway	NOTUS
15 Other Public Road	

Date: 2/4/2015



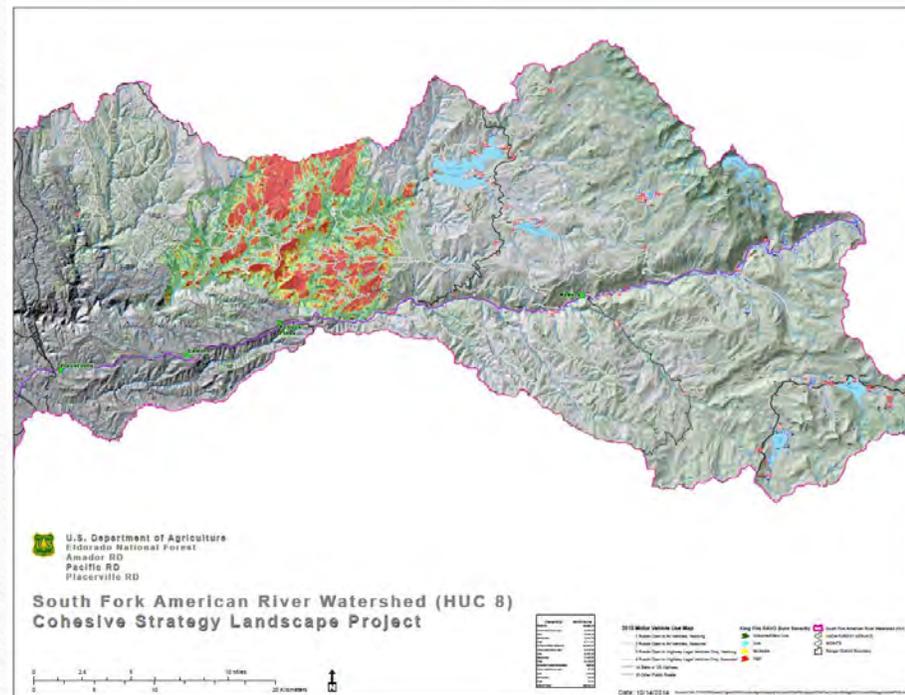
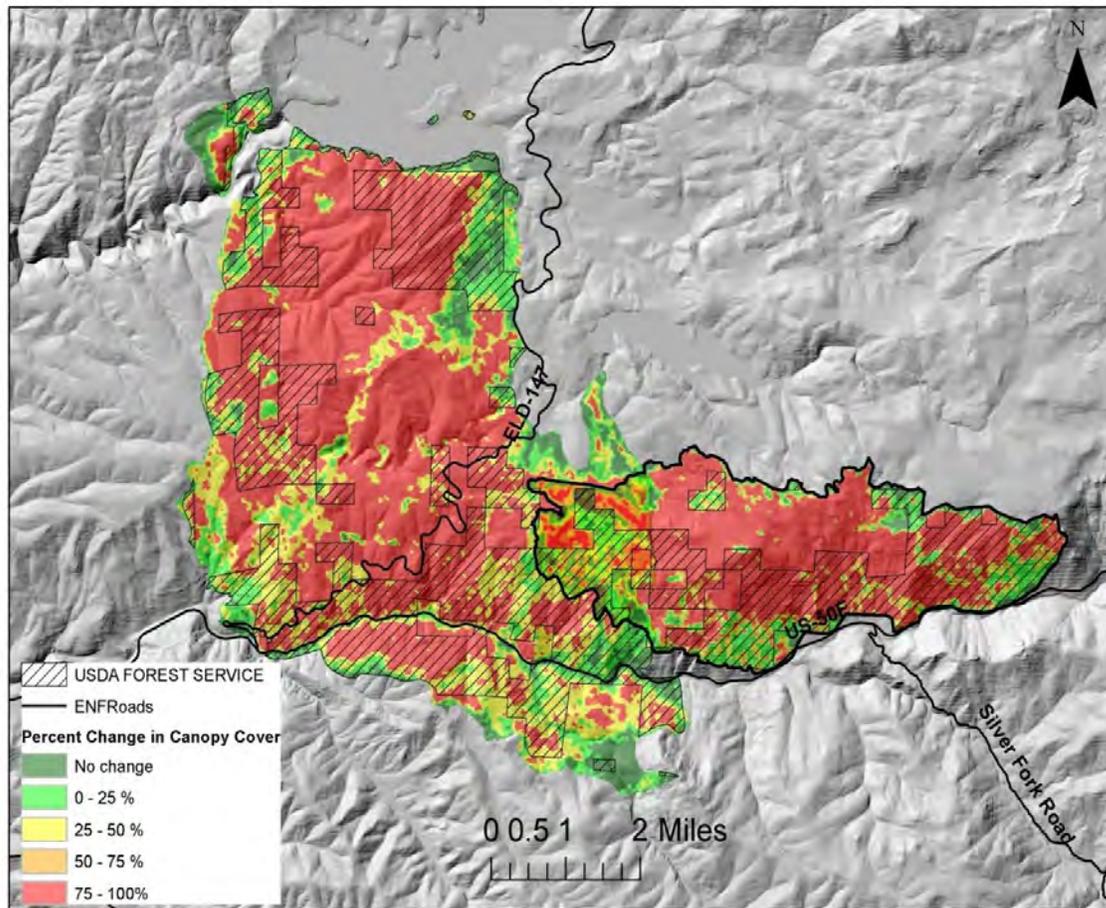
FUNCTION



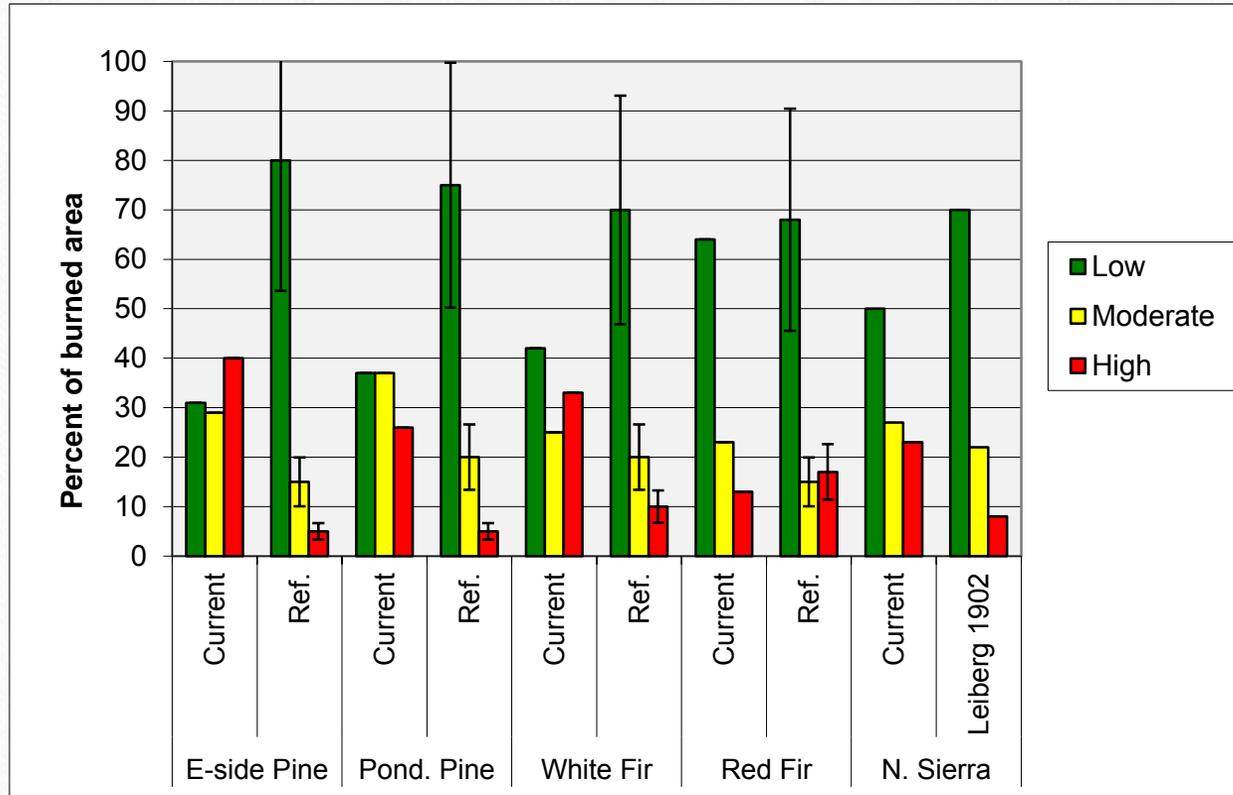
- Shift from Fire Regime I to Fire Regimes III and IV
- Current mean and mean max fire sizes larger than presettlement mean
- Fire rotations much longer today than presettlement



FUNCTION



FUNCTION

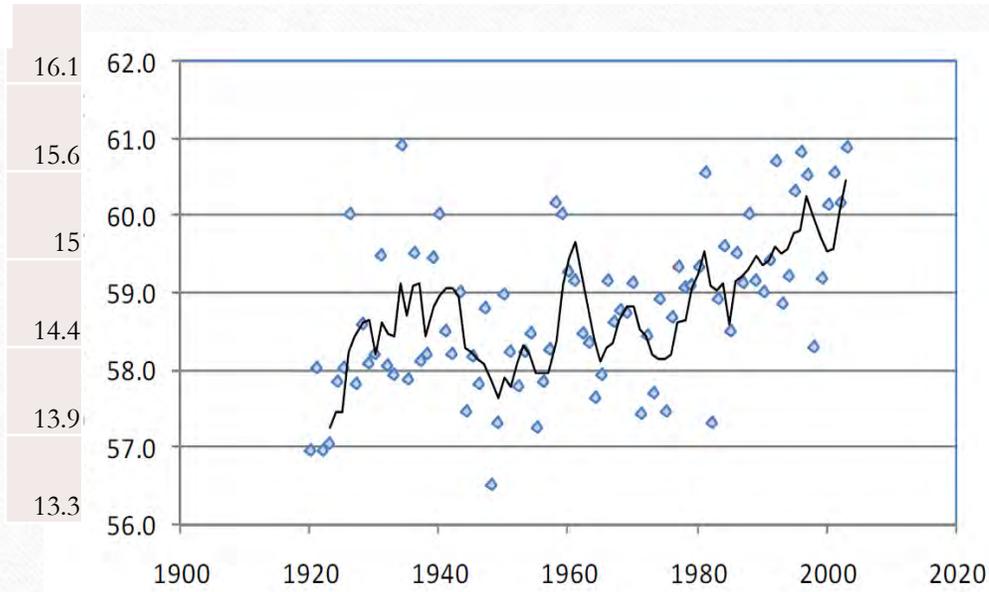


- Current high severity patch sizes higher than presettlement mean
- Current severity higher than presettlement



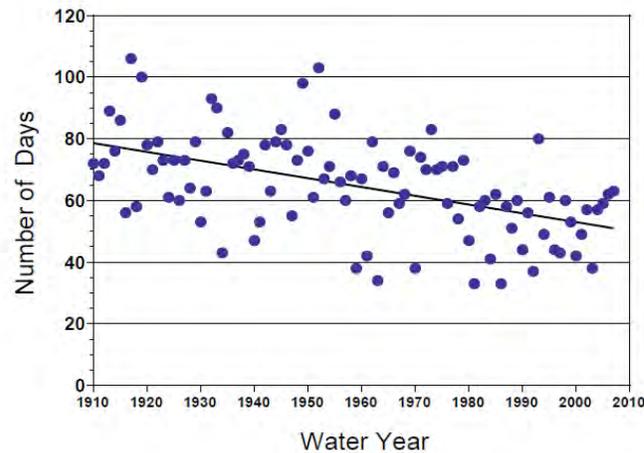
CLIMATE

Temperatures are climbing in California



California: mean
annual temps,
1920-2005

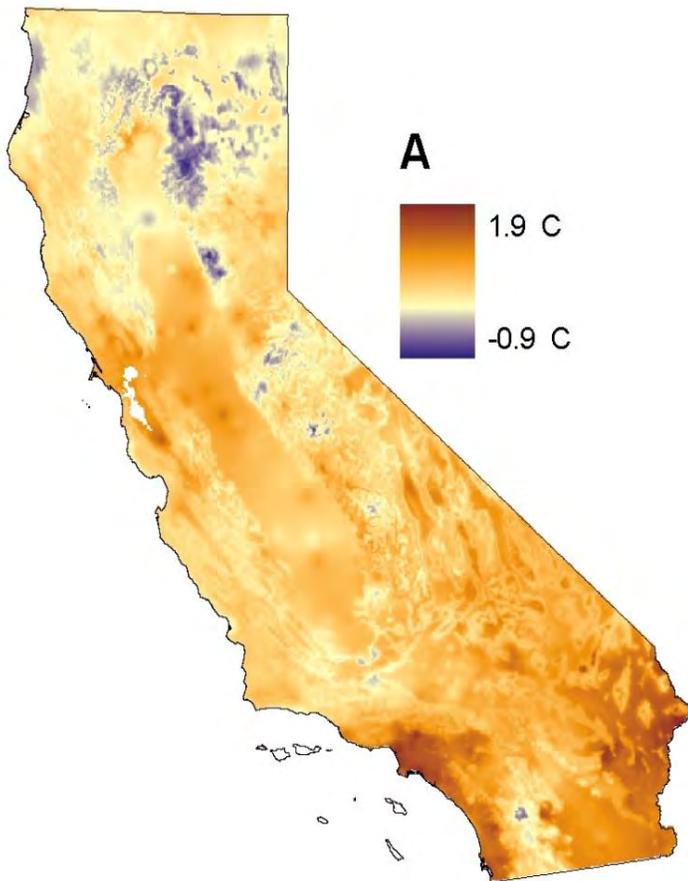
Moser et al. 2009



Tahoe City:
number of days
below freezing,
1910-2009

CLIMATE

*Future climate: models project more of the same
— mean annual temperature*

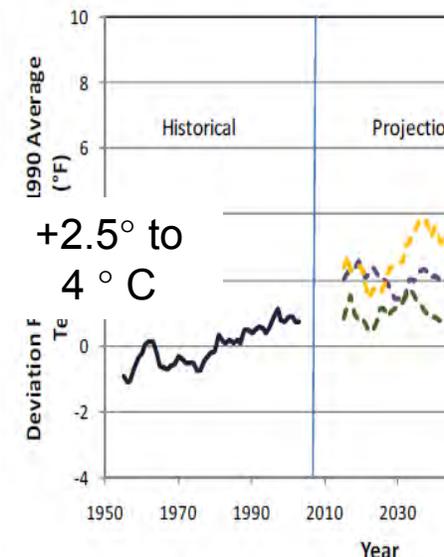
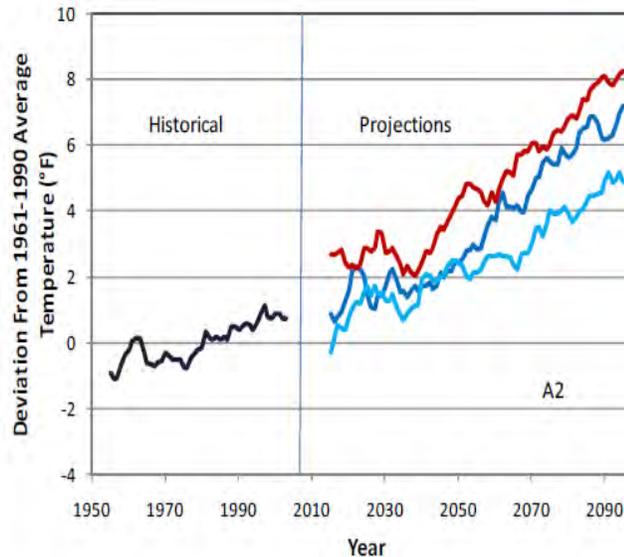
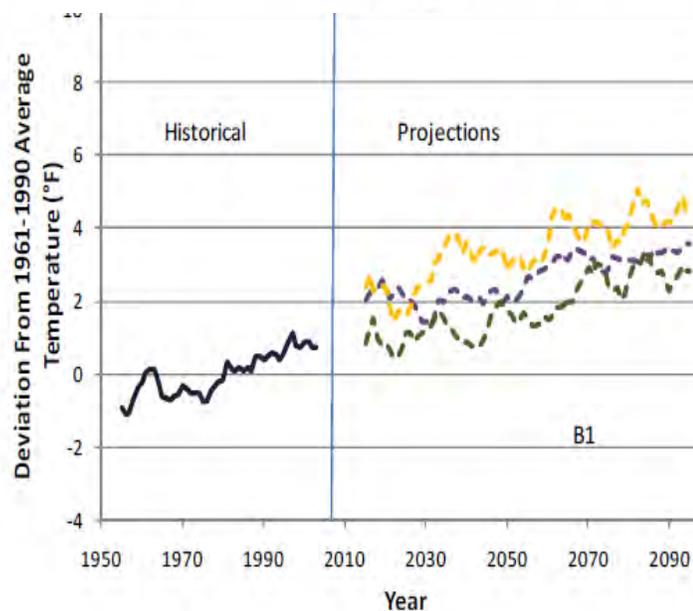


early 20th century vs. early 21st century

redf

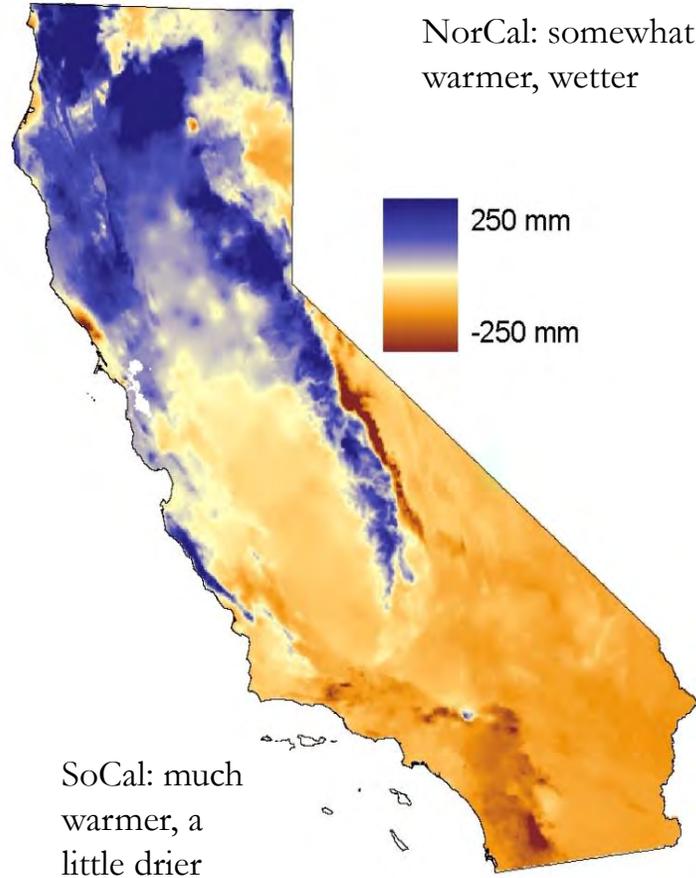


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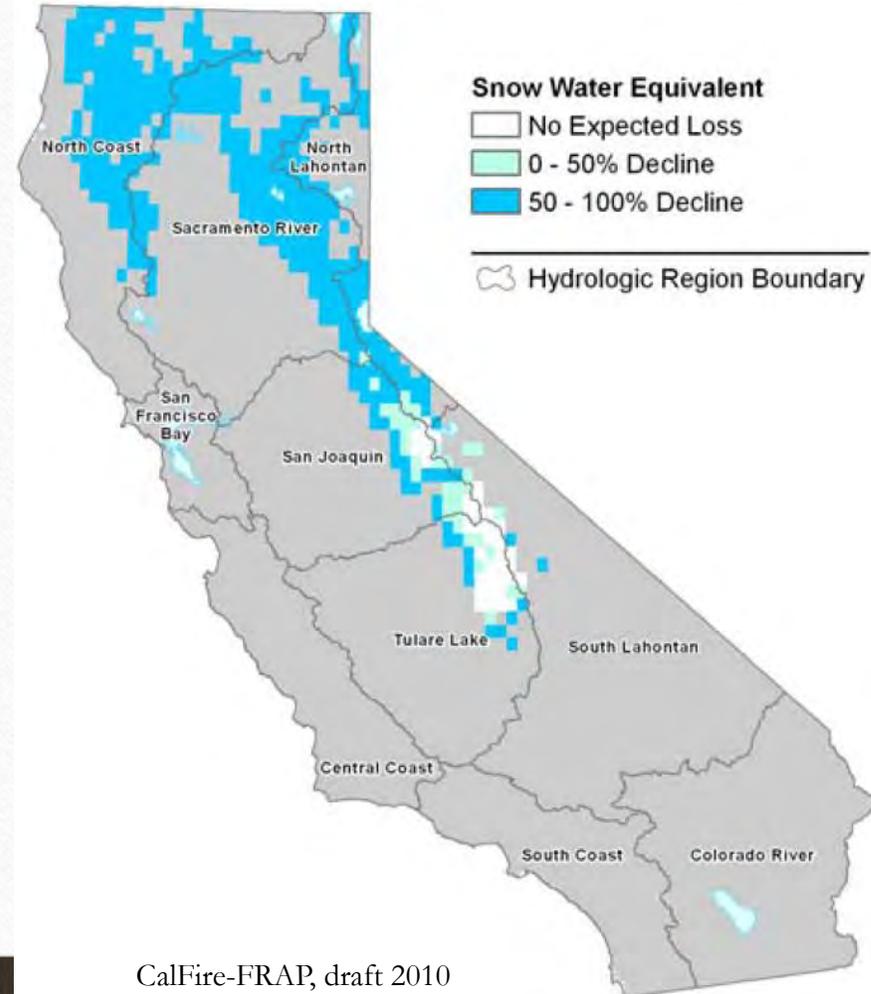
CLIMATE

*Precipitation early 20th century vs.
early 21st century*



Graphic courtesy of S. Dobrowski, Univ of MT

*Future climate: snowpack
2010-2100*

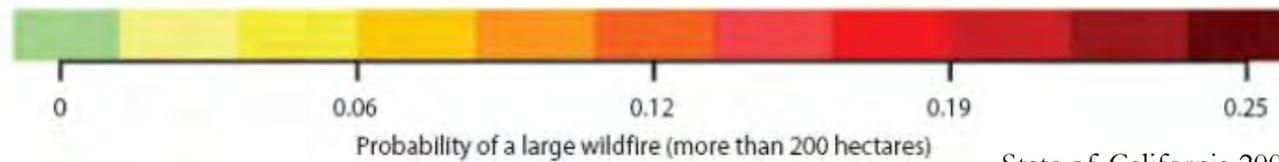
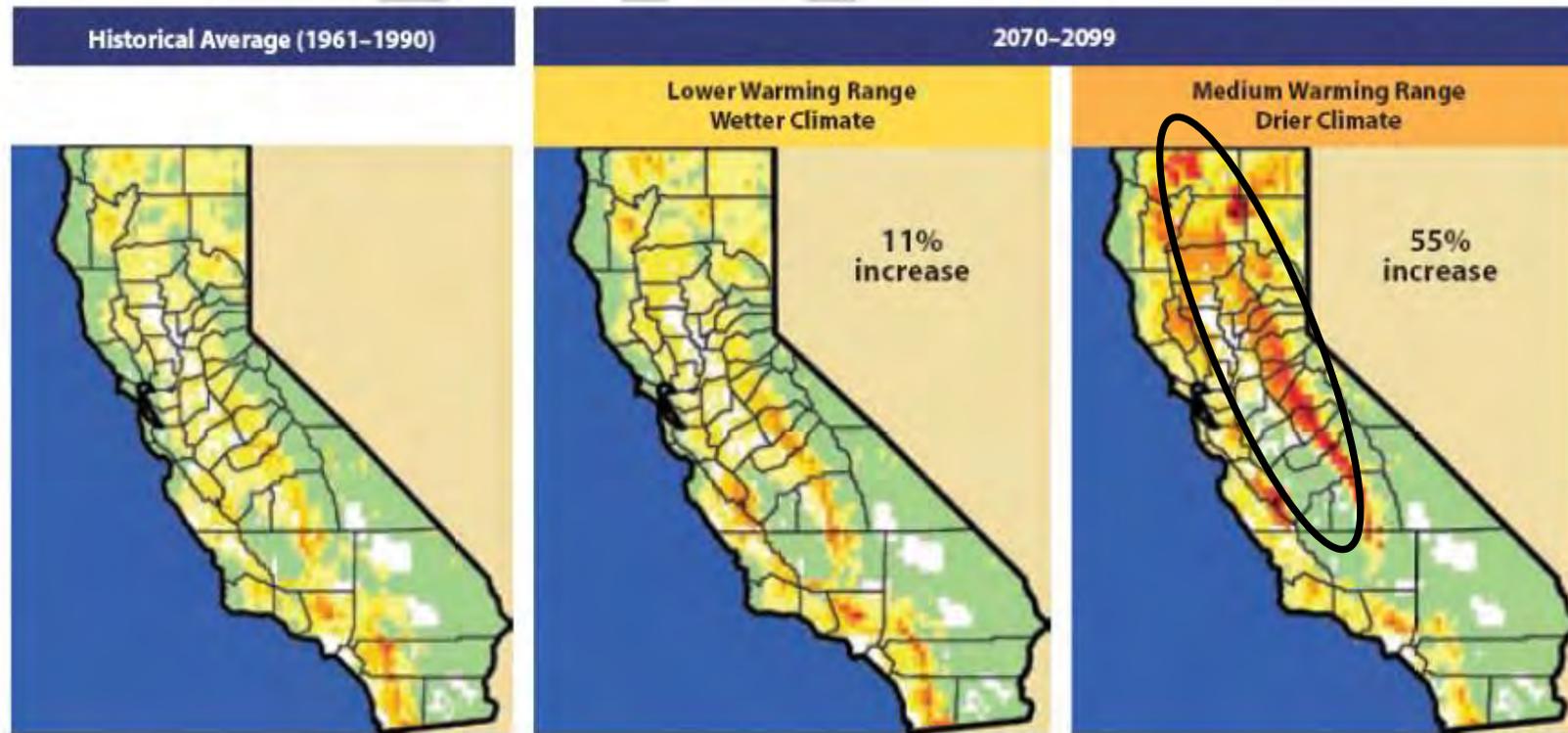


CalFire-FRAP, draft 2010



FIRE

*Future fire trends: Increasing probabilities of large wildfires
except in areas of climatic extremes (very wet, dry, or cold)*

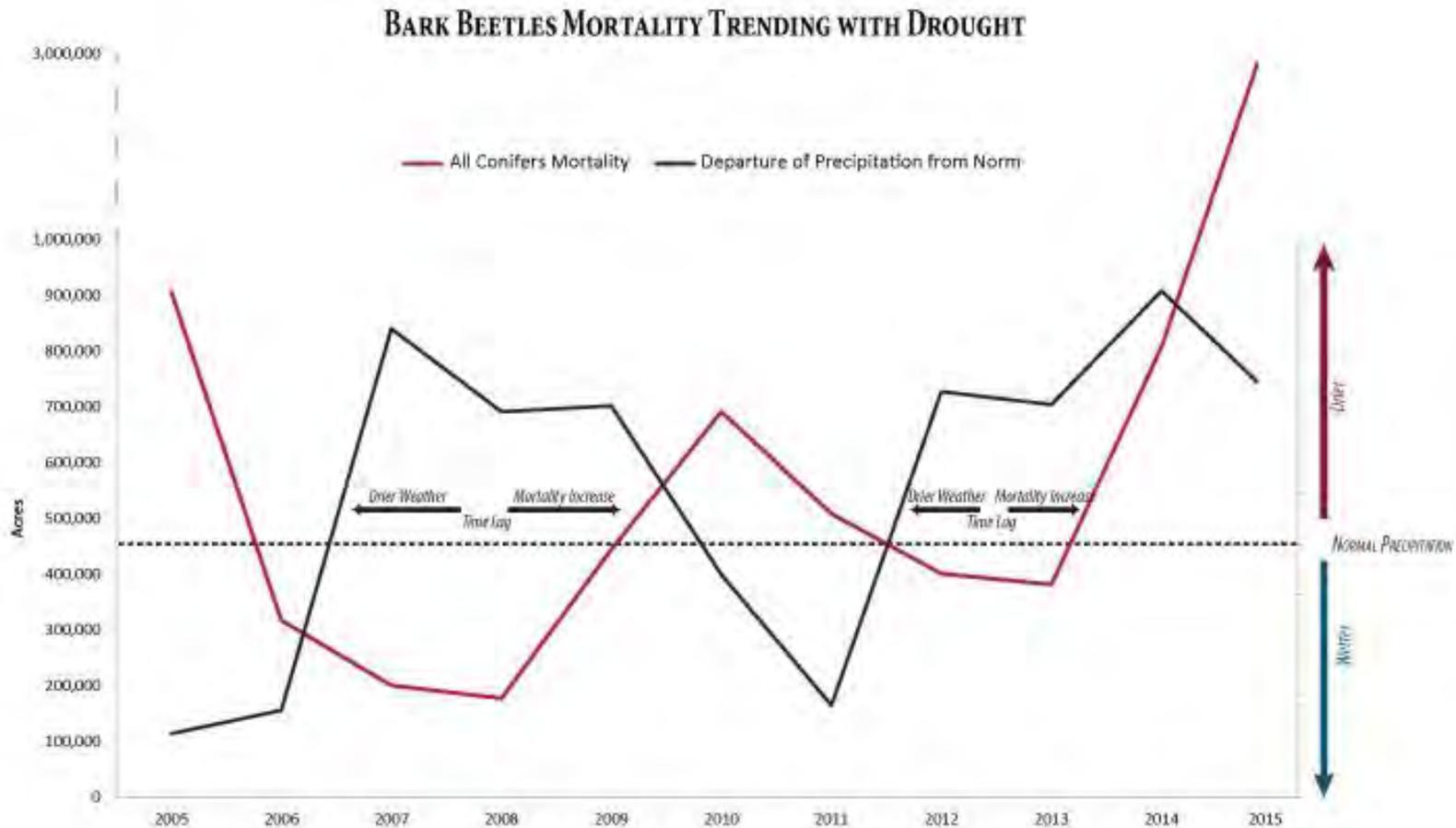


State of California 2009



INSECTS

Bark beetle mortality driven by drought cycles

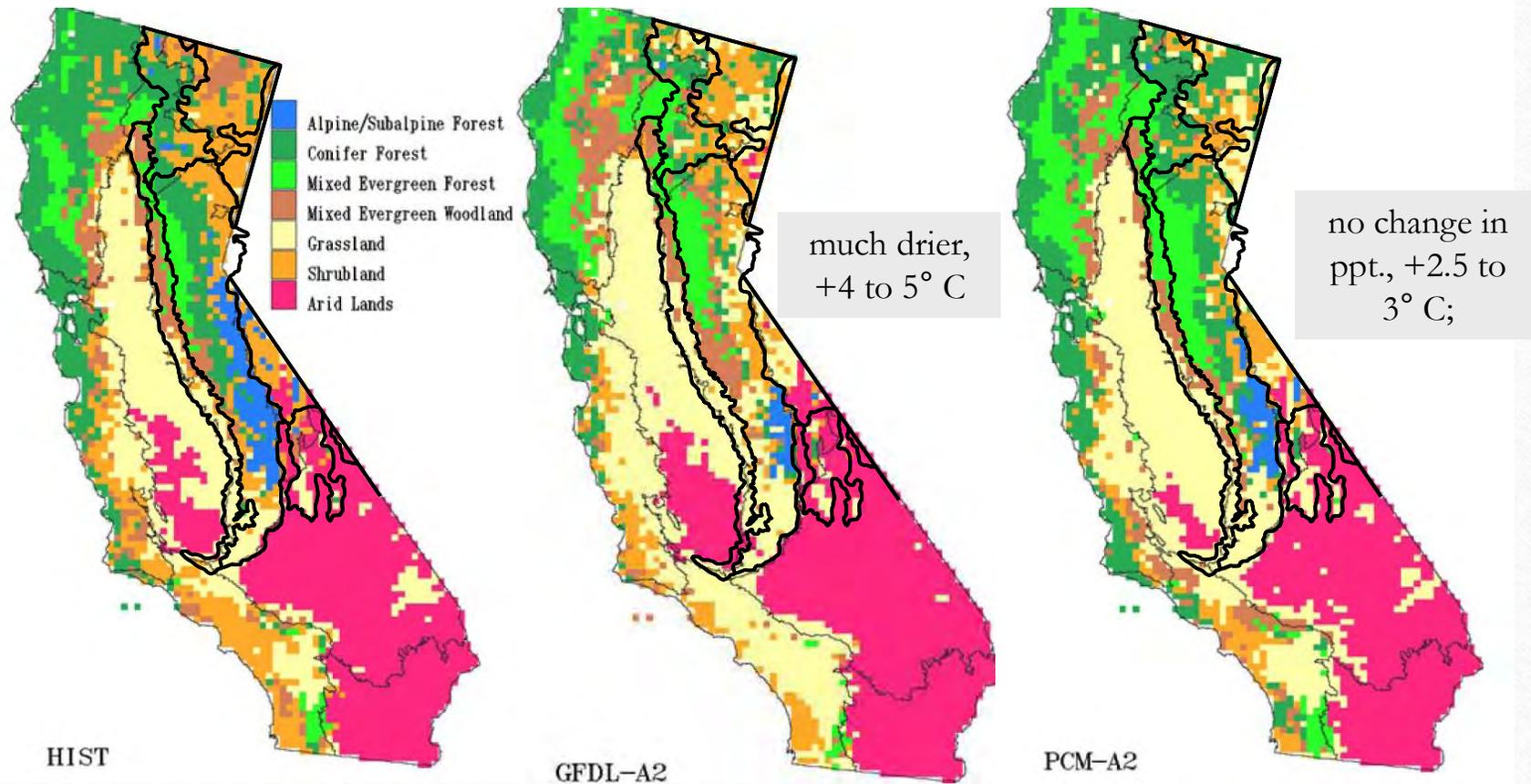


U.S. Forest Service Region 5 State and Private Forestry



VEGETATION

Interactions between climate change and fire are projected to have major effects on California vegetation



Lenihan et al. 2008



Thank you!

