

# USDA Regional Climate Hubs: California

## Regional Vulnerability Assessment Summary



## Climate Vulnerabilities in California

### Regional Description:

California is the nation's number one agricultural state, with revenues of over \$46 billion in 2013. California produces a diverse array of specialty crops, field crops, and livestock products; the top five by value in 2013 were milk, almonds, grapes, cattle and calves, and strawberries. California is home to more than 30 million acres of forest land – including many ecologically unique and economically important forest types – as well as more than 40 million acres of rangeland. California's forests and grasslands, like those of other Western states, have long been shaped by fire and drought. California's precipitation is highly variable from year to year and ranges from 60" on the North Coast to just a few inches in the southern deserts. California agriculture (concentrated in the Central Valley) depends heavily on irrigation, which comes from a combination of groundwater wells and surface water delivered by state and federal projects. Since 2011-2012, California has been in the grip of its worst drought on record.

### Climate Related Hazards and Vulnerabilities:

- Surface water supplies are likely to face increasing challenges from decreased snowpack, more frequent droughts, and more intense floods (the prevalence of large "atmospheric river" storms in California may increase).
- Groundwater quality and quantity in the Central Valley may continue to decline.
- Decreased chill-hours (cumulative hours below 45°F) may reduce yields and quality in chill-dependent perennials such as almonds, walnuts, pistachios, stonefruit, and grapes.
- Forage productivity of California rangelands may be hampered by variable precipitation and high temperatures.
- Reduced snowpack, higher temperatures, and pest/pathogen outbreaks may cause a decline in forest health. Forest fires may increase in frequency, intensity, and spatial extent.

### Adaptation and Mitigation Strategies:

- Switch to different crops or varieties, especially those that are more heat-tolerant, require fewer chill-hours, have lower irrigation requirements, and/or are more tolerant of poor-quality water.
- Use management practices (such as providing shade) that allow crops and livestock to survive high temperatures.
- Adopt more efficient irrigation technologies (for example, using site-specific weather data to estimate demand).
- Reduce stocking rates and adjust grazing strategies to utilize limited forage without degrading rangeland health.
- Actively manage forests to reduce fuel load, increase stand heterogeneity, and aid regeneration of suitable species

### Regional Priorities:

We partner with UC Cooperative Extension to identify land users' concerns, questions, and priorities. We work closely with state agencies such as the California Department of Food and Agriculture and with our local USDA agencies such as NRCS and FSA. Our current projects include a climate vulnerability assessment of California rangelands; a series of fact sheets on the current drought; briefs on adaptation and mitigation strategies for forest land owners, a greenhouse gas model calibrated for California specialty crops, and a study on how climate data can aid California orchard managers.

To learn more about the USDA Climate Hubs visit: [www.usda.gov/climatehubs](http://www.usda.gov/climatehubs)

To read the full Vulnerability Assessment visit: <http://go.usa.gov/3eEfr>