

REGIONAL HOTSPOTS FOR CLIMATE CHANGE

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There are many many such climate hotspots around the world. We are highlighting California in this bulletin.
Drying hotspots include: Amazon, Australia, California, Eastern China, Mediterranean, Middle East and South Africa

CALIFORNIA

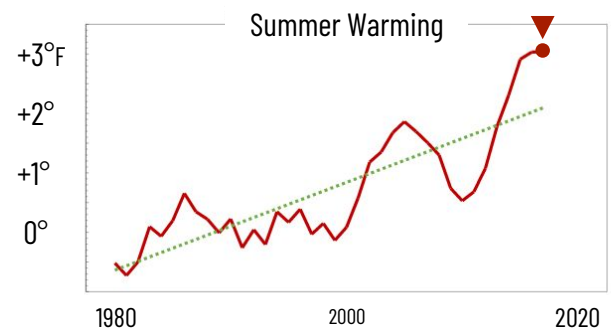


Hotter & drier with shrinking wet seasons, mega drought & fires...

Views expressed here are those of the authors and do not necessarily reflect the views of Scripps Institution of Oceanography. Funded by Edward Frieman Endowment to UCSD.

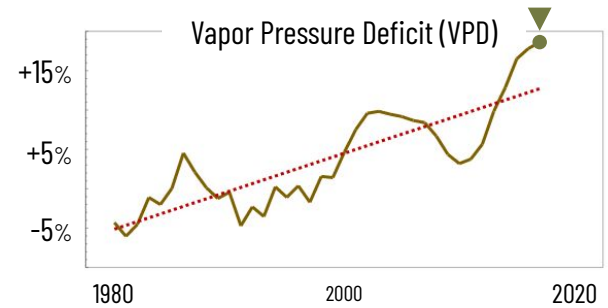
! HOTTER SUMMERS

Summer in Northern California is now hotter by more than 3°F compared with early 1980s¹.



! DRIER SUMMERS

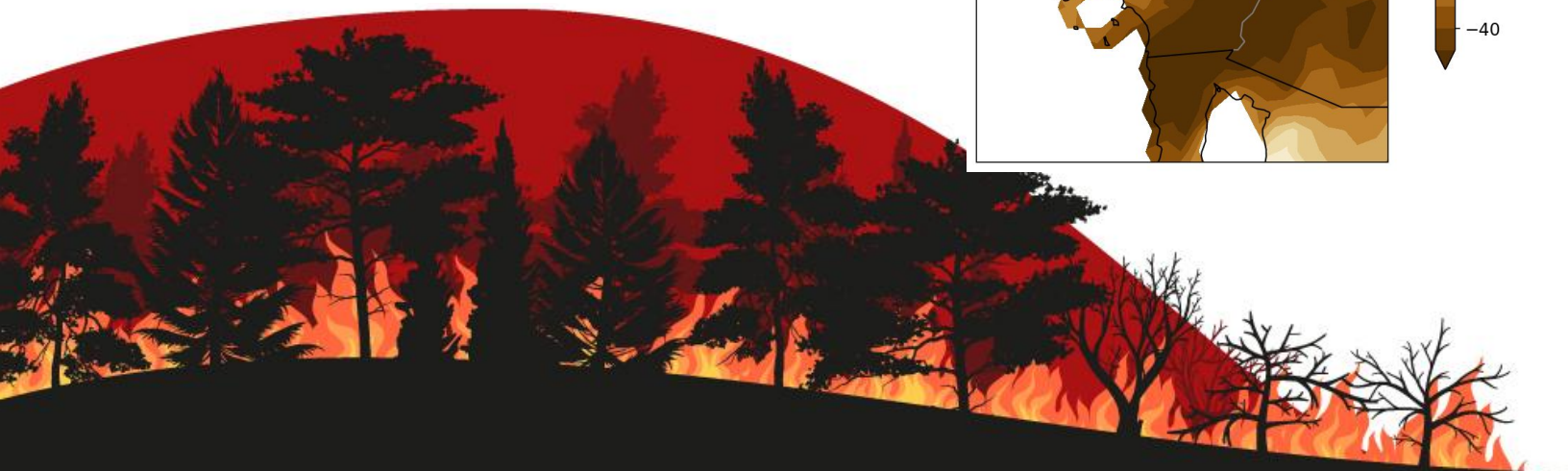
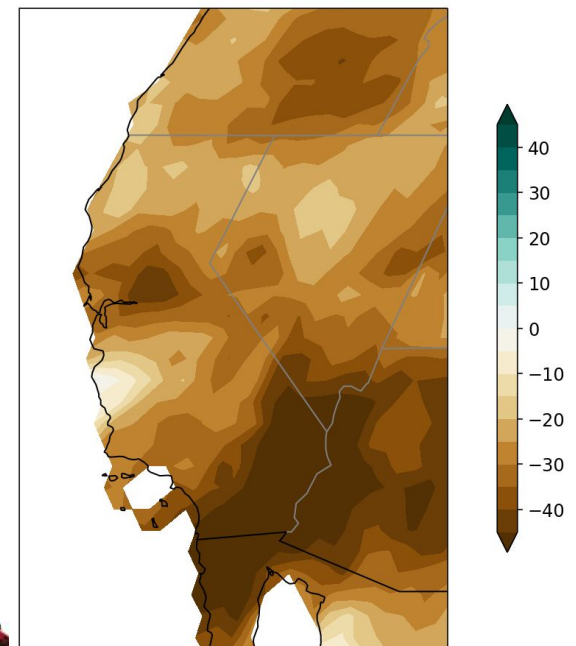
One measure of drying is vapor pressure deficit (VPD), which is the missing water vapor in the air. Since 1980, VPD increased by nearly 20%¹. Wildfires increase exponentially with VPD².



! MEGA-DROUGHTS

All of California, along with most of the US southwest and northwest, has been in a severe drying trend during the last four decades³. Drying is due to the simultaneous decrease in precipitation (P) and increase in VPD¹. VPD increases exponentially with warming. The map shows the percent change in P minus the percent change in VPD.

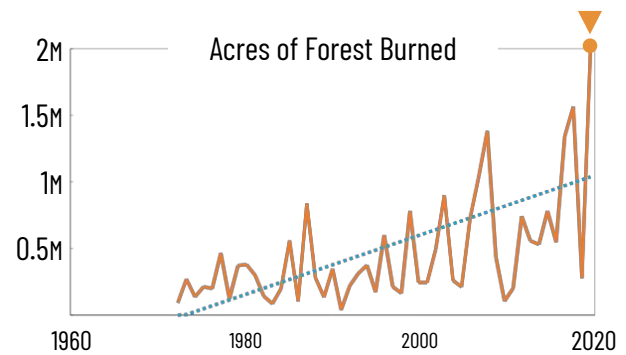
Multi decadal drying
(1980 to 2020)



! WORSENING FIRE SEASON

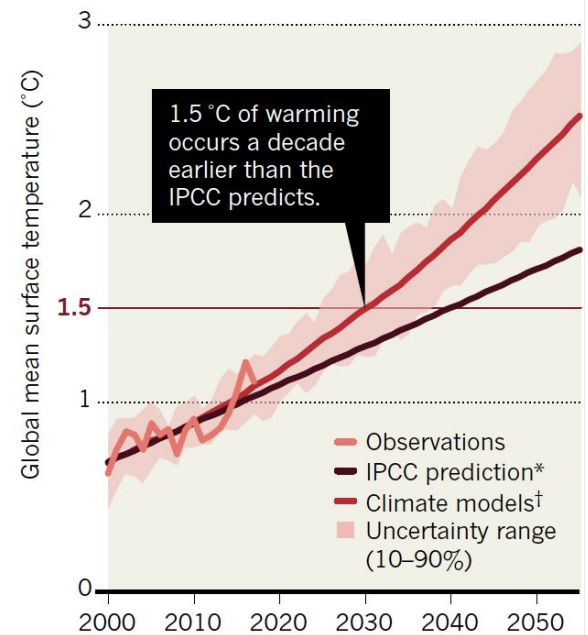
The annual area burned per decade has increased fourfold since the 1970s^{2,4}. Roughly a third of California's forests burned in the current decade. The direct and indirect cost of the record breaking 2018 fires was \$150 billion; the 2018 record was broken by the 2020 fires⁵. Smoke from fires causes severe air pollution leading to premature deaths and illnesses⁶. In addition, people directly exposed to fires suffer from severe intensification of major depressive disorder, PTSD and anxiety disorder⁷.

Global mean heating of the planet, which was 1.8 F (1C) as of 2015 is projected to increase by 50% to 2.7 F (1.5C) by 2030⁸. When that happens, climate change is likely to move into everyone's living room like COVID.



ACCELERATED WARMING

Climate simulations predict that global warming will rise exponentially if emissions go unchecked.



*Mean values for 2001-15 extended to 2050, assuming a linear rise of 0.2 °C per year. †10-year average, 37 climate models for the RCP8.5 scenario (IPCC Fifth Assessment 2014).

Graph reproduced from Xu, Victor and Ramanathan, 2018



Global Fire Map - July 14, 2021
firms.modaps.eosdis.nasa.gov/map

There is still time!

Building Climate Resilience

- Prepare for a further worsening of extremes by at least 50%
- Develop a 10-year climate resilience plan
- Protect all vulnerable people from heat waves, wildfires and smoke pollution
- Pay attention to public health, including mental health effects
- Agriculture industry to shift away from thirsty crops
- Start a statewide Climate Education for All program

Bending the Warming Curve

- Fossil-free power generation by 2030
- Bend the methane emissions curve by 2025
- Carbon-free and soot-free transportation by 2035
- Retrain, and relocate, displaced fossil fuel workers
- California should lead and inspire followers in other states



References

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