California's Drought Stress Index

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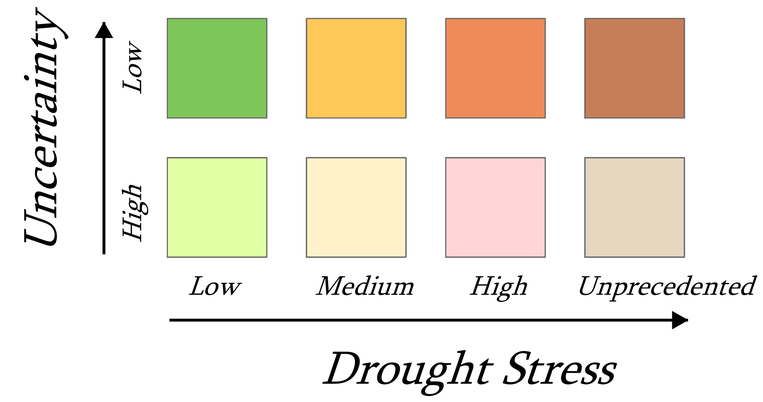
Drought Stress Index



The Drought Stress Index synthesizes observed past and projected future climate data into a single metric for all landscapes in California. This map was generated by comparing future projections from a mean of 15 global climate models run under the International Panel on Climate Change A2 emissions scenario – the most probable emission scenario - compared to observed climate data from the 20th century. The uncertainty is low if there is substantial agreement among the 15 GCMs, and high if not.

OREGON
IDAHO
UTAH
NEVADA
ARIZONA
MEXICO

EAST CASCADES-MODOC PLATEAU
KLAMATH MOUNTAINS
CALIFORNIA NORTH COAST
GREAT SIERRA NEVADA
CENTRAL CALIFORNIA VALLEY
GREAT BASIN
MOJAVE DESERT
SOUTHERN CALIFORNIA COAST
SONORAN DESERT

NORTHERN CALIFORNIA CURRENT
SOUTHERN CALIFORNIA CURRENT
Pacific Ocean

Crescent City
Eureka
Redding
Truckee
Sacramento
Santa Rosa
San Francisco
San Jose
Monterey
Merced
Fresno
Bakersfield
Bishop
Barstow
Needles
Santa Barbara
Los Angeles
Palm Springs
Blythe
San Diego

Terrestrial Ecoregional Boundary
Marine Ecoregional Boundary

0 25 50 75 100 Miles
0 25 50 75 100 Kilometers
N

DATA AND METHODS

The observed climate data are from the PRISM climate layers from 1900-1999 at 800m resolution. To learn more about this dataset and the methods used to generate it, please visit http://www.prism.oregonstate.edu.

The future climate projection summaries were generated from 15 global climate models (GCMs) run to support the International Panel on Climate Change (IPCC) Forth Assessment Report. To learn more about these data, please visit http://www-pcmdi.llnl.gov/ipcc/about_ipcc.php. We converted and downscaled these data using a change factor approach and a spline interpolation to match the 800m resolution of the PRISM data.

The drought stress index is calculated by comparing the future (2070-2099) 30-year mean projection of annual precipitation for every 800m pixel to the observed annual precipitation values between 1900 and 1999. The index is calculated based on the number of observed years that are greater than the future projection. Thus a value of 70 means that the future projection is drier than 70 of the 100 years between 1900 and 1999. We classified this value into the following categories: 0-50 is low, 50-66 is medium, 66-99 is high, and 100 is unprecedented. We calculated these values for all 15 of the GCMs, and generated a standard deviation between these values. We consider a standard deviation of 20 or greater as "high" uncertainty and a standard deviation of less than 20 as "low" uncertainty.

Map produced by TNC CA Science - 11/30/2009
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