Western Regional Climate Center
Overview & Update
Twelfth Biennial U.S. Drought Monitor Forum
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WESTERN REGIONAL CLIMATE CENTER

- One of six Regional Climate Centers (RCCs) administered by NOAA’s National Centers for Environmental Information (NCEI).
- Host Institution: Desert Research Institute’s Division of Atmospheric Sciences in Reno, Nevada (since 1986).
- Mission:
  - Act as a repository for historical climate data and information.
  - Disseminate high-quality climate data and information.
  - Engage in applied research related to climate issues.
  - Improve the coordination of climate-related activities at local, state, regional, and national scales.
- Federal partners: NOAA NCEI, NOAA National Integrated Drought Information System (NIDIS), USGS Southwest Climate Adaptation Science Center, and NOAA’s California-Nevada Applications Program.
- Research areas: climate impacts, climate trends, weather and climate extremes, ENSO relationships to Western climate, wildfire and smoke impacts, drought, snowpack and water resources, climate adaptation, agriculture, human dimensions of climate, climate tools development.
WESTERN REGIONAL CLIMATE CENTER
SERVICES & CAPABILITIES

- **Applied Climate Activities**
  - Analysis and interpretation of weather and climate data
  - Custom data-based decision support
  - Development of climate-related communication materials
  - Media interviews on regional weather and climate
  - Engagement with water resource managers, land management agencies, operational weather forecasters, local governments, non-profits, and others to develop climate science-related tools to meet stakeholder needs

- **Monitoring**
  - Climate monitoring network development
  - Siting, installation, and maintenance of weather stations
  - Data ingest and hosting

- **Social Science**
  - Evaluation of climate tools and information

- **Web-based tool and product development**
  - Data analysis tools
  - Custom data visualization
  - Geospatial and interactive mapping
NEW CLIMATE APPS
STATE CLIMATE TRACKER

Climate Dashboard: September 2021

September 2021 Climate Division Departures from 1991-2020 Average
Departure-based products are calculated from 1991-2020 computed averages.

Climate Division Departures from 1991-2020 Average
Departure-based products are calculated from 1991-2020 computed averages.

Statewide Departures from 1991-2020 Average
Departure-based products are calculated from 1991-2020 computed averages.

https://wrcc.dri.edu/my/climate/tracker
NEW CLIMATE APPS
SNOW DROUGHT TRACKER
NEW CLIMATE APPS
SNOW DROUGHT TRACKER

2019-12-27
SWE % of Normal, WYTD PPT % of Normal
SWE 211%
PPT 134%

2020-02-19
SWE % of Normal, WYTD PPT % of Normal
SWE 115%
PPT 99%

2020-03-10
SWE % of Normal, WYTD PPT % of Normal
SWE 62%
PPT 102%

Phase Diagram
Baldy, White Mts, Arizona

Wet snow drought
OpenET provides open, easily accessible satellite-based ET data for improved water management.

OpenET team: NASA Ames, DRI, USDA ARS, USGS, and various universities.

Input data: Landsat, GOES, Sentinel-2, Suomi NPP, Terra, Aqua, gridMET, Spatial CIMIS, DAYMET, PRISM, NLDAS.
WESTWIDE DROUGHT TRACKER

• Modernization underway
• Datasets, software, & computing resources will be updated.
• New access to cloud computing, APIs, and cloud data catalogs via Google Earth Engine and Climate Engine.
• Updated WWDT will become a climate app on WRCC’s newly designed web interface.
CLIMATE ENGINE

- Climate & Hydrology
  - gridMET, PRISM, ANUSPLIN, TerraClimate, CFS Reanalysis, MERRA2, NLDAS2, ERA5, CHIRPS, ACIS, SNODAS

- Remote Sensing
  - Landsat, MODIS, Sentinel-2

- Climate Forecasts
  - CFS GRIDMET
CLIMATE MONITORING
CLIMATE MONITORING
CLIMATE SUMMARIES

January in the West

After a flurry of new, across much of the region, a series of Pacific storms swept in late January, resulting in widespread precipitation accumulating to exceed the 1-month average at nearly 50% of the locations responsible for reporting the December average. At nearly 27% of the locations reporting the December average, 1-month precipitation was 100% above normal, with nearly 45% of the locations reporting 0.50" or more of precipitation. In California, the December average of 0.50" was 9.70" more than normal, with nearly 35% of the locations reporting 0.50" or more of precipitation. In Oregon, the December average of 0.20" was 7.30" more than normal, with nearly 24% of the locations reporting 0.50" or more of precipitation. In Washington, the December average of 0.20" was 6.60" more than normal, with nearly 18% of the locations reporting 0.50" or more of precipitation. In Nevada, the December average of 0.30" was 5.90" more than normal, with nearly 15% of the locations reporting 0.50" or more of precipitation. In Idaho, the December average of 0.20" was 5.20" more than normal, with nearly 12% of the locations reporting 0.50" or more of precipitation. In Montana, the December average of 0.50" was 4.50" more than normal, with nearly 10% of the locations reporting 0.50" or more of precipitation. In Wyoming, the December average of 0.50" was 4.10" more than normal, with nearly 8% of the locations reporting 0.50" or more of precipitation. In Colorado, the December average of 0.90" was 3.90" more than normal, with nearly 3% of the locations reporting 0.50" or more of precipitation. In New Mexico, the December average of 0.50" was 3.60" more than normal, with nearly 2% of the locations reporting 0.50" or more of precipitation. In Texas, the December average of 0.40" was 3.30" more than normal, with nearly 2% of the locations reporting 0.50" or more of precipitation. In Arizona, the December average of 0.40" was 3.10" more than normal, with nearly 1% of the locations reporting 0.50" or more of precipitation. In Hawaii, the December average of 0.50" was 3.00" more than normal, with nearly 0% of the locations reporting 0.50" or more of precipitation. In the U.S. Drought Monitor, January 2021, there was no change to drought conditions across the nation.

Significant Events for January 2021

• Heavy snowfall accumulations in the Snowy Range Mountains (January 21, 2021). Heavy snowfall accumulations are expected to continue to occur in the Rocky Mountain region during the winter months, due to the increased likelihood of snowfall in these regions. Heavy snowfall accumulations are expected to continue to occur in the Rocky Mountain region during the winter months, due to the increased likelihood of snowfall in these regions. Heavy snowfall accumulations are expected to continue to occur in the Rocky Mountain region during the winter months, due to the increased likelihood of snowfall in these regions.

January 2021 Departure from Normal Temperature and Percent of Normal Precipitation for Western United States

Highlights for Hawaii and the U.S. Affiliated Pacific Islands

• During the June – August 2021 period, ENSO-neutral conditions persisted with a transition to La Niña conditions expected in the coming months with a 70% – 80% chance of La Niña continuing through the Northern Hemisphere winter 2021 – 2022.

• Areas of the Federated States of Micronesia (FSM) and the Republic of the Marshall Islands (RMI) experiencing persistent drought (Kapingamarangi, Wolei) saw improvement in conditions.

• For the June – August (JJA) period, below-normal rainfall was observed across much of the western tropical Pacific in the Northern Hemisphere. This includes Ailinglaplap and Kwajalein (RMI), which observed their driest August on record as well as their driest 2nd and 3rd driest JJA period on record, respectively.

• In the Hawaiian Islands, drier-than-normal conditions prevailed during JJA with 40% of the island chain experiencing drought by the end of August, according to the U.S. Drought Monitor.

• Satellite analysis showed above-normal sea levels occurring in the tropical western Pacific by August while below-normal sea levels were observed across the central tropical and eastern Pacific regions.

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http://dpc.uc.arizona.edu/Hawaii_USAPICto_2021/Climate_Summary_and_Newsletter_Summary/
THANK YOU!

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