

# Rural Migration News

## Blog 235

AUGUST 2021

### Agriculture and Drought

Most of the 11 western states were in D2 severe drought in summer 2021. The US drought monitor showed that over 90 percent of the land in AZ, CA, NV, and UT was in D2 severe drought, and significant areas were in D4 exceptional drought.

The 11 western states produce farm commodities worth \$112 billion and account for a third of US farm cash receipts. California accounts for \$50 billion or 45 percent of the western total.

The State Water Resources Control Board in August 2021 restricted access to irrigation water for 5,700 of the 7,700 users of the Sacramento-San Joaquin Delta watershed in order to prevent the intrusion of saltwater into the Delta. Farmers pumped more groundwater to compensate for the loss of surface water, sometimes digging wells 1,000 feet deep before finding water. The Sustainable Groundwater Management Act (SGMA) enacted in 2014 will require water districts to prevent the overdrafting of groundwater.

A Farm Bureau survey that asked how western farmers responded to the 2021 drought found that the

most common response of animal farmers was to sell off some of their livestock because of the lack of pasture and the rising cost of feed, which depressed the price of feeder cattle. Crop farmers reduced their acreage of annual crops and pumped more ground water, and some stopped watering older orchards and vineyards to provide water for more productive trees and vines.

A major issue in 2021 was the lack of surface water, water from winter

precipitation stored behind dams and delivered via canals for summer irrigation. All water providers reduced surface water deliveries in 2021.

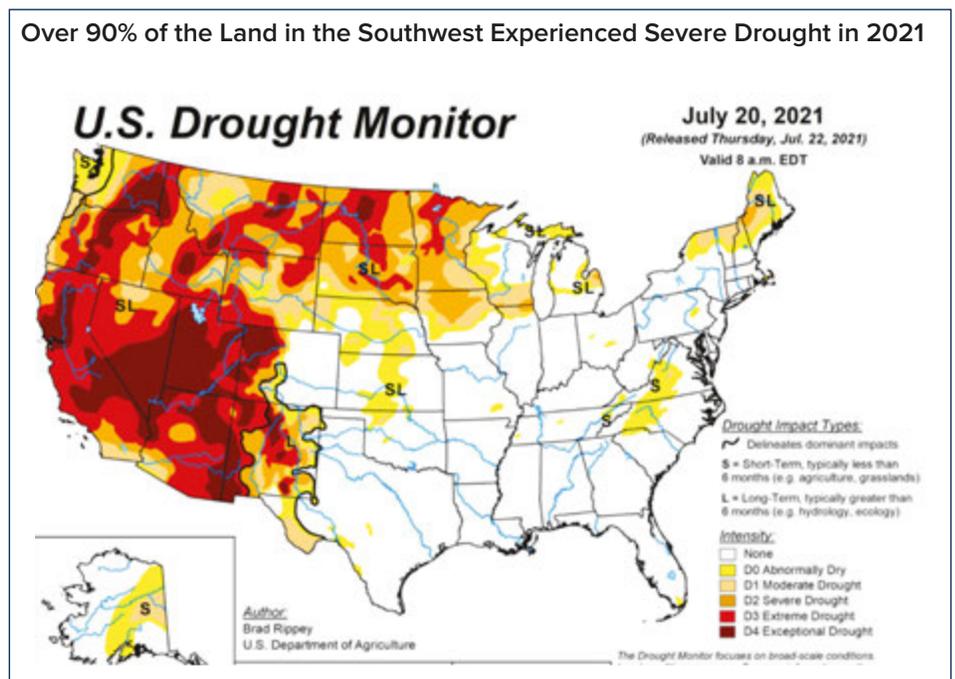
The Hoover Dam on the 1,450 mile long Colorado river that created Lake Mead in 1936 is the largest US reservoir by water volume. The dam is the height of a 60-story building, with a base that is 660 feet wide and a top 45 feet wide, and provides water for 40 million people and farm land in AZ and CA.

Water deliveries were curtailed after the level of Lake Mead fell to 1,075 feet above sea level in August 2021, one third full. Lake Mead's water level is projected to decline by a foot a week in summer 2021 and to drop below 1,050 feet early in 2022, which will reduce the production of electricity from the dam's 17 turbines and cut off water to some Arizona farmers.

### IPCC

The Intergovernmental Panel on Climate Change released its sixth report in August 2021. The report concluded that human activities

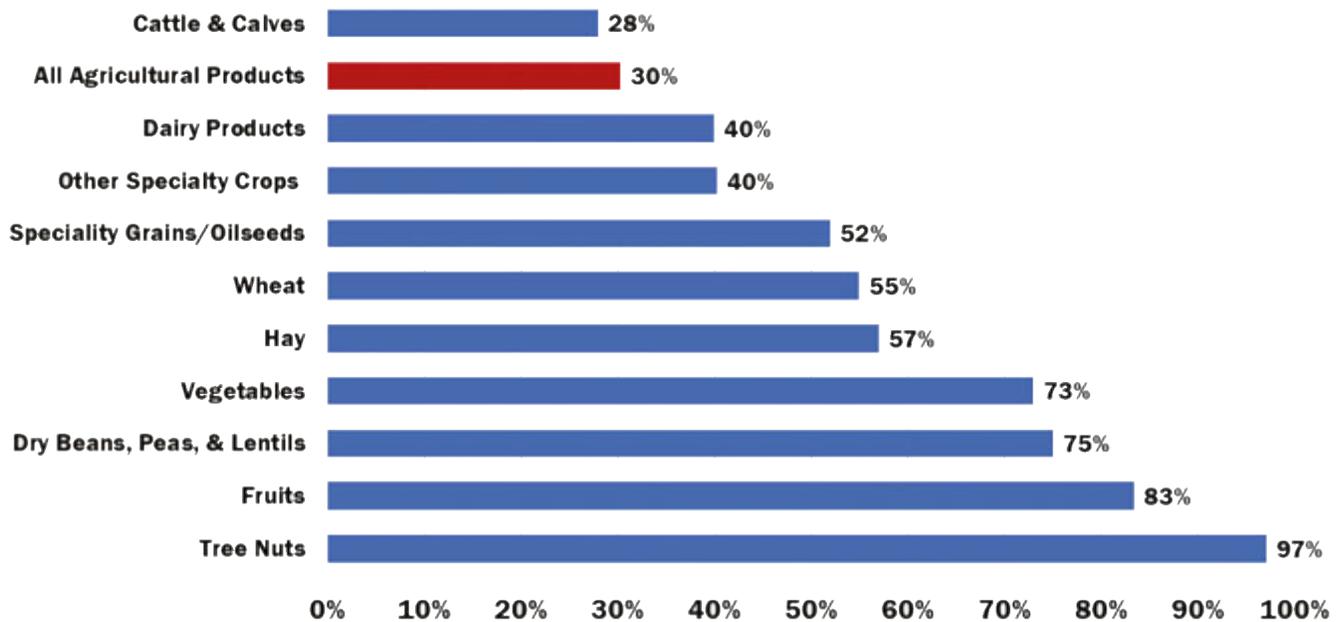
Over 90% of the Land in the Southwest Experienced Severe Drought in 2021



The 11 Western States Produce 3/4 or More of U.S. Fruits, Vegetables, and Tree Nuts

**Figure 1: Percent of U.S. Production By Value Produced in the West+ Region**

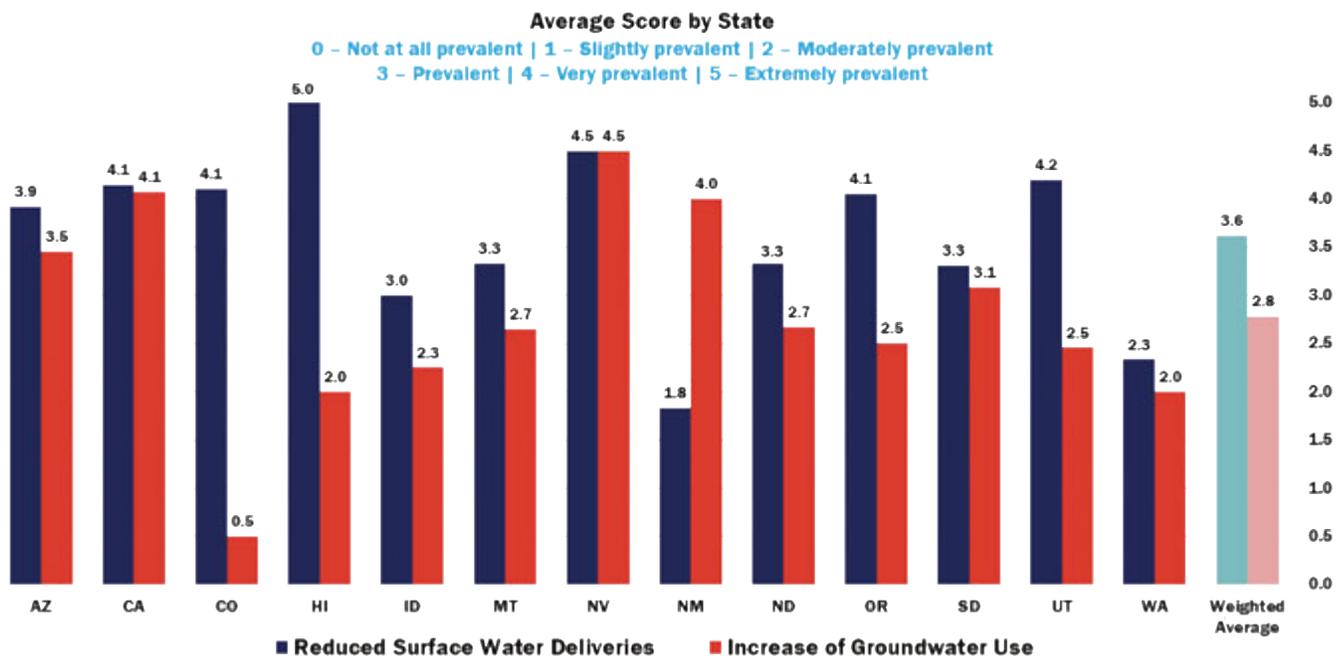
(AZ, CA, CO, ID, MT, NV, NM, ND, OR, SD, UT, WA, WY)



Source: <https://www.fb.org/market-intel/afbf-survey-assesses-how-farmers-and-ranchers-are-dealing-with-drought>

Most Western Farmers Received Less Surface Water in 2021

**Figure 3: Reduced Surface Water Deliveries**



Source: <https://www.fb.org/market-intel/afbf-survey-assesses-how-farmers-and-ranchers-are-dealing-with-drought>

have emitted sufficient greenhouse gases to raise average global temperatures by at least 1.5C or 2.7F above pre-industrial levels by 2040. The IPCC said that a billion people face severe heat waves, floods, and droughts every five years.

Global average temperatures in 2021 are 1.1C or 2F above 1850 levels. The IPCC said that the 2021 heat waves and wildfires in the western US and Canada as well as in southern Europe, and flash floods in western Europe, are precursors of the impacts of global warming.

Avoiding further warming means reducing greenhouse gas emissions. Most industrial countries have enacted laws to reduce carbon dioxide emissions. However, China, which currently emits 30 percent of global greenhouse gases, is building more coal-fired power plants. If temperatures surpass a tipping point, the glaciers in Antarctica and Greenland could melt, raising water levels and threatening coastal cities.

**Lake Mead Water Levels Dropped by a Foot a Week in Summer 2021**

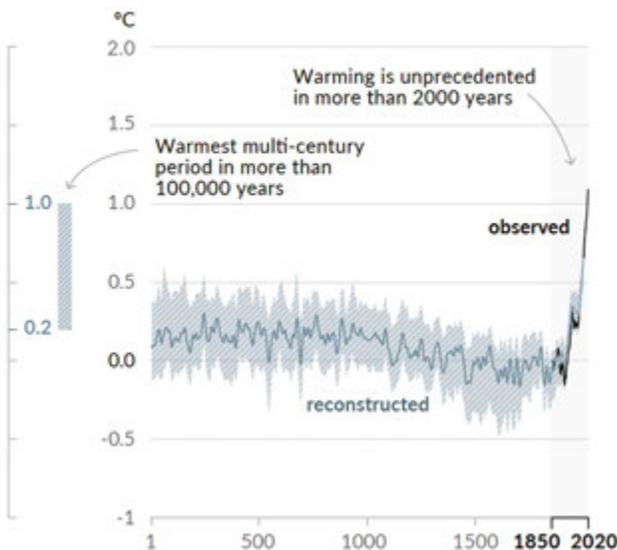


Some 195 governments will discuss the IPCC report in COP 26 in Glasgow in November 2021. Environmentalists hope that world leaders embrace and act on the IPCC conclusion that human activities such as burning fossil fuels and clearing forests are responsible for rising temperatures and adopt policies to reduce these activities to slow warming.

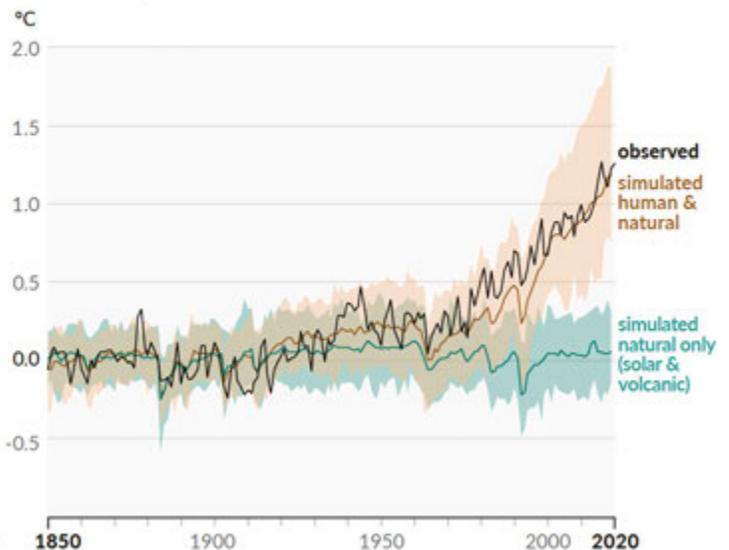
**Global Temperatures are 1.1C or 2F Above Pre-Industrial Levels Due to Human Activities**

**Changes in global surface temperature relative to 1850-1900**

**a) Change in global surface temperature (decadal average) as reconstructed (1-2000) and observed (1850-2020)**



**b) Change in global surface temperature (annual average) as observed and simulated using human & natural and only natural factors (both 1850-2020)**



## Western North America is One of 12 Regions With More Drought Due to Global Warming

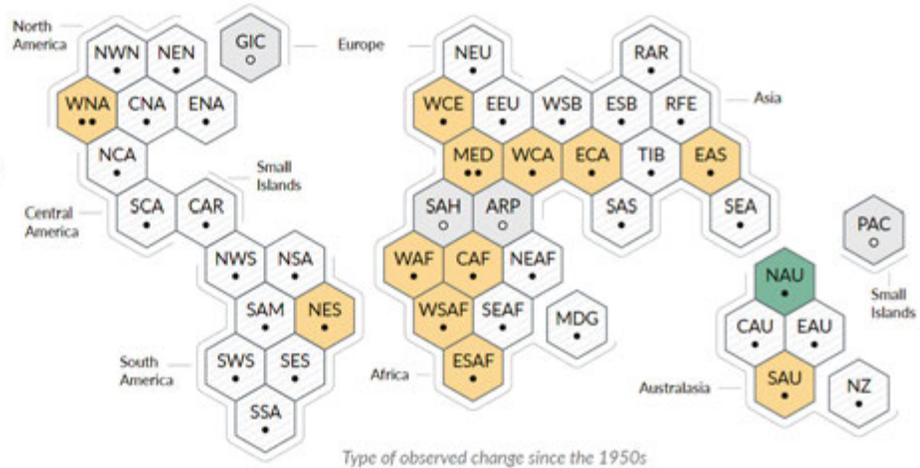
c) Synthesis of assessment of observed change in **agricultural and ecological drought** and confidence in human contribution to the observed changes in the world's regions

### Type of observed change in agricultural and ecological drought

-  Increase (12)
-  Decrease (1)
-  Low agreement in the type of change (28)
-  Limited data and/or literature (4)

### Confidence in human contribution to the observed change

- High
- Medium
- Low due to limited agreement
- Low due to limited evidence



## References

IPCC. 2021. AR6 Climate Change 2021: The Physical Science Basis.  
<https://www.ipcc.ch/report/ar6/wg1/>

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