

California drought hits state economy, pushes US food prices higher

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Last year saw the lowest rainfall in California since the state was founded in 1850. The resulting drought conditions have had far reaching implications for the state's economy and food prices across the country.

On May 14, the US Drought Monitor declared that for the first time since it began compiling data in 2000, every region of the state is in one of the three worst stages of drought: severe, extreme or exceptional. Between May and July, the percentage of the state facing the worst or exceptional stage of drought has grown from 25 to 36 percent.

Researchers at the University of California, Davis released a preliminary report on the predicted economic impacts of the drought, as well as the expected responses of agricultural producers in the state. The report estimates that 410,000 acres will be fallowed, i.e., plowed but left unseeded, this year, leading to a reduction in gross farm revenue of \$738 million.

According to the UC-Davis team, approximately 14,500 full-time and seasonal agricultural jobs will be lost this year, out of a total of 152,000. Most of these economic impacts will affect the San Joaquin Valley and Tulare Lake basins. The researchers estimate the agriculturally rich Central Valley will endure an economic loss of \$1.7 billion this year, which includes the costs of pumping groundwater and the decline in revenues from fallowed lands.

The USDA estimates that fruit and vegetable prices will rise by 4-5 percent this year, as the Central Valley normally produces almost half the country's fruits, vegetables and nuts. The state grows nearly 70 percent of the lettuce sold in the US, so its price has risen the highest of any crop. The California Farm Bureau estimates that the average American family should expect to pay \$500 more on food in 2014.

Governor Jerry Brown has avoided any significant

response to the drought, instead emphasizing personal conservation practices. In his January 17 declaration of a State of Emergency, Brown declared that "everyone should try to do at least 20 percent conservation of their water use... There's not a government program that in and of itself can totally compensate for the lack of rain."

Further, he told Californians, "don't flush more than you have to, don't shower longer than you need to, and turn the water off when you're shaving or brushing your teeth... Every day this drought goes on, we're going to have to tighten the screws on what people are doing," he threatened.

The State Water Resources Control Board will decide whether or not to implement statewide fines of up to \$500 per day for "excessive" lawn watering, car and pavement washing, runoff, use of non-recirculating fountains and other minor wastes of water. The vast majority of water usage in the state is agricultural, with urban usage accounting for only 20 percent of the total. Focusing conservation measures on urban dwellers, Brown does the bidding of the agricultural and meat industry giants, whose profit-driven inefficient water-use practices—along with the reckless destruction of the environment by the capitalist class in general—are the primary source of water insecurity.

Efficient statewide water usage cannot be accomplished through an ancient system of private water rights but only through scientific study and rational control of the state's immense water resources, which is only possible by breaking the economic grip of the giant agribusinesses and the financial interests behind them. Supplying cities and farms in a haphazard manner results in inefficient and damaging practices.

For the first time in its 54-year history, the State Water Project, which helps supply water to 25 million

Californians and irrigates 750,000 acres of farmland through 700 miles of canals and pipelines, ceased deliveries this February. In April, deliveries resumed at 5 percent of normal flows. The UC Davis research team estimates that the drought will cause a single-year loss of 6.5 million acre-feet in surface water deliveries throughout the state, or a 33 percent reduction of the water normally delivered. An acre-foot is the volume required to cover an acre in one foot of water.

To compensate for this dramatic loss in surface water deliveries, groundwater pumping is estimated to increase by 5 million acre-feet during this year's growing season. This level of groundwater pumping is entirely unsustainable and threatens to diminish groundwater levels to dangerous lows, which can also lead to increased subsidence of the land. At a certain point, the water pumped is of lower quality, causing ecological damage and further depleting river flows in a feedback-loop.

Since 1962, there has been a cumulative groundwater loss of approximately 52 million acre-feet in the state. Pumping vastly increases during periods of drought, and is then insufficiently replenished during ever-shorter wet periods prior to the next drought. During the last major period of drought, in 1985-1992, groundwater depletion reached roughly 50 million acre-feet, and was only replenished by roughly 25 million acre-feet during the ensuing wet period from 1993 to 1999.

NASA's Gravity Recovery and Climate Experiment (GRACE) satellites, first launched in 2002, provide comprehensive data on global groundwater levels every month. GRACE has shown that, since the late 1990s, the Central Valley has lost about 50 cubic kilometers (12 cubic miles) of groundwater, or 1.5 times the volume of Lake Mead, the largest man-made reservoir in the United States.

The current, first generation of GRACE satellites has survived much longer than expected, and they are predicted to fall out of orbit soon. The next generation, called GRACE-FO, will be launched in 2017. Because of cuts in NASA's funding, this generation of the GRACE satellites will have the same low-resolution sensors as the current model, despite significant advances made available in the technology.

Due to the dramatic increase in groundwater pumping, the economic impacts of this year's drought,

one of the worst on record, could be relatively minor. UC Berkeley historical climatologist Lynn Ingram, of the Geography Department, has noted that the past three years could be the start of a much lengthier drought, however. Through sediment core analysis of the San Francisco Bay, Ingram has determined that the 20th century was the wettest in California's history, going back 2000 years, and that periods of extended, even centuries-long drought were not uncommon historically.

Thus, the economic and ecological impacts could potentially increase exponentially in the coming years, as groundwater becomes more depleted and surface water fails to return to the 20th century "normal" in conjunction with the deepening of global climate change. While the past shows periods of centuries-long droughts, the future is difficult to predict and model due to the sporadic effects of climate change.

Barring the intervention of the international working class and the rational reorganization of the world economy, the intensification of global climate change will lead to more persistent, unpredictable and extreme weather events such as California's ongoing drought.



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