PAESTA Podcast Series – You Asked, We Answered!

Episode 12 – Why Does California Battle Drought Conditions So Often?

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Hello there, my name is Lori Ezzedine and I would like to talk to you about the California drought, but more specifically, why California battles drought conditions so often. In order to answer this question, there are a few areas and terms that need to be covered. First, what are droughts, groundwater and aquifers? Second, what is the significance of the drought in California and why should we care? And third, what is the history of California droughts?

So, what is a drought? A drought is a long period of time that passes with abnormally low levels of rainfall or snowpack, which in turn causes a shortage of water.

The current drought in California began in 2012. [1] One study found that the current California drought is the worst one in 1,200 years. [2] Another article stated that in 2014, California had an all time low at 5% of the historical average of snow pack accumulations. [2] A study from the same article found that there is a greater chance of low rainfall in the years to come because of the overall warmer baseline conditions.

What is groundwater? Groundwater in a broader sense is water that is held underground. The amount of groundwater available depends on the amount of rainfall and/or snowpack that accumulated that year. [3] Half of that evaporates, but the other half is used for cities, farms or put in storage. The remaining rainfall or snowpack that seeps into the ground is then accumulated in aquifers. [4] An aquifer is a body of saturated rock that is located underground which water can easily move through. So how does an aquifer work? Simple. It fills with moving water. As previously stated, the amount of ground water it fills with depends on the rainfall and/or snowpack levels. Once the water accumulates, it will eventually leave the aquifer and must be replaced by new water to replenish the aquifer.

This leads us into our second question, what is the significance of the drought in California and why should we care? [5] Because the groundwater in California sustains the lives of over 40 million people, and is also responsible for 15% of the nations food supply. California is the most populated state in the country, one of the worlds leading agriculture producers and the eighth largest economy in the world. [5] Agriculture in California uses more than 70% of the groundwater, and due to this astonishing statistic and how severe the drought has become, California officials have made farmers cut their water use by up to 36%. Citizens have also made cutbacks by not watering their lawns as often or not washing their cars. So, why does this matter? Well, if water is becoming less and less readily available, and farmers can only use a fraction of what they used to, this means that not only will the agricultural sect not be able to produce as much food as they used to, but also, whatever food they do produce, will be raised in price. You can see how this could be problematic.

Now for the third topic, what is the history of California droughts? Let’s start off by stating the obvious; California does not have regular precipitation patterns. [6] Through the studies of tree rings, sediments and other natural evidence, researchers have proven multiple droughts in California. The two most severe mega droughts were a 240 yearlong drought that started in 850 A.D. and, 50 years after the conclusion of that one, another one that stretched at least 180 years. There have been numerous long and short droughts in California’s past. [7] There was one during the dust bowl, which started in, 1928 and ended in 1935, another one from 1947 to 1950, one from 1959 to 1960, and then again from 1976 to 1977. 1977 was one of the driest years on record in California where 47 out of 58 counties declared a local drought emergency. Of course, this record has been replaced by the current drought, [6] with the 2013-2014 rainfall season being the driest year based on tree ring data. As you can see, California has experienced its fair share of droughts. But the leading question to all of this is: “Why?”

Why *does* California experience drought conditions so often? Many have debated global warming as a reason the droughts keep occurring, and many have also debated that the reason for the droughts is the reoccurring La Niña. [8] Global warming is said to have *intensified* the California drought by 15 to 20%. Although much research supports the claim that the drought is a consequence of natural climate variability, it is said that the drought will last longer than it should and made worse because of climate change. However, the immediate reason for the drought is ‘the blob’, otherwise known as La Niña. [9] La Niña is warm water in the Pacific Ocean that has made its way to the west coast is to blame for the drought. It started in 2011 and causes storms that would normally hit California to drench to other locations, which is why there is little to no rainfall or snowpack accumulation.

So now that we know that La Niña is the cause of the California drought, what can we do about it? The best thing to do would be to continue to reduce water use in all sects of California and just wait for the storm to pass. Unfortunately, this probably won’t be the last drought that occurs in California.

This is Lori Ezzedine and thank you for listening.

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