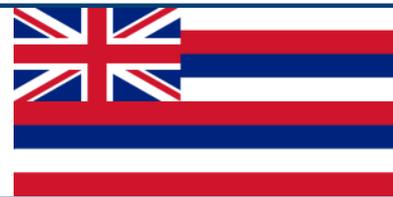




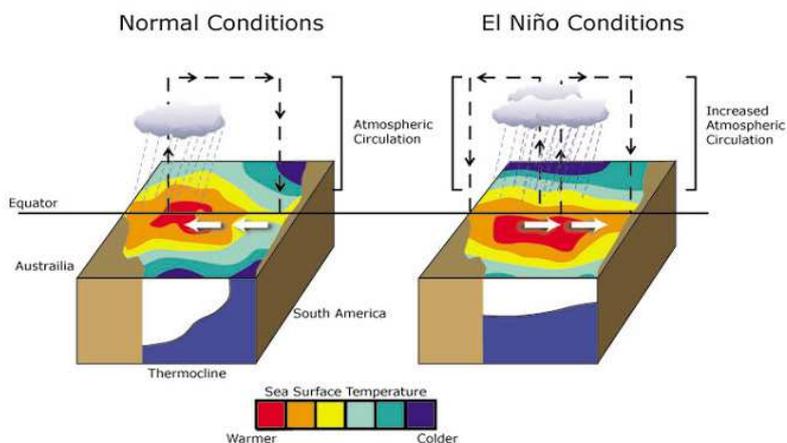
# El Niño and its Impacts on Hawai'i



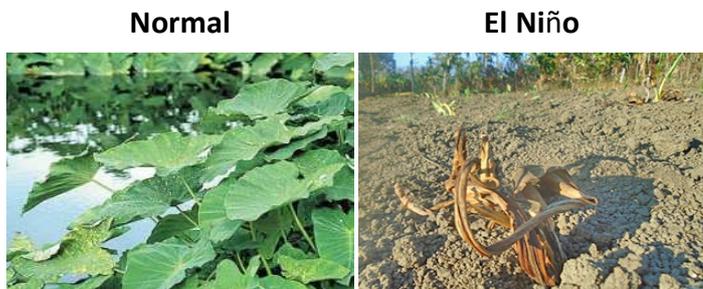
## What is El Niño?

The El Niño – Southern Oscillation (ENSO) is a recurring climate pattern where about 3 to 7 years climate conditions over the Pacific Ocean basin change dramatically. The extremes of this oscillation are referred to as El Niño and La Niña.

Normally, strong trade winds blow from the east along the equator, ocean waters are warm and rainfall is plentiful over the western Pacific, while over the central and eastern Pacific, ocean waters are cool and conditions are dry. During an El Niño event, sea surface temperatures over the central and eastern Pacific become warmer than normal.



The normal easterly trade winds weaken and sometimes, the winds will switch and blow from the west to the east! The result is drier weather conditions over the Western Pacific which can impact food and water availability, like taro.



Mostly, El Niño conditions linger for a year, but sometimes longer. Conditions can start as early as March and peak in December. This event is called “El Niño”, Spanish for the Christ Child.

Normal



El Niño



Coral and algae depend on each other to survive. When stressed, algae leaves the coral and the coral is left bleached and vulnerable to disease.

Storms form closer to the islands and can increase flooding and sediment runoff from the land onto the coral reefs. This effect combined with slight sea level drops can cause coral die-offs and alter fishing habitats.

Associated with ENSO events are droughts, flash floods from severe storms, food and water shortages, and increase in health problems.



### Every El Niño Differs!

The strengths and impacts of these events vary greatly making constant monitoring and awareness extremely important for decision makers to help you be prepared.

### Summary for Hawai'i

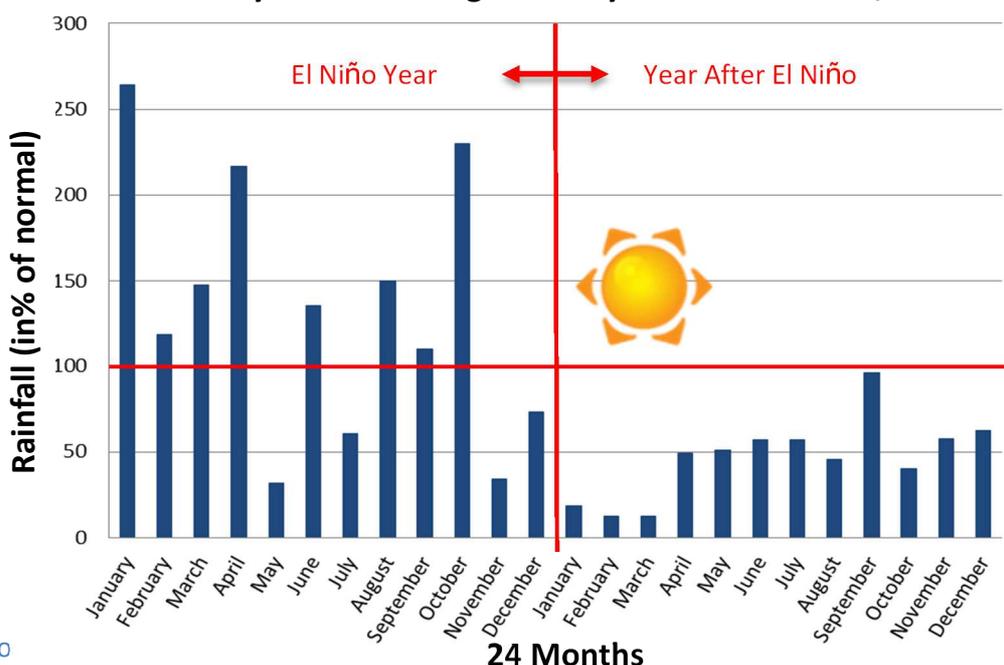
		<b>Rainfall</b>	More rain in beginning of season, then rapidly less; drier wet-season
		<b>Trade-winds</b>	Weaker, with occasional westerly winds
		<b>Sea Level</b>	Near to slightly above normal; high run-up from distant swells
		<b>Ocean Conditions</b>	Much warmer at and below the surface
		<b>Tropical Cyclones</b>	Increased risk, storms form closer to & move towards the islands



# Weather Ready: Drought Preparedness

- Rainfall tends to be above average for most of the El Niño year. Dry conditions tend to start by the end of the El Niño year and are at their worst during the first half of the Year After El Niño. In some cases dry conditions can persist for the entire year after El Niño.
- Water supply will decrease
- Farming & crops will be damaged
- Habitats for terrestrial and marine plants and animals will be stressed
- Health problems - bacteria in water and food, lack of food, and dehydration
- Wild fires risk will increase

### Monthly rainfall during El Niño years for Honolulu, Oahu



El Niño Year ← → Year After El Niño



Xeriscape - allow your garden to take advantage of natural climate conditions & make efficient use of gardening

*Fragile ecosystems are more vulnerable to disease & even death, during weather extreme events*

## Weather Ready Tips

Water pollution from agriculture or sewage runoff can wreck havoc to our natural ecosystems and pollute our natural water supply. Here are a few tips to consider, especially during weather extreme events including El Niño:

Group plants according to their watering and sun needs & mulch to minimize evaporation

Use graywater for irrigating lawns, trees, ornamentals or food crops (not for young & acid soil-needing plants or softener containing water)

Check for leaks in & around your house. Turn off the water in your house & check your water meter. After 2 hours, check to see if the meter has changed. If so, something is leaking.



*Permaculture mitigates sedimentation & storm water runoff*



Stabilize stream banks & plant less water-dependent crops

Water lawns only 2 to 3 times a week & don't water 9am – 5pm

### For Additional Information go to:

- Pacific ENSO Applications Climate (PEAC) Center: <http://www.weather.gov/peac/>
- Weather Service Office (WSO): <http://www.prh.noaa.gov/hnl/>

- NOAA Climate Prediction Center (CPC): <http://www.cpc.ncep.noaa.gov/>
- NOAA National Centers for Environmental Information (NCEI): <https://www.ncei.noaa.gov/>



Email: [peac@noaa.gov](mailto:peac@noaa.gov) Pacific ENSO Applications Climate Center