

# WHAT DOES EL NIÑO MEAN FOR COASTAL CALIFORNIA?

## Potential effects of the 2015-2016 El Niño

El Niño is a complex weather pattern that occurs when sea-surface temperatures near the equator in the eastern Pacific Ocean are warmer than normal. The easterly trade winds along the equatorial Pacific weaken or reverse, which sends warm water surging from the west to the east side of the Pacific Ocean. El Niño causes atmospheric changes that impact weather patterns across the Pacific, U.S., and other regions of the globe.



### El Niño changes coastal conditions in California:

During an El Niño winter, typical storm tracks move farther south through California. In February and March, storms are generally stronger, more frequent, and cause more damage:

- Waves:** ↑ May be up to 30 percent larger than normal
- Winds:** ↑ Stronger storm winds and waves from the south and southwest
- Rainfall:** ↑ Greater amounts than normal, especially in Southern California
- Sea Level:** ↑ Up to 20-30 centimeters (8-12 inches) higher than normal during the winter, and even higher during storms due to winds and waves



### How could El Niño affect you?

- Almost double the typical winter-season beach erosion due to higher-than-average sea levels and waves
- Increases in sea-cliff erosion caused by greater beach erosion, larger waves, and heavier rainfall
- Increased coastal flooding at stream mouths and in coastal lagoons
- Up to three times as much damage to coastal roads, buildings and utilities, especially on south- and southwest-facing coastlines
- Big increases in beach hazards, such as debris washing on shore and rip currents

Please contact Patrick Barnard at [pbarnard@usgs.gov](mailto:pbarnard@usgs.gov) or 831.460.7556

### What resources are available for more information?

USGS Coastal Storm Modeling System: [https://walrus.wr.usgs.gov/coastal\\_processes/cosmos/](https://walrus.wr.usgs.gov/coastal_processes/cosmos/)

Climate Change Impacts in Santa Cruz: <http://walrus.wr.usgs.gov/climate-change/scruz.html>

USGS El Niño: <http://elnino.usgs.gov/>

California Coastal Commission: <http://www.coastal.ca.gov/climate/extreme-weather/el-nino/>

