

Glossary
COSEE-West
“Changing Climate and the California Coastal Ocean”

- B Buoyancy** – the upward force that a fluid exerts on an object that is less dense than the fluid. Buoyancy allows a boat to float on water and provides lift for balloons.
- C California Current** – a Pacific Ocean current that moves south along the western coast of North America, from southern British Columbia to southern Baja California. It is part of the North Pacific Gyre.
- Climate** – the prevailing or normal pattern of weather at a place, or in a region, averaged over a long period of time; in contrast to weather, which is the state of the atmosphere at a particular time.
- Climate Change** – refers to the variation in the Earth's global climate or in regional climates over time. It describes changes in the variability or average state of the atmosphere (or average weather) over time scales ranging from decades to millions of years.
- Conductivity** – a measure of the ability of a material to conduct or transmit an electric charge. (NASA/JPL)
- Coriolis Effect** – an apparent deflection of a moving object in a rotating frame of reference. In general, objects moving along the surface of the Earth in the Northern hemisphere appear to be deflected to the right of the direction of travel and in the Southern hemisphere, to the left of the direction of travel. The Coriolis Effect, caused by the rotation of the Earth, is responsible for the direction of rotation of cyclones and ocean currents. Contrary to popular belief, the Coriolis Effect is not a determining factor in the rotation of water in toilets or bathtubs.
- D Density** – is the quantity of something per unit measure, especially per unit length, area, or volume; the mass per unit volume of a substance under specified conditions of pressure and temperature.
- E El Niño** – is the condition when the warm mass of water in the western equatorial Pacific Ocean travels to the central and eastern Pacific Ocean. The warm water replaces the cold, nutrient rich upwelled waters along the west coasts of North and South America that are present during non-El Niño conditions. An El Niño event typically last about 12 months, but can last up to 18 months.
- El Niño Southern Oscillation (ENSO)** – the interaction between the movement of Pacific Ocean water (El Niño /La Niña) and the see-sawing atmospheric pressure between the eastern and western equatorial Pacific (southern oscillation). ENSO occurs when the easterly equatorial surface winds weaken, or reverse, and the warm water in the western equatorial Pacific Ocean moves to the central and eastern Pacific Ocean. This flow of water is accompanied by heavy rainfall along the coast of Peru, Mexico, and California.

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Equatorial counter current – a significant current in the Pacific, Atlantic and Indian Oceans that flows west-to-east at approximately five degrees North latitude. Counter currents to the east balance the accumulation of water in the western areas of each ocean that is caused by the westerly flowing North and South Equatorial Currents. In El Niño years, the equatorial counter current intensifies in the Pacific Ocean.

G Greenhouse effect – the retention of part of the Sun's energy in the Earth's atmosphere in the form of heat as a result of the presence of greenhouse gases. Solar energy, mostly in the form of short-wavelength visible radiation, penetrates the atmosphere and is absorbed by the Earth's surface. The heated surface then radiates some of that energy into the atmosphere in the form of longer-wavelength infrared radiation. Although some of this radiation escapes into space, much of it is absorbed by greenhouse gases in the lower atmosphere, which in turn re-radiate a portion back to the Earth's surface. The atmosphere thus acts in a manner roughly analogous to the glass in a greenhouse, which allows sunlight to penetrate and warm the plants and soil but which traps most of the resulting heat energy inside. The greenhouse effect is essential to life on Earth; however, intensification of its effect due to increased levels of greenhouse gases in the atmosphere is considered to be the main contributing factor to global warming.

"greenhouse effect" *The American Heritage® Science Dictionary*
[http://dictionary.reference.com/browse/greenhouse effect](http://dictionary.reference.com/browse/greenhouse%20effect)

Global Warming – an increase in the average temperature of the Earth's atmosphere, especially a sustained increase great enough to cause changes in the global climate. The Earth has experienced numerous episodes of global warming through its history, and currently appears to be undergoing such warming. The present warming is generally attributed to an increased *greenhouse effect*, brought about by increased levels of greenhouse gases, largely due to effects of human industry and agriculture. Expected long-term effects are rising sea levels, flooding, melting of polar ice caps and glaciers, fluctuations in temperature and precipitation, more frequent and stronger El Niños and La Niñas, drought, heat waves, and forest fires.

"global warming." *The American Heritage® Science Dictionary*
[http://dictionary.reference.com/browse/greenhouse effect](http://dictionary.reference.com/browse/greenhouse%20effect)

L La Niña – the counterpart to El Niño, recognized by colder than normal water temperatures in the eastern equatorial Pacific Ocean. It usually follows an El Niño event, but not always. La Niña typically lasts about 12 months, but can last up to 18 months.

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- N North Pacific Gyre** – a swirling vortex of ocean currents occupying an area of approximately ten million square miles (34 million km²) in the northern Pacific Ocean. Located between the equator and 50° N latitude, it is created by the clockwise circulation of multiple ocean currents: the North Pacific Current to the north, the California Current to the east, the North Equatorial Current to the south, and the Kuroshio Current to the west.
- P Pacific Decadal Oscillation (PDO)** – is a long-lived El Niño-like pattern of Pacific climate variability. These 2 climate oscillations have similar spatial climate fingerprints, but they behave very differently over time. Two main characteristics distinguish PDO from El Niño/Southern Oscillation (ENSO): 1) in the 20th century, PDO "events" persisted for 20 - 30 years, while typical ENSO events persisted for 6 - 18 months; 2) the climatic fingerprints of the PDO are most visible in the North Pacific/North American sector, while secondary signatures exist in the tropics - the opposite is true for ENSO.
- Practical salinity unit (psu)** – a measure of the concentration of dissolved salts in water, the UNESCO Practical Salinity Scale of 1978 (PSS78) defines salinity in terms of a conductivity ratio, so it is dimensionless. Salinity was formerly expressed in terms of parts per thousand (0/00) by weight. That is, a salinity of 35 ppt meant 35 pounds of salt per 1,000 pounds of seawater. Open ocean salinity is generally in the range from 32 to 37. (NASA/JPL)
- S Salinity** – a measure of the quantity of dissolved salts in ocean water. About 90 percent of that salt would be sodium chloride, or ordinary table salt. The other major dissolved salts in ocean water are chlorine, sodium, magnesium, sulfur and potassium: Open ocean water is about 3.5% salt. If the oceans dried up completely, enough salt would be left behind to build a 180-mile-tall, one-mile-thick wall around the equator. Salinity is now measured as practical salinity units (psu).
- T Temperature** – a measure of the warmth or coldness of an object or substance with reference to some standard value.
- Thermohaline Circulation** – a term for the global density-driven circulation of the oceans. Seawater density depends on both temperature and salinity, hence the name *thermohaline*. The salinity and temperature differences arise from heating/cooling at the sea surface and from surface freshwater fluxes (evaporation and sea ice formation increase salinity; precipitation, runoff and ice-melt decrease salinity).
- W Weather** – the state of the atmosphere at a given time and place, with respect to variables such as temperature, moisture, wind velocity, and barometric pressure.