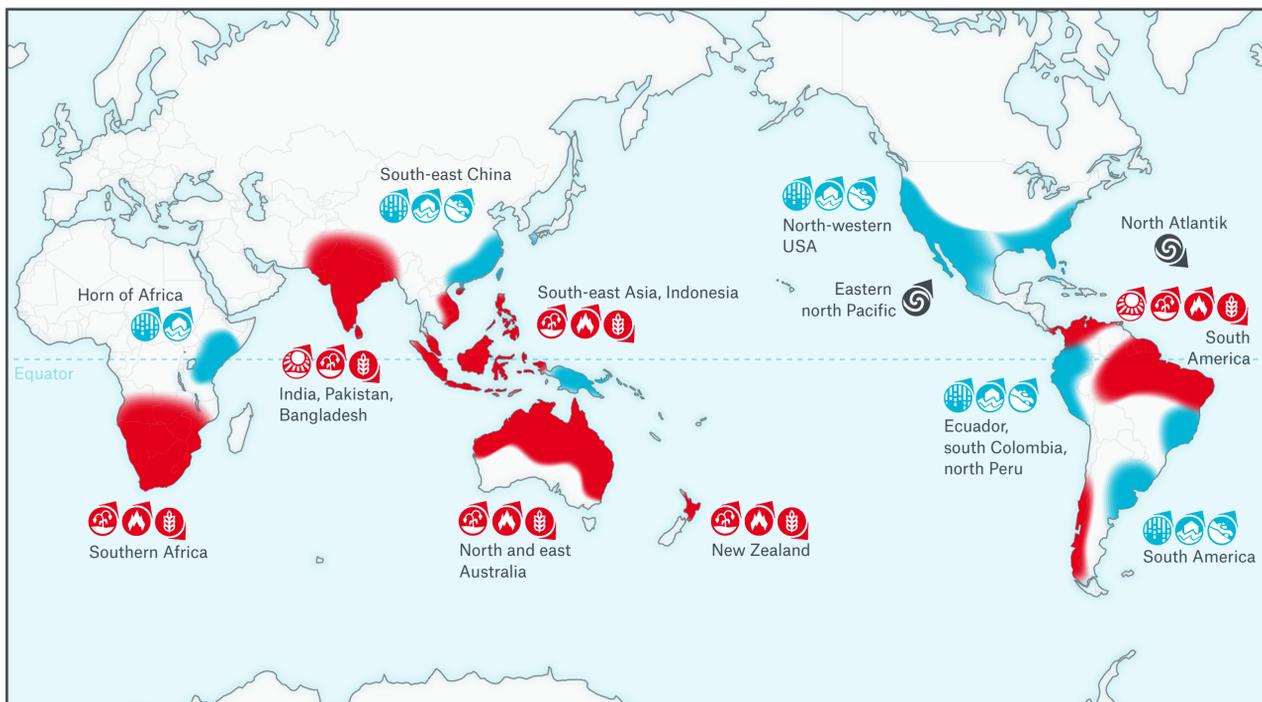


# How El Niño impacts our weather

Experts believe that the weather phenomenon, El Niño, is very likely to occur this year. What will this mean for global weather?

## El Niño and its global effects

El Niño can alter weather conditions in many parts of the world. Its effects include: hot weather, droughts, forest and bush fires, heavy rain and subsequent flooding, landslides and many more. El Niño even influences the activity of tropical cyclones. In the tropical Atlantic, the statistical average declines, but it increases off the Pacific coast of Mexico. More severe typhoons occur in the northwest Pacific. And each El Niño is different, with the effects and their intensity varying from one occurrence to the next.



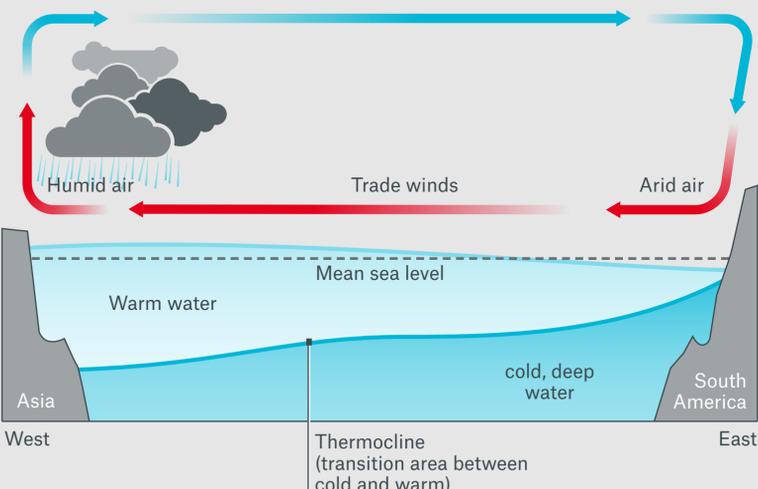
- Key**
- Heat
  - Drought
  - Bushfire and forest fire
  - Crop yields
  - Heavy precipitation
  - Floods
  - Landslides
  - Tropical cyclones
  - Affected Regions
- Tendency**
- Increase
  - Decrease

## El Niño configures global weather and conditions

As contrasting configurations of the tropical ocean-atmosphere system, El Niño and La Niña represent a natural climate oscillation with global effects, particularly in tropical and subtropical regions. Accordingly, the occurrence of an El Niño event alters the probability of weather features and weather extremes arising in many regions of the world.

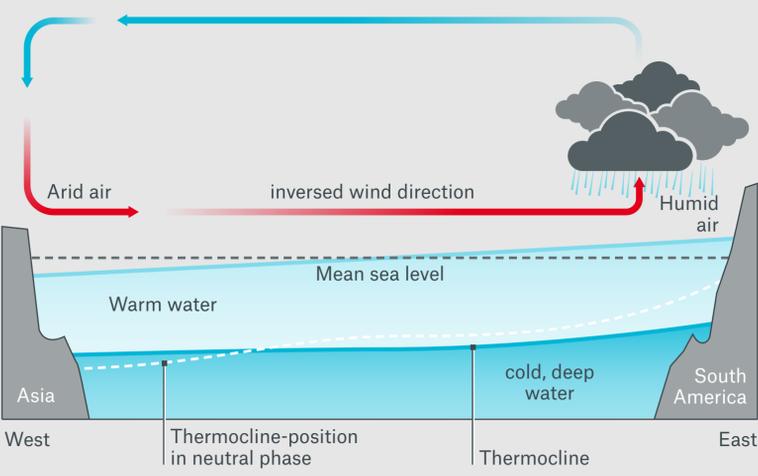
### What happens during a neutral phase

Normal conditions are referred to as the neutral phase: Strong trade winds from easterly directions push the warm surface water west as far as the coast of Indonesia, while in the process reducing the thickness of the warm equatorial surface layer in the east. Cold, nutrient-rich, deep water is then able to upwell into the surface layer off the coast of South America. The particularly warm water off the coast of Indonesia evaporates. The resulting rising masses of moisture-laden air result in increased precipitation over Indonesia and the neighbouring land areas. Conversely, dry air, accompanied by cloud dispersion, falls over the eastern tropical Pacific and the west coast of South America, producing dry weather conditions there.



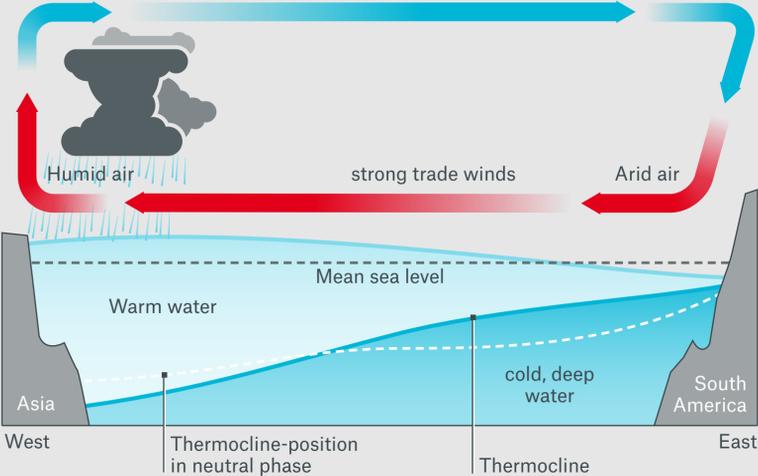
### What happens during an El Niño phase

During an El Niño phase, the trade winds weaken substantially, or can even blow in the reverse direction. Warm surface water drifts from Indonesia along an equatorial corridor as far as South America, increasing the thickness of the warm ocean surface layer there. The cold deep water is then no longer able to upwell into the top layer of water. The warm masses of water now evaporate in the eastern tropical Pacific and off the west coast of South America, resulting in heavy rain there. In Indonesia and neighbouring regions, however, the weather tends to be dry.



### What happens during a La Niña phase

The overall pattern is similar to the neutral phase, the only difference being that the trade winds blow more strongly from easterly directions. The thicker layer of warm surface water that has been pushed by wind shear along the equator close to the coast of Indonesia to form the thick end of a wedge results in significantly increased precipitation along the coast of Indonesia and neighbouring regions, while extremely dry weather prevails in the eastern tropical Pacific and on the west coast of South America.



## Is it possible to predict El Niño or La Niña?

Modern dynamic and statistical prediction models are able to predict the probability of an El Niño or La Niña event up to six months in advance with an impressive level of accuracy. However, it is not yet possible to predict the maximum intensity with any degree of accuracy. The long-term effects on other regions can only be roughly predicted because other factors are also in play. Many aspects of the question of how exactly an El Niño event is triggered are still the subject of research.

## Anomalies in the Pacific mean surface temperature

Source: NOAA Center for Weather and Climate Prediction

