A 60 SECOND GUIDE TO . . .

# El Niño and Development

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## What is El Niño?

The **El Niño Southern Oscillation** is the term used to describe changes in weather patterns in the Pacific Ocean.

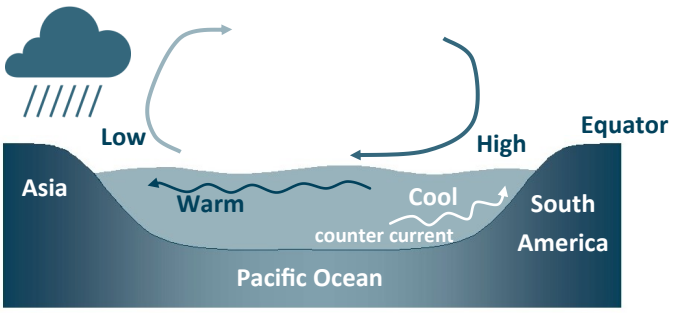
In non-El Niño years which are the usual conditions, strong **trade winds** flow from the Americas westwards towards the Equator in Indonesia. By the time it reaches the coast it has become a hot, wet **air mass** which rises up to create a rainy, low pressure system at the surface which in turn draws more air in from the high pressure region around Ecuador and the Galapagos Islands.

Under the ocean surface, the west flowing trade winds move with the warm surface water, which beneath it creates a **colder counter-current** flowing eastwards. When this current reaches the South American coast it rises upwards, bringing **nutrient rich waters** to the surface.

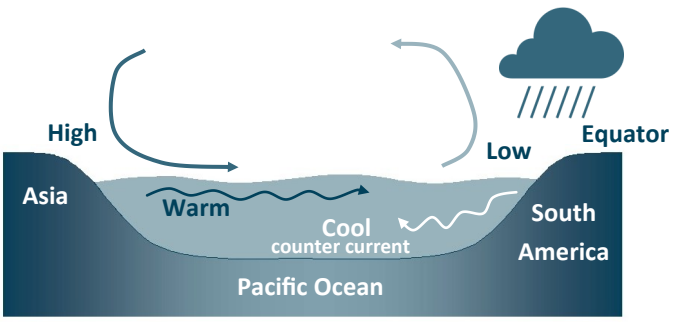
In an El Niño year (which can last for twenty months) the weather patterns reverse and western South America receives very warm, wet weather while Indonesia and Australia sit under prolonged high pressures which can result in **drought conditions**.

Scientists have a number of theories as to why this happens. Some have recognised that extreme weather events such as **tropical storms** can upset the usual trade wind balances while others have evidence to suggest that the cycles are part of a naturally occurring **feedback loop** to ensure no part of the ocean becomes too warm.

**In 'normal years' an upwelling of colder, nutrient rich water rises up along the west coast of South America**




**In 'El Niño years', warm dry air descends in the western Pacific creating droughts and South America receives warmer waters off its west coast.**




## Who does it affect?

El Niño years cause regular drought conditions in eastern Australia. The rain fed **Murray-Darling Basin** which drains almost all of New South Wales has been especially affected. In El Niño years it experiences twenty eight percent lower than long term averages and severe droughts in 1982, 1994, 2002 and 2006-7 can all be attributed to El Niño. The Basin is provides nearly fifty percent of Australia's agricultural produce and in the 2006-7 drought, Australia's **national economy** decreased by one percent as a direct result of El Niño. Some industries were hit harder than others with 2008 vintage grape yields for wine dropping by forty percent.

On the other side of the Pacific the effects are also felt in the primary sector. **Peru's fishing industry** and especially its anchovy trade relies on the cold Humboldt current to bring plankton, on which the fish feed, to the surface and in El Niño years, the waters are too warm for these and other fish to feed and breed. The 1997-8 El Niño event also increased the levels of **melt water** flowing from the Andes and over 350 people died and 250,000 were made homeless by **flooding** as a result.

## How is El Niño linked to development?

As with any area affected by a naturally occurring phenomenon, the more developed a nation is the more likely it is to be **resilient** to the change and be able to afford to **invest** in measures which will aid its recovery.

In times of domestic agricultural decline, as has been seen in the drought periods in **Australia**, wealthier nations have a greater economic trading power to buy goods from overseas to see them through downturns. While average food prices will rise, the higher levels of **disposable incomes** enjoyed by most Australians will sustain relatively good standards of living.

Poorer nations such as **Peru** tend to have a greater percentage of their **GDP** come from **primary industry** (6.2% compared to 0.7% in the UK) and a greater number of their populace employed in that sector (26% compared to 1% in the UK). This can be compounded by the high percentage of primary workers who are employed in just one aspect of the sector, such as anchovy fishing. Therefore in El Niño years Peru potentially stands to lose a lot more, both nationally and personally to each member of the population compared to a country which has a much wider base of industry on which to rely.



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