

El Niño and the Pacific see-saw

by S. Ananathanarayanan

Unusual weather often makes people say, “maybe it’s the El Niño effect”. And now, a link between the start of fine weather in Europe and the onset of monsoon in India has been describes as ‘a kind of El Nino effect’. What is the ‘El Nino’ anyway?

El Niño became topical after the unprecedented rainfall in the Pacific coast of South America and century’s worst drought in Australia, in 1982, which were explained as due to ‘El Niño’.

Weather in the tropical Pacific

The usual weather in Peru, on the Pacific coast of South America, is dry weather, cool coastal waters and plenty of fishing. And in Australia, the Philippines, the far western Pacific limit, there is warm water and ample rainfall.

These conditions cause rising of the air over Australia and blowing of trade winds from the Peru end. The result is that the ocean waters ‘shore up’ to the west and the sea level itself is half a metre higher around Australia.

The collection of warmer water in the west causes the cool water in the deeper part of the sea to be pushed lower down. And in the East, near Peru, the cooler deep seawater ‘wells up’, bringing with it rich nutrients, which make for the flourishing sea fish economy of the Peruvian coast. This is the usual climate, except for a few months in the beginning of the year, when there are some warm currents from the north.

Enter El Niño

But once every few years, usually in late December, the Peru end sees a stronger invasion by warm, surface ocean currents. This wrecks the fishing, and brings torrential rain. The usually arid Peru becomes green – ‘the desert becomes a garden’, with water snakes, bananas, and coconuts!

Because this happens in late December, Peruvians connect it to the coming of baby Jesus and have given the name, 'El Niño', the Christ Child, to the mystery.

And then again, the climate slips back to the usual, cool, eastern seas, the coolest being the time of 'La Niña', the reverse of the 'El Niño' condition. The two effects alternate, usually every two years, but the period can be as long as ten years.

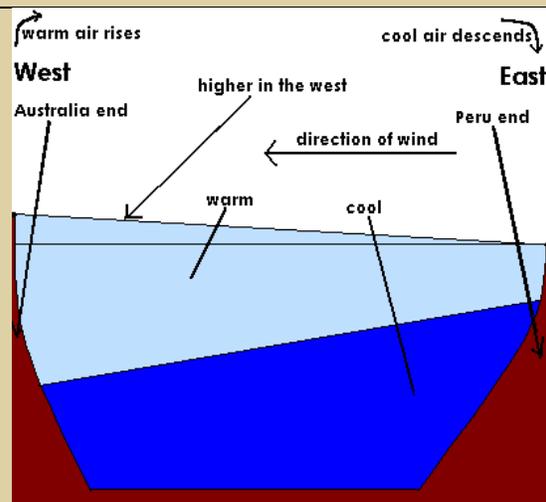
Meteorology of El Niño

Scientists had observed quite early that fine weather (high pressure) in Tahiti (eastern Pacific, near South America) meant rainy days (low pressure) in Darwin, Australia, or vice versa – a 'see-saw', in fact of a mass of air across the international date line!

To complete the picture, when there is low pressure in the Australia side, the air rises and flows back west at higher altitudes, to descend, over cool Peru, and Tahiti.

What throws the switch?

Current studies indicate that when warm water collects in the west (that is eastern Australia), heat is transported north by ocean currents, and also to the atmosphere by evaporation. Natural flows then deliver the excess heat to the eastern Pacific (that is near Peru), setting off El Niño. The effect is hence that the tropical Pacific Ocean loses heat during El Niño and gains it during La Niña.



A form of ocean and atmospheric behaviour that could be behind variations in climate patterns in other parts of the world too.

DENNIS THE MENACE by Hank Ketchum



"LOOKS LIKE EL NIÑO IS ABOUT TO STRIKE AGAIN!"