

Modelling of the El Niño Southern Oscillations

The El Niño Southern Oscillations (ENSOs) are a composite weather phenomena originating in the Pacific Ocean which produce lasting teleconnections on the global climate system. El Niño can be considered to be an oceanic warming event which disrupts the normal Pacific circulation at irregular intervals of 2–7 years. Whilst the Southern Oscillation are an inter-annual flip between the tropical sea level pressure between the western and eastern Pacific leading to the weakening and strengthening of the easterly trade winds across the Pacific.

During El Niño years, strong trade winds are absent to transfer warm water westwards across the Pacific, the result is that the water flows back eastwards towards the American continents. This leads to warmer and wetter conditions along the western coastlines of the Americas and dryer conditions in Australia and Indonesia. The positives for this include better vegetation growth for South American farmers and negatives would be the breeding and spreading of tropical diseases such as malaria and cholera. Whilst the effects of the coupled ENSOs can be approximately understood, modern research has yet to find a reliable model which can predict when and how ENSOs occur.

Bjerknes (1969) identified El Niño and the Southern Oscillations are connected through being different aspects of the same phenomena.

References

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