Editors' Highlight

Predicting how a central Pacific El Niño will evolve

El Niños, in which warmer than usual sea surface temperatures occur in the equatorial Pacific Ocean, are known to have a major influence on weather patterns worldwide. Yu and Kim (2010) categorized the ways in which certain types of El Niño events evolve. They focused on an El Niño known as the central Pacific (CP) type, in which sea surface temperature warming occurs mainly in the central Pacific Ocean, rather than in the eastern Pacific where most common El Niño sea surface temperature warming occurs. The two types of El Niños have different effects on weather patterns and may respond differently to global warming. The CP type has occurred more frequently in recent decades. On the basis of events that occurred between 1958 and 2007, the researchers identified three distinct patterns through which central Pacific El Niños evolve. They also showed that the pattern of evolution was linked to the depth of the thermocline, the transition layer where the temperature drops sharply between surface waters and deep waters. The researchers found that in general during a CP-type El Niño, if the thermocline was at a shallower than normal depth, then eastern Pacific cooling was likely to occur, ending the El Niño abruptly. If the thermocline was at normal depth, the El Niño would likely decay about as quickly as it grew. If the thermocline was deeper than normal depth, then eastern Pacific warming would likely occur, slowing the ending of the El Niño. The results could be useful for predicting the duration of CP-type El Niños.

View abstract

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