

New insights from the stalled El Nino of 2014

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It may be even trickier to predict the strength of El Niño weather patterns than previously thought, according to a study by Yale researchers.

A new variable—intraseasonal [wind](#) bursts—may play an unexpected role in the way El Niño systems develop, the researchers say. The finding has implications for short-term, interannual atmospheric changes

that bring global consequences.

The key to the finding was a strong El Niño pattern that failed to materialize in 2014. Using satellite observations and computer simulations, the researchers discovered that an exceptionally strong, easterly wind burst in June of that year helped to stall the El Niño to stall.

"Easterly wind bursts are fairly common, but the strength of this easterly wind burst was unusually high," said Alexey Fedorov, a Yale professor of geology and geophysics and author of a study appearing the week of Feb. 8 in the *Proceedings of the National Academy of Sciences*. "In this particular case, it was associated with the strengthening of the South Pacific subtropical high, possibly related to a cold ocean temperature anomaly south of the equator."

El Niño [events](#) are the warm phase of the El Niño-Southern Oscillation (ENSO), a periodic variation of water temperature and winds in the tropical Pacific Ocean. La Niña is the cooling phase of ENSO. Both patterns have global implications for weather and climate.

Fedorov said random atmospheric processes make it inherently difficult to predict El Niño. Since 2000, there has been a shift in El Niño's properties, including its magnitude and frequency. El Niño events have been more frequent during that time, compared to the previous two decades, but none of them reached the magnitude of El Niño events in 1982 and 1997.

Of course, even a stalled El Niño has an impact on future patterns. "Apparently the failed El Niño of 2014 actually created favorable conditions for the 2015-2016 El Niño we are experiencing now, which is now among the three strongest events on record," Fedorov said.

More information: Exceptionally strong easterly wind burst stalling El Niño of 2014, [DOI: 10.1073/pnas.1514182113](https://doi.org/10.1073/pnas.1514182113)

Provided by Yale University

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