



Unusually warm Indian Ocean sea surface temperatures help to arrest development of El Niño in 2014

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In early 2014, strong westerly wind bursts (WWBs) and high heat content in the equatorial Pacific favored development of a major El Niño. However, significant coupling between the Pacific Ocean and atmosphere failed to take hold during boreal summer of 2014 such that only borderline El Niño conditions were evident by the end of the year. Observational analysis suggests that warm sea surface temperatures (SSTs) in the Indian Ocean in 2014 weakened westerly wind anomalies in the Pacific and may have helped to arrest the development of the El Niño. We test this hypothesis using an ensemble of coupled numerical experiments in which observed Indian Ocean SST anomalies in 2014–15 are prescribed but the Pacific Ocean-atmosphere system is free to evolve. Results confirm that warm SST anomalies in the Indian Ocean created conditions that would have favored a weakening of El Niño by suppressing the Bjerknes feedback in boreal summer of 2014. This process does not preclude others that have been proposed in the unusual evolution of El Niño SSTs in 2014, but it adds to the list a forcing mechanism external to the tropical Pacific.