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How symmetric are SST events globally?

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Sea surface temperature (SST) is an integral quantity of the climate system that establishes a link between atmospheric and oceanic variability. SST variations can reflect the ocean's reaction to atmospheric forcing, an atmosphere that reacts to the ocean, or a coupled process. Here, we seek to evaluate how strongly ocean dynamics contribute to seasonal SST variability globally by assessing the symmetry of SST events.
We use a simple method to identify events in given time series of monthly mean SST. An event is defined as a spell of SST anomalies which coherently exceed a variance-based threshold. For each location, we identify all positive and negative events, producing distributions of event-characteristics that allow us to perform statistical significance tests.
We find that SST events are, in general, rather symmetric across the globe. While positive events have a significantly larger amplitude than negative events in the equatorial Pacific, no coherent patterns emerge for significant differences between the lengths of positive and negative events. This is in contrast to research that suggested that negative events of the El Niño-Southern Oscillation (ENSO) are substantially longer than positive events.