



The recent global-warming hiatus: What is the role of the Pacific variability?

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The observed global mean surface air temperature (GMST) has not risen over the last 15 years, spurring outbreaks of skepticism regarding the nature of global warming and challenging the upper-range transient response of the current-generation global climate models. Recent numerical studies have however tempered the relevance of the observed pause in global warming by highlighting the key role of the tropical Pacific internal variability. Here we first show that many climate models overestimate the influence of the El Niño Southern Oscillation on GMST, thereby shedding doubt on their ability to capture the tropical Pacific contribution to the hiatus. Moreover, we highlight that model results are quite sensitive to the experimental design. We argue that overriding the surface wind stress is more suitable than nudging the sea surface temperature for controlling the tropical Pacific ocean heat uptake and, thereby, the multi-decadal variability of GMST. Using the former technique, our model captures several aspects of the recent climate evolution, including the weaker slowdown of global warming over land and the transition towards a negative phase of the Pacific Decadal Oscillation. Yet, the recent global warming is still overestimated, not only over the recent 1998-2012 hiatus period but also over former decades, thereby suggesting that the model might be too sensitive to the prescribed radiative forcings.