



## **A study of the effects of westerly wind bursts on ENSO based on CESM**

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Numerous works have indicated that westerly wind bursts (WWBs) have a significant contribution to the development of El Niño events. However, the simulation of WWBs commonly exist large biases in current coupled general circulation models, limiting our ability in predicting El Niño events. In this study, we introduce a WWBs parameterization scheme into the global coupled Community Earth System Model (CESM) to improve the representation of WWBs and to study the impacts of WWBs on ENSO characteristics. It is found that WWBs have important effects on ENSO asymmetry and ENSO diversity. With the parameterized WWBs, extreme El Niño and central Pacific El Niño events could be well reproduced in CESM. Further diagnoses show that the increased horizontal advection in the central Pacific and vertical advection in the eastern Pacific, which are triggered by WWBs, are crucial factors responsible for the improvement in the ENSO simulation skill.