Geophysical Research Abstracts
Vol. 19, EGU2017-2016, 2017
EGU General Assembly 2017

Natural Variations of Tropical Width and Recent Trends

Damianos Mantsis (1), Steven Sherwood (1), and Robert Allen (2)

(1) Climate Change Research Centre, University of New South Wales, Sydney, New South Wales, Australia, (2) University of California, Riverside CA, USA

The temporal evolution of the tropical widening since 1979 is investigated using satellite observations and climate models. The tropics expand poleward but the rate of widening varies considerably, with peaks following lows and vice versa. The maximum temporal trend takes place during the period 1993-2012, and it appears to be associated with a global SST patterns that resembles the ENSO/PDO in the Pacific region. Idealized experiments with CAM5 also reveal that the Tropical Pacific has the biggest contribution to the widening of the tropics, but a significant contribution also comes from the Indian Ocean.
It is shown that a number of climate models from the CMIP5 database can simulate, without any type of forcing, the satellite-inferred tropical widening, as well as the Pacific SST pattern associated with it. Our results question the source of the recent observed tropical widening, suggesting that, to a large degree, it is driven by internal variability.