



Regional changes to the remote impacts of the El Niño-Southern Oscillation

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Climate variability in the tropical Pacific Ocean associated with the El Niño-Southern Oscillation (ENSO) effects remote regions around the world through atmospheric teleconnections. Under 20th century climate conditions, ENSO's modulation of interannual climate has contributed to significant and sometimes severe societal impacts. It is therefore important to understand whether the remote effects of ENSO will change as the climate continues to warm in the coming decades.

Our recent study using the high-emission RCP8.5 simulations of coupled climate models has shown that there is robust intermodel agreement on an increase in the spatial extent of ENSOs temperature and precipitation teleconnections over land areas globally. However, the same models do not show a consistent change in the teleconnection strength over land in the latter half of the 21st century, which suggests that the models are projecting more than a simple global amplification of existing ENSO teleconnections in the future.

Here we show that strengthened teleconnections are projected to occur in regions of Australia, South America and Africa. Our study combines results from an ensemble of atmosphere-only ACCESS1-0 model simulations and an ensemble of high-emission RCP8.5 coupled climate model simulations to investigate the dynamics giving rise to the projected strengthening of ENSO's temperature and precipitation teleconnections in these regions. Details of these dynamics will also be discussed.