Does "ENSO Diversity" remotely matter ?

Prashant D. Sardeshmukh

CIRES and NOAA ESRL/Physical Sciences Division
325 Broadway R/PSD1
Boulder CO 80305-3328
Prashant.D.Sardeshmukh@noaa.gov

Abstract

There is great interest in how ENSO has been affected and will be affected by global warming. Because ENSO is such a dominant player in global climate variability on interannual time scales, it is widely believed that any change in the patterns and amplitudes of ENSO-related tropical SST variations will have global repercussions. We will argue, however, that only the SST changes in central Pacific and the Indo-Pacific warm pool region will be important in this regard. This is because although the interannual SST variability is largest in the central and eastern tropical Pacific, the global climate is actually much more sensitive to SST changes in the central and western tropical Pacific and Indian oceans. Extensive sensitivity experiments performed using three different atmospheric GCMs with localized SST anomaly "patches" prescribed throughout the tropical oceans will be used to make this point. The results from this sensitivity analysis also make it much easier to interpret the climate change responses around the globe obtained in the CMIP5 climate models to changes in radiative forcing.