Introduction

Auxiliary figure A demonstrates a significant quadratic relationship between the DJFM EAPI and the Niño 3.4 SST index in a 1000-year long control simulation with the GFDL CM2.1. After the removal of the variability of the EAPI that varies linearly with the Niño 3.4 index using linear regression, a quadratic relationship remains in the residual variability, and the significance may be quantified by a second order polynomial fitting.

Auxiliary figure B presents the El Niño-La Niña composite patterns in SST and 200 hPa streamfunction in observation, CM2.1 coupled simulation, all three pacemaker experiments, and an atmosphere-only experiment with prescribed ENSO SST. It is intended to show that the DTEP experiment with oceanic forcing only within the deep tropical eastern Pacific can reproduce faithfully the observed Pacific-East Asia teleconnection, suggesting the importance of the air-sea thermal coupling over the western North Pacific for the teleconnection.

Auxiliary figure C compares the regression patterns in precipitation, SST, upper and lower level streamfunction of the first principal component (PC) of the ensemble-mean East Asia/West Pacific precipitation in the experiment of TROP-DTEP versus those associated with the 2nd PC of the internal variability of precipitation. The internal variability arises from the air-sea coupling between the atmosphere and the underlying ocean slab. The close resemblance between the left and the right panels suggests that the forced response in TROP-DTEP and the extra skill brought about in TROP might result from the excitation of an internal EOF pattern that is intrinsic to the slab coupled system.
Scatterplot of the DJFM EAPI vs the Niño 3.4 SST index from 1000 years long control run of the CM2.1. (a) is the original scatterplot with its least-squared linear fitting (black); (b) is the residual scatter between the two indices after the part of the EAPI that varies linearly with the Niño 3.4 index is removed through linear regression. The fitting toward a second order polynomial is significant at 95% confidence level based on an F test. The variances explained by the linear and the 2nd order polynomial fittings are also displayed.
2. 2011GL047614-fs02.eps (Auxiliary figure B) El Niño–La Niña composite of the DJFM SST (shadings, mm/day) and 200 hPa streamfunction (purple contours, \(10^5\) m\(^2\)/s) from (a) NCEP/CMAP; (b) CM2.1 100-year control run; (c) TROP; (d) DTEP-IO; (e) DTEP; and (f) fixed Nino SST experiments. All the fields are normalized with respect to 1 K warming of the Niño 3.4 index.
3. 2011GL047614-Iv03.eps (Auxiliary figure C) Regression onto the PC1 of the East Asia/West Pacific precipitation in the ensemble-mean TROP minus DTEP experiments (left) and the similar regression but for the PC2 of the precipitation in the internal variability (right). Upper panels show the regression patterns of precipitation and 850 hPa streamfunction and lower panels SST and 200 hPa streamfunction.