

Influence of the Northern Hemisphere Annular Mode on ENSO by Modulating Westerly Wind Bursts

TETSU NAKAMURA¹, YOSHIHIRO TACHIBANA¹, MEIJI HONDA²,
SHOZO YAMANE³

¹*Tokai University*

²*Japan Agency for Marine-Earth Science and Technology*

³*Chiba Institute of Science*

The influence of the Northern Hemisphere annular mode (NAM) on the El Niño/Southern Oscillation (ENSO) was examined using 41-year reanalysis data and an atmospheric general circulation model (AGCM). Significant lag correlations between the NAM index for spring and the Niño-3 index for the following winter were revealed. An anomalous lower tropospheric westerly associated with modulation of the westerly wind burst (WWB) over the western tropical Pacific in spring often coincided with the positive phase of the NAM and extended eastward during summer and autumn. Then, warm sea surface temperature (SST) anomalies reflecting El Niño appeared over the eastern tropical Pacific in early winter. In an AGCM experiment in which SSTs were fixed as a climatological-mean monthly distribution, the interannual modulation of WWB was significantly associated with NAM variability in spring, supporting the possible influence of the NAM in spring on an ENSO outbreak the following winter.