

UNDERSTANDING THE INFLUENCE OF ENSO ON THE NORTH PACIFIC VARIABILITY

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The El Niño Southern Oscillation (ENSO) is known to influence worldwide climate through the atmospheric response to sea surface temperature anomalies in the equatorial Pacific. Atmospheric bridge and oceanic tunnel connections have been ascribed to explain Tropical Pacific (TP)-North Pacific (NP) interactions. Nevertheless the portion and timescales of the extra-tropical SST variability modulated by ENSO or inherent to the extra-tropics are not completely resolved. A state of the art CGCM is used to investigate atmospheric and oceanic conditions in the North Pacific, comparing the results with available observations and re-analysis. The analysis is focused on the role of the tropics in affecting the North Pacific pattern. During winter warm SST anomalies in the Equatorial Pacific are correlated with negative SST anomalies in the Western Tropical and Eastern North Pacific Ocean. This well-known pattern is not realistically simulated by the CGCM that tends to simulate a strong connection between the Equatorial Pacific sector and the western subtropical North Pacific, but it drastically improves when the interannual tropical Pacific variability is realistic. At interannual timescales the TP-NP connection seems mostly driven by atmospheric processes. However, Kelvin and other coastally trapped ocean waves along the west coast of North America influence the North Pacific Ocean variability suggesting a dynamical ocean response to tropical SST anomalies.