



Interannual Variability in the Position and Strength of the East Asian Jet Stream and Its Relation to Large – scale Circulation

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East Asian Jet Stream (EASJ) is characterized by obvious interannual variability in strength and position (latitude), with wide impacts on East Asian climate in all seasons. In this study, two indices are established to measure the interannual variability in intensity and position of EASJ. Possible causing factors, including both local signals and non-local large-scale circulation, are examined using NCAP-NCAR reanalysis data to investigate their relations with jet variation.

Our analysis shows that the relationship between the interannual variations of EASJ and these factors depends on seasons. In the summer, both the intensity and position of EASJ are closely related to the meridional gradient of local surface temperature, but display no apparent relationship with the large-scale circulation. In cold seasons (autumn, winter and spring), both the local factor and the large-scale circulation, i.e. the Pacific/North American teleconnection pattern (PNA), play important roles in the interannual variability of the jet intensity. The variability in the jet position, however, is more correlated to the Arctic Oscillation (AO), especially in winter. Diagnostic analysis indicates that transient eddy activity plays an important role in connecting the interannual variability of EASJ position with AO.