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Variations of the North Equatorial Current Bifurcation Associated with El Nino Flavors

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The present study shows the different variations of the North Equatorial Current Bifurcation (NECB) in developing autumn of canonical El Niño, Central Pacific El Niño I (CP-I El Niño), and Central Pacific El Niño II (CP-II El Niño) and investigates the dynamic mechanism by analyzing Simple Ocean Data assimilation (SODA) datasets and using simple model experiments. It is suggested that the latitude variations of the NECB are negatively correlated to the sea surface height (SSH) near coast of Philippine. The NECB shifts northward during developing autumn of canonical El Niño and CP-II El Niño, while moves insignificantly during CP-I El Niño. For canonical El Niño and CP-II El Niño, the remote positive wind stress curl anomalies in the central and western tropical Pacific between 12°-15°N are responsible for the latitude variations of the NECB, which can induce westward Rossby waves of negative SSH anomalies, and thus result in northward shift of the NECB several months later. However, during developing autumn of CP-I El Niño, the local wind stress curl anomalies near coast of Philippine are significantly negative, and result in positive SSH anomalies over. Such anomalous positive SSH are offset by the negative counterpart resulting from the remote wind stress curl in the western tropical Pacific via Rossby waves. Therefore, the meridional shift of the NECB are not significant in autumn of CP-I El Niño. A series of experiments based on a $1\frac{1}{2}$-layer reduced gravity model are conducted to further confirm above results.