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Interannual variability of typhoon-induced northeast Asian marginal seas-mean sea level

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As connected through relatively narrow and shallow straits, inflow and outflow volume transports of the northeast Asian marginal seas (NEAMS) are strongly forced to yield significant convergence or divergence and resulting rise or drop in spatially-averaged sea level. Here, we examined interannual variations of August NEAMS-mean sea level observed from satellite altimetry from 1993 to 2019. Typhoon activity was found to be a primary factor controlling the interannual variations of NEAMS-mean sea level in August. Relatively high August sea level over the NEAMS is derived in years when more typhoons pass through the East China Sea (Period H) due to typhoon-induced Ekman transports. The resultant NEAMS-mean sea level is a few cm higher than that during the years of less or no typhoon activity in the East China Sea (Period L). This study highlights the importance of typhoon (hurricane) activity on interannual variations of regional sea level in the mid-latitude and semi-enclosed marginal seas.