

Response of the early summer (baiu) rain to interannual sea surface temperature variability in the East China Sea

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The East China Sea is the region where deep atmospheric response to warm western boundary currents is the strongest along with the Gulf Stream region. Atmospheric response, especially response of early summer (baiu) rain, to interannual variability of sea surface temperature (SST) front associated with the Kuroshio in the East China Sea is examined using by observational data and regional atmospheric model simulation. It is revealed from observational data that the strong (weak) SST front is accompanied by the heavy precipitation and large cloud liquid water over the northern East China Sea and south of Japan. The heavy precipitation is likely associated with the strengthening of storm activity over the SST front. These observational results are confirmed by the regional atmospheric model simulation. That is, when the SST front is intensified (reduced) by adding negative (positive) SST anomalies over the continental shelf, the storm activity is intensified (weakened) over the SST front. Because the interannual variability of the SST front intensity is largely governed by SST anomalies over the continental shelf, and because these SST anomalies persist at least from a month earlier, the results in the present study imply potential predictability of precipitation over south of Japan in early summer.

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