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The Remote Forcing of Indian Summer Monsoon on the Northwest Pacific during El Niño Decaying Years in FOAM Model

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By using observation and the Fast Ocean-Atmosphere coupled Model (FOAM), we have investigated the remote impact of Indian Ocean Basin Warming on the Northwest Pacific (NWP) during the El Niño decaying year. Seasonal transition of Indian Summer Monsoon (ISM) is proved to be critical in the climatic effect of Indian Ocean Basin Warming on the NWP. The positive SST anomalies in the North Indian Ocean reaches their peaks in spring during the El Niño decaying year while the easterly wind anomalies only appear in August, over Indo-West Pacific and together with abundant rainfall. As a result, the latent heat flux anomalies released by anomalous precipitation induce a Matsuno-Gill pattern response over Indo-West tropical Pacific and affect the NWP through easterly wind anomalies caused by Kelvin Waves. Therefore, an anomalous Northwest Pacific Anticyclone (ANPWA) abruptly intensifies over NWP in August by the Ekman divergence, which is maintained by the local air-sea feedback throughout the whole El Niño decaying summer. Our results have important implications for the prediction of East Asia Summer Monsoon.