



Sensitivity of Turkish precipitation to sea surface temperature variability in the surrounding seas

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This study aims to investigate the linkage between precipitation variability in Turkey and sea surface temperature variability in surrounding seas through sensitivity experiments using a state-of-the-art regional climate model, RegCM3. Sea surface temperatures of five regions including western half of Black Sea, eastern half of Black Sea, Aegean Sea, Eastern Mediterranean Sea, and Central Mediterranean Sea are individually modified by +2 K and -2 K in the model sensitivity simulations, and the results from these simulations are compared with a control simulation to quantify how these changes affect the Turkish precipitation. 10-year (1990-2000) sensitivity experiment for all seas are completed and in general, the results of the sensitivity experiments show that the response of Turkish precipitation to the sea surface temperature changes in the surrounding seas is limited and mostly confined to the coastal areas in Turkey. Increasing the sea surface temperature usually increases rainfall in the vicinity of the perturbation, and similarly, decreasing it reduces rainfall. Monthly results indicate that Black Sea regions mostly affect Turkish precipitation in October and November, Aegean Sea in December, and Mediterranean regions in December and January, which may be related to cyclone tracks and frequency in these months.