

Interdecadal variability in the thermal difference between western and eastern China and its association with summer monsoon anomalies

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The present study investigated the spring thermal difference between western and eastern China and its association with the rainfall anomalies by using station and reanalysis data from 1960 to 2006. The spring thermal difference between western and eastern China underwent an obvious interdecadal shift around 1979. The thermal difference between western and eastern China was small during 1960–1978, which strengthened the southeasterly wind anomalies in line with the thermal wind. This enhanced the East Asian summer monsoon. In addition, the increase in rainfall over North China and decrease in rainfall over the Yangtze River were associated with the strong East Asian summer monsoon. However, during 1979–2006, the thermal difference between western and eastern China was large, which strengthened the northwesterly wind anomalies in line with the thermal wind. This supports the notion of weakened East Asian summer monsoon associated with the decrease in rainfall over North China and increase in rainfall over the Yangtze River.