



Spatio-temporal Characteristics of Surface Air Temperature Variations over South China during the Spring to Summer Transition under Global Change

Fen Wang and Yaokun Li

Beijing normal university, global change and earth system science, global environment change, China
(wangfen2017@outlook.com)

Spatio-temporal Characteristics of Surface Air Temperature Variations over South China during the Spring to Summer Transition under Global Change

Fen Wang, Yaokun Li

Global Change and Earth System Science Research Institute, Beijing Normal University, 100875

The time — April to June can represent the transition from spring to summer over South China. Analysis shows that surface air temperature (SAT) variations from April to June and their association with surface heat flux (SHF) and atmospheric circulation. For spring-to-summer SAT variations, the first EOF mode is characterized by same-sign SAT anomalies over South China.

The second EOF mode features a dipole SAT anomaly pattern with anomalies over the south of the Yangtze River opposite to those over north of the Yangtze River. A correlation analysis of surface heat flux anomalies suggests that surface heat flux anomalies can explain SAT anomalies in several regions mainly by modulating surface sensible heat flux and surface net shortwave radiation. And cloud effect has a large role in shortwave radiation changes. Atmospheric circulation anomalies have significant correlation with SAT variations, which can reflect interaction between land and air. Positive SAT anomalies in leading and second mode can lead to cyclone anomalies on low level. While negative SAT anomalies in the second mode are associated with anomalous northerly winds from the high-latitude area induced by a significant equivalent barotropic feature over East Asia. It is more of the effect of atmospheric circulation on surface land.