

Interdecadal Change of the Impact of Eurasian Snow on Spring Precipitation Over Southern China

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In this study, the relationship between interdecadal and interannual changes of snow cover over Eurasia and precipitation over southern China are investigated. The results show that, the spring precipitation over southern China has experienced a change of positive to negative trend since the end of 1980s. The interannual change of spring precipitation over southern China has a significant positive correlation with the Eurasian snow cover (SCE) anomalies in northwest Lake Baikal. Baroclinic Atmosphere Model (LBM) was utilized in numerical simulation experiment. The results show that The SCE anomalies near northwest Lake Baikal can affect the spring precipitation over southern China by regulating the atmospheric circulation in East Asia and the Northwest Pacific. Further study indicates that the SCE anomalies near Lake Baikal have different contributions to the change of spring precipitation in south China around the end of 1980s. The whole dataset is divided into two periods, 1972-1987 (P1) and 1988-2009 (P2). During P1, the SCE anomalies around Lake Baikal contribute to the formation of regional mono-sign of spring precipitation over southern China. During P2, the SCE anomalies around Lake Baikal are conducive to the formation of north-south dipole modes of spring precipitation. Meanwhile, the SCE anomalies also have experienced an interdecadal change and contributes to precipitation mode over China. During P1, The SCE anomalies near Lake Baikal and its southeast side contribute to the formation of mono-sign of spring precipitation over southern China. During P2, the SCE anomalies near Lake Baikal and its northeast side are favorable for the south China spring precipitation to present the north-south dipole modes of spring precipitation.

Keywords: spring precipitation, snow cover, interdecadal changes