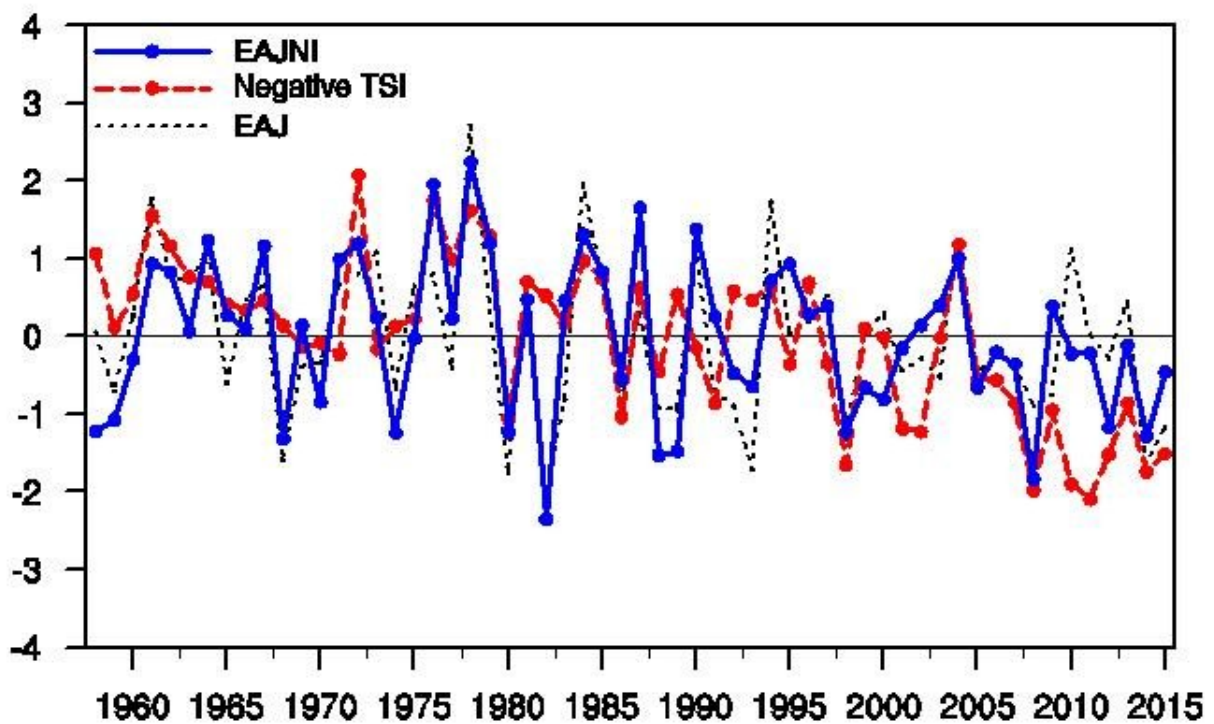


Positive feedback between East Asian mid-latitude circulation and land surface temperature

May 30 2018



Standardized time series of the indices for the northern flank of the EAJ (EAJNI, blue solid line), surface air temperature in the Russian Far East (TSI, red dashed line) and EAJ (black dashed line). Credit: LIn Xiaozhen

The interannual variability of the East Asian upper-tropospheric westerly

jet (EAJ) in summer is characterized by the meridional displacement of its axis, or a seesaw pattern of zonal wind anomalies between the northern and southern flanks of the EAJ. It plays a crucial role in summer climate anomalies in East Asia.

"Interannual variation of the meridional displacement of the EAJ relates to the tropical air-sea interaction, but mainly for the southern flank of EAJ," said LIN Xiaozhen, a master program student in the Institute of Atmospheric Physics (IAP) of the Chinese Academy of Sciences, and also the first author of a paper published in *Atmospheric and Oceanic Science Letters*.

"We found a close relationship between the surface air temperature in the Russian Far East and the northern flank of the EAJ and revealed a positive feedback mechanism between them," she said.

LIN's study indicated that related to a warmer surface in the Russian Far East, the westerly decelerates in the northern flank of the EAJ. The anticyclonic circulation anomaly related to a weakened westerly in the northern flank of the EAJ induced surface warming in the Russian Far East and the warmer surface could in turn act as a heat source and induce a local anticyclonic circulation [anomaly](#) in the upper troposphere, therefore decelerating the westerly in the northern flank of the EAJ.

These results implied that a better description of the summer [surface](#) condition in the Russian Far East may benefit seasonal forecasts of the EAJ and, subsequently, East Asian summer climate.

More information: Xiao-Zhen LIN et al, Close relationship between the East Asian westerly jet and Russian Far East surface air temperature in summer, *Atmospheric and Oceanic Science Letters* (2018). [DOI: 10.1080/16742834.2018.1467726](#)

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