



## **Positive Correlation between the Silk Road Pattern and the Meridional Displacement of the Upper-Level Mid-Latitude Jet**

Xiaowei Hong (1,2) and Riyu Lu (1)

(1) State Key Laboratory of Numerical Modeling for Atmospheric Sciences and Geophysical Fluid Dynamics, Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China, (2) University of the Chinese Academy of Sciences, Beijing, China

Local climate of the Eurasia continent is significantly affected by the Silk Road Pattern (SRP). Phase of the SRP is in high consistence with the meridional displacement of the upper-level westerly jet stream. A more polarward (equatorialward) jet is more likely to be accompanied by a positive (negative) SRP phase, with upper-level anti-cyclonic (cyclonic) anomalies around the Caspian Sea and the East Asia, and cyclonic (anti-cyclonic) anomalies in between and over the Europe. The key linking the two is that meridional wind anomalies around the Caspian Sea associated with a polarward (equatorialward) jet are in-phase with those associated with a SRP of the positive (negative) phase.

Synchronous summer SST anomalies of the tropical Eastern Pacific and Northern India Ocean directly affect the meridional location of the jet. Cold (warm) SST anomalies induce warm (cold) temperature anomalies along the jet band, and thus generate strong meridional gradient of the tropospheric temperature anomalies, facilitating a more northward (equatorialward) jet. At the same time, positive (negative) phase of SRP generate cold (warm) surface temperature anomalies in Europe and the central Asia through cyclonic (anti-cyclonic) tropospheric wind anomalies, and warm (cold) temperature anomalies in the western Asia and East Asia through anti-cyclonic (cyclonic) wind anomalies.