



## **Association of the East Asian subtropical westerly jet with the Southwest Asian summer monsoon: A diagnostic analysis on heavy rain events in Yunnan province, China**

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Yunnan province, China is a typical area that is influenced by Southwest Asian summer monsoon (SASM) during boreal summer. Although the interannual variation of summer precipitation in Yunnan Province is closely related to that of the SASM, the East Asian subtropical westerly jet (EASWJ) may have an important role in heavy rainfall events in Yunnan Province during boreal summer. By using daily observations and the NACAR/NCEP data during 1960-2011, a diagnostic analysis is performed to investigate the association of the EASWJ with the SASM on heavy rain events in Yunnan Province during boreal summer.

The analysis shows an anomalous divergence circulation pattern at upper level (200 hPa) over Eurasian continent that corresponds well to the negative anomaly of EASWJ during heavy rain events in boreal summer in Yunnan Province. At the same time, a low-level jet stream with abundant water vapor originated from the Arabian Sea and Bengal gulf provides necessarily dynamic and water conditions for heavy rain mechanism. The study further shows that the weakening of the EASWJ during heavy rain events in Yunnan Province is associated with the decrease in the meridional temperature gradient in northern mid-latitude (30°-40° N).