

## **The contrasting effects of the equatorial Pacific on the rainfall in Southwest China during its dry season**

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Rainfall anomaly in Southwest China (SWC) during its dry season (from January to March) is studied basing on the station-observational data covering the past several decades. Remarkably, both anomalous more and less rainfall events may occur in the El Niño years when the equatorial Pacific heating affects the climate conditions over a large scale globally, or in the years with El Niño-alike sea surface temperature anomaly patterns in the equatorial Pacific. These special years are picked out to investigate why the rainfall anomaly in SWC are opposite under the similar equatorial Pacific conditions. The composite anomalous background conditions of the two types show their exact difference that the heating center is located in the central equatorial Pacific when there is less rainfall in SWC, but moves eastward in the more rainfall years. With zonal shifts of the heating center, quite different anomalous Walker circulations are induced and position of the anomalous anticyclone over the western North Pacific becomes closer or farther to the mainland of China, causing different three-dimensional atmospheric circulations anomaly in the surrounding regions of SWC. As a result, water vapor transport to SWC and local vertical motions are influenced and the dry season's rainfall behaves anomaly finally.