



## **Precipitation change over china with global surface air temperature**

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**Abstract:** This paper presents the regional precipitation change with global warming over China using the relationship between annual precipitation data at stations over china and global surface air temperature (GSAT) during 1870-2003. The results clearly show the regional pattern of relationship between precipitation and GSAT. The relationship in cooling (1951-1979) and warming (1980-2003) periods have consistent positive and negative regional patterns. There are three regions, Northern China, southeast and southwest regions, with warming-wet/cooling-dry relationship between precipitation and GSAT, and one warming-dry/cooling-wet region in center of China. The Northern China with warming-wet/cooling-dry relationship marches the region with high mean U-wind from Jul to Sept. at 500hpa reflecting west wind speed while the southeast and southwest regions with warming-wet/cooling-dry relationship are related to the region with high mean V-wind from Jul to Sept. at 500hpa charactering east and south Asia summer monsoon. The directly relationship between GSAT and precipitation may clearly release some useful information which shows regional patterns of precipitation under global warming, though it can not release the mechanism of precipitation change with climate warming.