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Assessment of Trends in Extreme Precipitation Events in Yarlung Zangbo River Basin for 1958 to 2010

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The Yarlung Zangbo River Basin (YZRB) is located in the Qinghai-Tibet Plateau, which is known as the third polar in the world. The ecosystems in the YZRB are very fragile, which are influences by climate change. Precipitation is an important indicator to measure climate change. Extreme precipitation events have a great influence on both human society and nature. The objective of this study is to understand the changes of spatial distributions in extreme precipitation events trends in the YZRB. A precipitation product for 1958 to 2010 with spatial resolution of 5 km, temporal resolution of 3 hour was used. Linear trend estimation and the Mann-Kendall nonparametric test were explored to trends in annual precipitation and five typical extreme rainfall events indices. The results show that the annual precipitation in the YZRB is decreasing from the southeast to the northwest. Precipitation is decreasing significantly in the river source area, and in the eastern and western regions is significantly increased . Extreme Precipitation events occurred mainly in low altitude areas, such as Rikaze and the basin outlet area. The precipitation in Rikaze which is in the central area is significantly decreased, and in most of the eastern area is significantly increased. The variation tendency(annual variation)in the whole basin of the average rainfall, the heavy rainfall days, the greatest 5-day total rainfall, the heavy rainfall threshold and the heavy rainfall ratio showed an upward trend. While simple daily rainfall intensity has no significant trend.