



Precipitation variability on the Tibetan plateau in the past 600-year

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The Tibetan plateau (TP), as referred to the Third pole where ecology and water resources are particularly vulnerable to climate changes, is the source of ten major river systems in Asia. The variability of this regional water system is already under consideration and could be involved in future water shortages in the global warming condition. A better understanding of the spatial and temporal variability of precipitation in a long time period should be extremely important to improve our understanding of water resource changes on the TP. However, lack of reliable long-term precipitation record from the TP has constrained our understanding of precipitation variations in this region. Here, 5 time series of precipitation reconstructions by using ice cores and lake sediment in the TP have been discussed. These reconstructions span in the period of 1400-2000 AD, making it is possible to determine the precipitation variability in the TP at secular time scale. The results indicate that precipitation varies differently in the southern and northern TP in a secular time scale. In the past 600 years, both the precipitation in the southern and northern TP changed abruptly at around 1740 AD and 1850 AD. In the period 1400-1740, the precipitation increased (decreased) in the northern TP (the southern TP). While during the period 1740-1850, the precipitation decreased (increased) in northern TP (the southern TP). Then since 1850 the precipitation has increased (decreased) in the northern TP (the southern TP). So the precipitation variation is much different between in the northern and southern TP in both decade and secular time scales, which is the result of the monsoon prevailing in the southern TP and the westerly in the northern TP.