Precipitation bias variability versus various gauges under different climatic conditions over the Third Pole Environment(TPE) region

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ABSTRACT: An international programme dedicated to the study of the Third Pole Environment (TPE) is now developing. The TPE region is centred on the Tibetan Plateau and concerns the interests of the surrounding countries and regions. To improve input for hydrological research, we collected precipitation data on 241 meteorological stations across the TPE region; these data were obtained from various countries, thus including various types of gauges. Employing the procedure recommended by the World Meteorological Organization (WMO), a full version of bias adjustment was applied to the data, including adjustments for wind-induced error, wetting loss, evaporation loss and trace amount for each station. The results reveal that the average annual precipitation has increased considerably from a minimum of 4 mm to a maximum of 409 mm with an overall mean of 27% from the adjustment, the largest bias being found in the Chinese standard precipitation gauge (CSPG) which was used in the central TPE region. In addition, the bias shows variable spatial and temporal patterns in different climate zones throughout this area. It is expected that this study and its results will be beneficial for hydrological and climatic studies over the TPE region.