



## **Study of the temporal and spatial patterns of drought on the Qinghai-Tibetan Plateau based on standardized precipitation evapotranspiration index**

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Drought is one of the most serious natural disasters of human society, as a disaster prone and sensitive area, it is particularly important to monitor the drought situation on the Qinghai-Tibetan plateau [U+FF08] QTP [U+FF09]. According to the data of temperature and precipitation from 68 weather stations on the QTP from 1962 to 2017 and combining the Penman-Monteith formula, the standardized precipitation evapotranspiration index (SPEI) have been calculated. SPEI was used as drought index and applied the M-K trend analysis, we studied the spatial and temporal patterns of drought on QTP from interannual and seasonal variation of drought, drought frequency, drought intensity and drought stations percentage. The results show: (1) The SPEI based on the Penman-Monteith formula can well reflect the drought characteristics of QTP. (2) Since 1962, the SPEI on the QTP is rise overall, the drought intensity and drought stations percentage decreased gradually. The drought on the plateau in the past 55 years had obvious stage characteristics, the SPEI increases significantly after 1990s. (3) The northeast of QTP has a visible wetting tendency while the north was observed a drying tendency, this difference may be caused by the effects of the monsoon carrying moisture. (4) In general, the drought frequency and drought intensity in spring and winter are higher than that in summer and autumn, this result is helpful for management of agricultural irrigation and water resources on the QTP.