



## **Analysis of characteristics of multiple time scale drought based on SPEI in the east of northwest China**

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From characteristics of multiple time scale of drought, the Standardized Precipitation Evapotranspiration Index (SPEI) considering precipitation and temperature are calculated using CRU update data, and the characteristics of drought at different time scales from 1901 to 2012 in the east of northwest China have been investigated. In this paper, reliability for hundred years of the CRU data has been tested, and the adaptability of SPEI in study area has been discussed. The result shows that, the SPEI is confirmed to be applicable to analyze the drought in the east of northwest China from drought intensity and range. The time scale of SPEI is shorter, the fluctuation is more frequent, and the change is more significantly. The amplitude, period and phase of SPEI curve with different time scales are not the same. Short time scale mainly shows seasonal characteristics, and long time scale shows interannual and decadal characteristics. The study area is divided into the eastern of the Plateau area and the southern of Shaanxi area. There are three times extreme drought events in 48 months time scale of the SPEI index of less than -2.0 in the eastern of the Plateau area from 1901 to 2012, and only one time in the southern of Shaanxi area. Finally, the contribution of temperature anomaly to the drought is analyzed. The result indicates that high temperature contribution cannot be neglected by comparison with the SPI index.