TENDENCY OF DRYNESS/WETNESS OVER NORTHWEST
CHINA IN RECENT 50 YEARS

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ABSTRACT: Northwest China, an arid region, is interspersed with many oases in the wide areas of desert and Gobi. Because it is influenced by three climatic systems (westerly climatic system, plateau climatic system and southeastern monsoon climatic system), comparing with other regions, the climate change in Northwest China is more complex [1]. The main natural disaster in Northwest China is drought. Since drought is also one of the serious problems in the world, its change can has important impacts on human society, the economy and the environment [2], so the study of drought change in Northwest China is necessary. It is well known that the precipitation is just one of the factors in influence drought change in an area, and the temperature is another key factor [3-4]. The decrease or increase of temperature impacts on the drought change in an area by its effect on the potential evaporation. For this reason, a drought index (DRI) including the impact of both temperature and precipitation is defined in this paper, through calculating DRI in Northwest China to analyze the tendency of dryness/wetness in this area. In the present study, the DRI is calculated in recent 50 years by the use of 135 stations monthly precipitation and temperature data, which are the most complete station data set in Northwest China, processed by National Meteorological Information Center recently. Results show that warming aridification tendency is the main characteristic in Northwest China in recent 50 years; especially there is the most obvious warming aridification tendency in the eastern part of Northwest China. Although the precipitation in most parts of Northwest China has significant increasing tendency, the dryness/wetness tendency in these regions is unmarked. This shows that warming results in the increase of potential evaporation, and the increasing precipitation cannot compensate the loss of water in soil due to the increasing of potential evaporation. It is noticeable that there are two areas in which the range of precipitation increasing is wider than the wetting range. The one area is the northwest part of Xinjiang, the other one is located in east and south of Qinghai. Being in these areas, the temperature has obvious warming, that means the warming can enhance the drought. In addition, the change cycle and trend of DRI is different from those of precipitation, and due to consider synthetically the temperature and precipitation, the DRI can be more objective to reflect
the change of dryness/wetness in Northwest China.

**Keywords:** Northwest China, drought index, dryness/wetness change

**References:**


