

# Study on Multiscale Analysis on Drought Characteristics

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**Abstract**

One of the hazard of nature is a drought. Its impact varies from region to region and it is difficult for people to understand and define due to differences in hydrometeorological and social economic aspects across much of the country. In the most general sense, drought originates from a deficiency of precipitation over an extended period of time, usually month, season or more, resulting in a water shortage for some activity, group, or environmental sector. Palmer Drought Severity Index (PDSI) is well known and has been used to study aridity changes in modern and past climates. The PDSI index is estimated over US using USHCN historical data.(e.g. precipitation, temperature, latitude and soil moisture). In this study, low frequency drought variability associated with climate variability such as El-Nino and ENSO is mainly investigated. With respect to the multi-scale analysis, wavelet transform analysis is applied to the PDSI index in order to extract the low frequency band corresponding to 2-8 years. Finally, low frequency patterns associated with drought by comparing global wavelet power, with significance test are explored.

**Keywords : PDSI, Low frequency drought, Wavelet Decomposition**

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