



Spatio-temporal Characteristics of Meteorological Drought Events in The Euphrates-Tigris Basin during 1975–2022

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The Intergovernmental Panel on Climate Change (IPCC) in 2023 has projected an increase in temperatures across the Mediterranean basin in the coming years, alongside a persistent challenge of water scarcity. This forecast suggests a heightened probability of intensified and more frequent extreme climatic events, particularly droughts. Meteorological drought plays a pivotal role in influencing different forms of drought, highlighting the importance of understanding its spatiotemporal patterns at the basin level. Such an understanding holds significant implications for ensuring ecological sustainability and water resource management security. The present work aims to assess the spatial variability and the trends of the annual rainfall and meteorological drought in the Euphrates-Tigris River Basin (TEB) utilising measured and remote sensing data, which spans from January 1975 to December 2022 (a 47-year period). Drought assessment took place based on the Standardized Precipitation Index (SPI) for a 12-month timescale. We employed the 12-month SPI as the foundation for detecting drought occurrences. This timeframe offers a compromise between short- and long-term drought events, thus accurately capturing the influence of climate change on vital water resources like river flow. The findings offer valuable insights into the attributes and underlying mechanisms of meteorological droughts across the basin.