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# Temporal Variation of Reference Evapotranspiration in Central Anatolia Region, Turkey and Meteorological Drought Analysis via Standardized Precipitation Evapotranspiration Index Method

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**Abstract :** Analysis of temporal variation of reference evapotranspiration (ET0) is important in arid and semi-arid regions where water resources are limited. In this study, temporal variation of reference evapotranspiration (ET0) and meteorological drought analysis through SPEI (Standardized Precipitation Evapotranspiration Index) method have been carried out in provinces of Central Anatolia Region, Turkey. Reference evapotranspiration of concerning provinces in the region has been estimated using Penman-Monteith method and one calendar year has been split up four periods as r1, r2, r3 and r4. Temporal variation of reference evapotranspiration according to four periods has been analyzed through parametric Dickey-Fuller test and non-parametric Mann-Whitney U test. As a result, significant increasing trends for reference evapotranspiration have been detected and according to SPEI method used for estimating meteorological drought in provinces, mild drought has been experienced in general, and however there have been also a significant amount of events where moderate and severely droughts occurred.

**Keywords :** central Anatolia region, drought index, Penman-Monteith, reference evapotranspiration, temporal variation
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