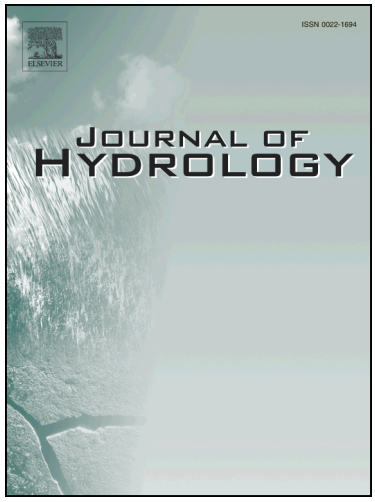

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Construction of Prediction Intervals for Palmer Drought Severity Index Using Bootstrap

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Abstract

In this study, we propose an approach based on the residual-based bootstrap method to obtain valid prediction intervals using monthly, short-term (three-months) and mid-term (six-months) drought observations. The effects of North Atlantic and Arctic Oscillation indexes on the constructed prediction intervals are also examined. Performance of the proposed approach is evaluated for the Palmer Drought Severity Index (PDSI) obtained from Konya closed basin located in Central Anatolia, Turkey. The finite sample properties of the proposed method are further illustrated by an extensive simulation study. Our results revealed that the proposed approach is capable of producing valid prediction intervals for future PDSI values.

Keywords: Bootstrap, drought, Konya basin, PDSI, prediction

1. Introduction

Drought is a temporary and recurring meteorological event, originating from the lack of precipitation over an extended period of time. Early indications of

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