Accepted Manuscript

Integrated meteorological and hydrological drought model: a management tool for proactive water resources planning of semi-arid regions

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 PII:
 S0309-1708(17)30683-8

 DOI:
 10.1016/j.advwatres.2017.07.007

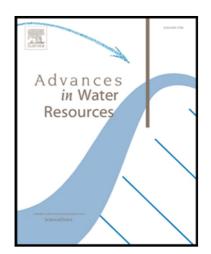
 Reference:
 ADWR 2892

To appear in: Advances in Water Resources

Received date:22 May 2016Revised date:2 July 2017Accepted date:7 July 2017

Please cite this article as: Arash Modaresi Rad, Bijan Ghahraman, Davar Khalili, Zahra Ghahremani, Samira Ahmadi Ardakani, Integrated meteorological and hydrological drought model: a management tool for proactive water resources planning of semi-arid regions, *Advances in Water Resources* (2017), doi: 10.1016/j.advwatres.2017.07.007

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Highlights

- A joint meteorological and hydrological drought model is proposed.
- Compared to previous studies, this new model improves detection of extreme drought events.
- Detection of drought onset and persistency is improved in new model.
- A procedure to identify the most appropriate goodness-of-fit (GOF) is presented that also includes the degree of upper tail dependence.
- This leads to realistic estimation of drought severity and duration, hence recurrence intervals of certain significant droughts can aid to prepare drought contingency plans.

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