

Interactive comment on “An assessment of trends and potential future changes in groundwater-baseflow drought based on catchment response times” by Jost Hellwig and Kerstin Stahl

S. Sawaske (Referee)

sawaske@gmail.com

Received and published: 31 July 2018

General Comments

This is a sound and timely paper that builds on established methods and previous work of others and examines important water resource issues with management implications in the face of climate change. There is a thorough introduction and discussion of methods. The analysis is based on a very large sample size of existing gages which strengthens the validity of the results and conclusions. Methods used in the analy-

C1

sis are well documented and established procedures in the field. There is a detailed appendix and appropriate and easily interpretable figures. I particularly appreciated figure 5, a very compelling illustration of the impacts of start and end year on trend analyses.

Specific Comments

The study includes data from presumably a wide range of catchment types based on the spatial distribution of gages. However, the only catchment attribute discussed is a measure of porosity. I would have preferred some greater detail of catchment geology, land use/vegetation, and geomorphic characteristics to differentiate the study basins.

I don't fully understand the use of the “scenario-neutral” term. Although emissions specific scenarios are not discussed, only one trajectory is analyzed (reduced summer precip. and increase winter precip.). It would be interesting to test the baseflow impacts of varied changes in seasonal precipitation pattern.

How are summer low flows in the Alpine foothills projected to change? Although minimum flows currently occur in winter, low flows in summer can have greater water resources and ecological implications.

It was important to note in section 5.2 that: “Catchments' characteristics response times were assumed to remain constant”. Although likely outside the scope of this article, it would be nice to explore this more and the implications on baseflow recession.

Technical Corrections

5.2, line 1 should be dependent rather than depending.

This is an easily readable and well formatted text.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2018-248>, 2018.

C2