

## ***Interactive comment on “PAttern REtrieval or deNegation Testing Scheme (PARENTS) v.1.0 – Identifying the degree of presence of given patterns in spatial time series” by Benjamin Müller et al.***

**Anonymous Referee #1**

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General comments:

A relatively straightforward PCA method is used to retrieve biogeophysical variables from a time series of 28 ASTER images acquired from 2001 to 2012 covering a catchment. Title suggests that a software is presented (“Parents”) but this software is not available now. This paper is a third of a series of studies using the same dataset over the same area. Which remotely sensed variable is used is unclear because several terms are used (“surface temperature”, “land surface temperature”, “temperature TOA”). Introduction does not permit understanding the novelty and the objectives of

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this work with respect to previous studies by the same authors. Figure 4 was already published (Figure 1 in Mueller et al. 2014 and Figure 1 in Mueller et al. 2016). Figure 2 was already published (Figure 2 in Mueller et al. 2014 and Figure 4 in Mueller et al. 2016). Finally, I tend to think that this work is not technically correct. While previous works focused on rather static properties of the catchment such as land cover, topography, geology, soil texture, this study considers thermal inertia and LAI. Thermal inertia depends on soil moisture. Both soil moisture and LAI can vary rapidly and both present seasonal and interannual variability. I do not see how they can be monitored using data presenting such a poor sampling time. The authors would rather use geology and land cover as they did in their previous work (but then: what’s new?). This paper cannot be published in the present form.

Recommendation: reject.

Particular comments:

- L. 37: Only surface soil moisture (SSM) can be observed from space. “WC” is too vague.
- L. 51: What does “TS” stand for? Time series ?
- P. 3: Authors should explain the added value of this paper with respect to previous studies published in HESS (2014 and 2016) by the same authors. Is there anything new in this study?
- L. 278-280 (and Tables 1 and 2): This is not correct. Moisture could influence thermal inertia (not only bedrock properties) and LAI has seasonal and interannual variability.
- L. 393 (data assimilation): not clear for understanding. Which kind of DA schemes?
- L. 535: what is the definition of a LAI “composite value”?
- L. 566 (1000000 optimization steps): sounds a lot.
- L. 585 (Figure 5): what does TOA stand for? Top Of the Atmosphere? In this case,

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you should refrain calling this quantity “surface temperature”.

- L. 590 (Figure 6): Thermal inertia and LAI are variables through time. What do these maps mean?

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2019-563>, 2019.