

## ***Interactive comment on “A meteo-hydrological modelling system for the reconstruction of river runoff: the case of the Ofanto river catchment” by Giorgia Verri et al.***

### **Anonymous Referee #2**

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I regret to inform you that my personal opinion is that the paper needs a major revision in order to clarify the valuable work developed by its authors. To begin with, I really found confusing the description of the two objectives mentioned: the reconstruction of rainfall and runoff series. I would respectfully recommend writing two different papers in order to clarify different methodologies and perspectives unless you use runoff modelling results as criteria for rainfall estimation, which is a point that I couldn't clarify after reading your paper. I would highlight some other problems concerning the content of the paper reviewed: 1. Considering the methodology. Don't you find quite dangerous the use of a huge amount of parameters to simulate meteorological, hydrological and hydraulic processes?. What controls the over parameterization effects

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on your model/system? 2. You have mentioned nothing about PET estimation, which may be an important process considering the duration of events. Have you discard its influence and why?. And considering the altitudes shown in the MDT figure and the mountainous characteristics of your catchment, I've also missed some comments about snow and melting processes. 3. Are you using a continuous model or an event based one. It seems that the actual objective is not to represent a long time series, but a collation of convective events producing extremes. 4. Would you say that long time response of aquifers is well represented in your model?. What are the physiographic characteristics of your basin in order to guess how is the aquifer response?. You also mentioned that the coefficients for the infiltration and saturated hydraulic conductivity are seasonally dependent. Don't you think that this is a problem of a lack of how your model works with water availability dependence of both infiltration and groundwater propagation laws or even more of the model capabilities but not of the parameters?. I mean, is there any structural problem in your model?. It seems that you've taken a practical approach, but not a science based one. 5. What is the main criteria to calibrate and validate rainfall and runoff?. It seems that highest extremes had been used a reference of quality. If so, why not other kind of values considering that your objective is to represent long time series? 6. Furthermore, I would say that there are many more inconsistencies that make difficult the reading of the paper. Some others may be the following ones: a. Would you say that a reconstruction from winter 2011 to autumn 2013 is a long time series? b. How do you define your catchment?. Is it a small river catchment or a medium sized one?. 7. I would recommend reviewing the conclusions section too. What I found there is a review of some topics previously described as well as some evidence previously known as the key role played by aquifer discharge to affect the baseflow. Finally, I would recommend rewriting the whole paper (or papers) considering the interesting work developed by authors and the interesting topics they have assessed based on a global modelling approach.

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