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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Importance of maximum snow accumulation for summer low flows in humid catchments" *by* M. Jenicek et al.

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First of all I want to mention that the presented paper is from my point of view in the scope of HESS. Actually, I like the study design of M. Jenicek et al. and enjoyed reading the paper. However, there is indeed as has been suggested by the first reviewer a lot of potential to improve the study. I want to contribute some thoughts about the graphs and the story they are telling (or not).

With one crying eye I noticed that nearly all graphs present somehow "information", but often cannot transfer knowledge; what is to decode data into understanding. In my eyes that is in this case a real pity as the data and the idea behind the paper are very interesting and comprehensive (I have seen the corresponding presentation of M.

Jenicek at HYPER Droughts, 2014). Here some suggestions to improve some parts of the paper:

Starting with Figure 3, I recognized that the authors introduce some kind of catchment grouping along the elevational gradient of all catchments (mentioned in the figure caption). I wonder why these "elevation classes" not used throughout the whole paper. Instead a color-coding with yellowish, greenish and brownish shading is used (Fig. 5,6,8, but surprisingly not in Fig.1), which makes it really difficult to disclose the catchment ranking. In Figure 1 additional information could be placed into the map (as also suggested by Reviewer 1): snow map of Switzerland, DEM etc... A river network would be also helpful to see whether a catchment is a sub-catchment/headwater of another catchment or just situated next to the other.

However, it seems to be easy to replace the used color coding with more distinct colors to improve the readability of the graphs. Is it really important to have a gradient color for decreasing elevation? Or is it more important to have three clearly distinguishable colors to highlight catchments for different groups?

The authors should also consider abbreviations for all the catchment names. The length and the number of the catchment names blur the dots and lines in the graphs (Fig. 5, 6, 8), although I like to have the names there instead of a legend. What about 3-letter-catchment-abbrevations in three different colors according to the above mentioned catchment grouping?

Fig. 6 could be improved with different plot scaling. If the graph were widen then the horizontal distances between the catchments (especially near Hinterrhein) would be larger. What is used for the dots, the mean 7d minimum flow or the median? The graph looks like a mixture of boxplot and dots, perhaps one is better than both? Another example is Figure 2. The reader's eye has to remove around 18 boxes around the single plots, has to remove numerous unnecessary axes labels and plot titles (the names of the months) to see the actual data points, which in my opinion should be at

least double sized. One row of month's names and one x-axis and y-axis with labels is certainly enough, isn't it? By the way – the boxplots on the left hand side a rather confusing than helpful, because they are related to the x-axis not the y-axis of the monthly plots, aren't they? The boxplot is [mm] the plots are [%], this should also be checked!

Also Fig. 7 is confusing. In the text rank correlation is referred to this figure, but the figure is a scatter plot of CPI against minimum discharge. What kind of regression is used there? Is it possible to account for uncertainty (95th confidence bounds or so) in this figure?

A – perhaps valuable – suggestion for Fig. 8: I wonder if it is feasible to add the "movement" of the catchments to the graphs? The authors show scatter plots of scores for 4 consecutive months during the year. Perhaps (when all the long names are removed and a distinct color coding is used) there is enough space to add some kind of arrows indicating how a catchment "move" on the score plots from one month to next? For example, Emme is moving two times to the left and the up in September. Riale is moving right, then back, then up. Other catchments do not move. The dot size here can also be used as indicator of catchment elevation (smaller dots for lowland, larger dots for high alpine catchments). Furthermore, August and September could be swapped to guide the reader clockwise through the months.

To end, I think a comprehensive and consistent improvement of all the good ideas the Authors have (figures) would certainly improve the story of the paper and will give the reader more guidance to extract knowledge from the presented data and modeling results. To reach this point the figures have to be more integrated into the text and the discussion.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 12, 7023, 2015.