In the following, we want to give a preliminary statement to address the main criticism of two of the referees (Dr. Birsan and Referee #3) – the overlap with another paper. As for the other helpful suggestions of the referees, we will give a detailed reply as soon as we can include any comments from Referee #4.

It is definitely true that there are similar features in our first paper (Detection of regional climate change effects on alpine hydrology by daily resolution trend analysis in Tyrol, Austria; in the following referred to as "first paper") compared to the second one (Attribution of high resolution streamflow trends in Western Austria – an approach based on climate and discharge station data; in the following referred to as "second paper"). However, as the title indicates, the first paper was only about the methodology of detection and description of the trends, the second one focuses on the attribution of the trends. As the required trend analyses were not standard methods, we somehow had to address this issue within the second paper. Anyway, we tried to keep the "old" information limited, that is maybe why sometimes the explanations came too short. Regretfully, the first paper is still not yet available, due to a considerable delay in the review process.

Moreover, we did not know that there would be a follow-up paper when we submitted the first one. If we would have known, we would have explicitly mentioned it in both titles such as "Hydroclimatic trends in Western Austria - Part one: Detection; Part two: Attribution". The problem is that there is quite an amount of new results and it would anyway have been too much to include all in just a single paper, as also pointed out by Referee #3.

At the end of the introduction of the second paper, we tried to address this overlap via the following phrases:
"The present study is a complement to Kormann et al. (2013), where 30 day moving average trends were derived for different hydroclimatic variables. Comparable to applying a moving average filter, the datasets were split into a series of 30 day average subsets and then tested for trends in all 365 days of the year. It was shown that a far more detailed picture of the changes can be obtained by daily trends than by seasonal or annual averages, where a lot of the information is lost by averaging data over a certain period of time. Furthermore, the authors stated that the timing of daily trends (i.e. the day of year when a trend turns up) potentially is a more robust measure than trend magnitude. However, similar to many other studies, the attribution of the streamflow trends in Kormann et al. (2013) was limited to interpretation only."

In the following, we want to point out the specific differences more thoroughly:

Next to the contents that were specified by referee Dr. Birsan (*"... paper deals with the very same region, some methods are identical, e.g., Mann-Kendall test, Sen's slope, 30-day moving average (30DMA), and the data series are quite the same (except that, in that paper, longer intervals were also considered); the effect of altitude on trend timing and magnitude is also discussed; some figures are similar, too.)* the first paper presents the following additional analyses:

- we analysed the stability of *annual* trends versus different time periods
- we analysed the differences between monthly and 30-day moving average (*30DMA*) trends
- we pointed out the advantages of the *30DMA* analyses
- we showed and interpreted only <u>significant</u> *30DMA* trends in the first paper; the discussion of the results was only based on interpretation
- we analysed trends of further variables such as new snow height and precipitation
- we analysed the stability of *30DMA* trends of multiple hydroclimatic variables versus different time periods and emphasized the intensification of the trends

- we analysed the height dependency of seasonal trends of the various hydroclimatic variables via different analyses

In the second paper, we attributed the streamflow trends via analyses of other observed variables, and additionally, via trends of these, i.e. the focus is laid on relating the trends of different variables and discuss the results in the context of the underlying hydrological processes. We are aware that the trends have been addressed already before.

This time we showed all trends, not only significant ones. This was due to the following: During our analyses we found, that for attributing trends, it is crucial to not leave out any of the information contained in the data (cf. Fig. 3). Additional information is provided via showing field significances (cf. Fig. 3 and Fig. 5). Basically, only Fig. 3 a) has been plotted as such in the first paper. Fig. 5 a) and d) bear additional information compared to the one in the first paper.

Further analyses of the second paper:
- streamflow trends of *annual* totals versus height (in the first paper, only seasonal trends were analysed on their height dependency) and the issue of minimum detectability
- Fourier form models for analysing the changes of phase and the amplitude of streamflow
- subseasonal trends of daily maximum and minimum temperature (as we found out that the trends of Tmax and Tmin are important for trend attribution as well, next to Tmean)
- characteristic dates such as the top-of-winter (maximum snow height), maximum streamflow or temperature passing the freezing point in spring
- a multiple linear regression model was fitted to the seasonal streamflow trends to indicate the main trend drivers
- subdaily (hourly) trends
- combination of these different methods to physically explain trend drivers and inconsistencies of annual trend analyses

We are happy to distribute our first paper to any referee for double checking these points.