

Hydrol. Earth Syst. Sci. Discuss., referee comment RC3
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Comment on hess-2022-196

Anonymous Referee #3

Referee comment on "Attributing trend in naturalized streamflow to temporally explicit vegetation change and climate variation in the Yellow River basin of China" by Zhihui Wang et al., Hydrol. Earth Syst. Sci. Discuss.,
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Attributing hydrological variation to climate and surface feature is a hot topic under global warming in Anthropocene and the Yellow River basin is a typical case where eco-hydrological processes have changed severely during recent decades, so it's critical to quantify the contributions of land use/cover and climate changes to streamflow reduction in the YRB, China. Many previous studies have already focused on this topic using various methods and have got some interesting findings. But as authors of this MS mentioned, those studies analyzed the contributions of inter-annual change of driving factors to hydrological processes, while effects of the intra-annual change of climate and vegetation have not been examined. To solve it, this MS improved the VIC model by coupling time-series land cover and LAI remote sensing data to capture the cumulative effect of dynamic vegetation on the hydrological cycle, and designed six scenario simulation experiments to separate impacts of intra-annual changes of climate and vegetation from those of inter-annual changes and the interactive effects. Since topic of this MS is meaningful and innovative, methods are convincing, and results & discussions are reasonable, I recommend it to be published with revisions. Some specific comments are as follows:

Line 187-188, the optimization algorithm named MOCOM-UA is inconsistent with SCE-UA in fig. 2.

Line 313, unit of runoff coefficient is wrong in Fig. 7a.

Line 365, as Fig. 9 shows, temperature has negative impact on streamflow in the source

regions. This is inconsistent with my understanding of this region that higher temperature contributes to an increase in runoff due to its role in promoting glacier melting, although the authors discussed the negative impact in Section 5.4 and attributed it to permafrost degradation.

Line 390 It's confusing to use rainfall and precipitation concurrently because they have different meanings and precipitation includes rainfall, snow, hail, etc.

Line 435-439 There are some grammatical errors in these sentences such as vegetation phenology rather than phenological.

Line 455 Error in name of y-axis, annual instead of anuual.

Line 455 Differences between trends of annual streamflow with continuous and noncontinuous LAI changes is little visually, especially for Figs. 12b, c, and d, so adding significant level of these trends may be more convincing.

Line 458 Error in figure name; Figs. 12c and 12d are for LM-HYK instead of LM-TDG.

Line 486-491 This paragraph should move to Section 5.2 to build a direct connection with streamflow change, so that take Section 5.3 as an additional methodological analysis to highlight the role of vegetation dynamics in streamflow trend.

Line 544 Usage of due to is wrong, please check it throughout this MS.

Line 547 Grammatical error, accounts instead of account.

Line 555-557 Usage of disentangle is wrong, rewritten it, please.