

Hydrol. Earth Syst. Sci. Discuss., referee comment RC2
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Comment on hess-2020-679

Anonymous Referee #2

Referee comment on "How does water yield respond to mountain pine beetle infestation in a semiarid forest?" by Jianning Ren et al., Hydrol. Earth Syst. Sci. Discuss.,
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The authors contributed a very interesting manuscript that is within the scope of the journal and the scientific quality of the ms is very good. Much of my research is in ecohydrology and one recent ms showed the effect of beetle defoliation in dryland riparian corridors of the SW USA and how water use (ET) on these corridors (13 rivers and streams) changed before and after the introduction of the beetles (see Restoration Ecology 2018); therefore, the authors contribution is of great interest to me and certainly contributes something new to the field of hydrology. There are citations that could be added to the ms. background to further demonstrate changes in riparian corridor ET before and after beetle introductions, although their paper is unique in looking at mountain pine beetle infestation and adding in other types of woodlands may not be needed. I have really learned from their discussion and the long-term aridity index is an excellent contribution to water yield research. These results (key points) show that separating wet years and dry years may provide important knowledge that is useful in other systems. I am curious now to apply similar methods in riparian corridors to see if in fact the response to mortality level remains nonlinear and varies by location and year, as I suspect it would in other beetle-infested land covers. My findings suggest that in canopies that were monotypic with high density and extent had increased water yield could be wiped out entirely but then regrown. The re-greening post mountain pine beetle does not exist I presume and therefore this work may not be transferrable to other ecosystems, but I do believe this ms and its findings, especially the drought information, is of great interest to the readership. This conclusion was therefore of most interest: " in a dry year, low to medium MPB-caused vegetation mortality decreases water yield, and high mortality increases water yield; this response to mortality level is nonlinear and varies by location and year."