

The paper by Miller et al. "Development of stream flow projections under changing climate conditions over Colorado Head investigates future stream flow predictions and the role of evapotranspiration rates. I found the paper interesting to read and I am sure it has relevance to scientist working in this catchment. However, I find it very hard to read in its current form and question some of the approaches taken by the authors. It is especially hard to read due to the large number of acronyms used in conjunction to what seems to be policy statements without clear relevance to the scientific goal of the paper.

Main points:

There is considerable effort in deriving sub-daily data sets, however, all analysis concentrates on longer time periods. I am not sure I understand the effort of an sub-daily (even sub-monthly) time step given the presentation of the results - the authors need to elaborate on this.

Oh boy, is this paper full of acronyms. For the first time as a reviewer I actually had to make a list myself just to remember them all. I urge the authors to reconsider in particular for readers who are not familiar with the area and institutional landscape. Please: (1) remove all acronyms from the abstract; (2) delete all acronyms which are not used in the further text (and there are a few); (3) reconsider creating acronyms which just make the text harder to read e.g. do you really need MAP, MAT or MAE (latter one gets easily confused with Mean Absolute Error)

The paper omits any statistics on the performance of the model with respect to observations. If comparisons are plotted they obscure quality of the results (figure 5, 7 and 9)

I do not fully understand, the application of your post-run bias correction, which basically 'creates' or 'destroys' water and does not correct for any possible timing errors. You claim to see non-stationary, which will be also valid for your bias correction.

There are large assumptions in the computation of input fields of precipitation, temperature and evaporation. I would argue that the differences you see are smaller than the impact of the uncertainties in your assumptions.

Please, put all units into the SI system

Why was the VIC model and the CBRFC RFS model used - why not just VIC?

Individual points

p5578L2 I do not understand why there is a Reclamation in brackets?

p5579L1 rephrase currently - your paper maybe read in 2020.

p5579L5-10 Such fluctuations can be normal in other reservoirs and hence are no clear evidence for a drought, please describe the hydro-meteorological climatology of the area

p5579L16 you describe impacts on changes in timing and your paper uses a sub-daily time step, but non of your analysis refers to this or shows it

p5579L16 Please make more clear what your paper adds in respect to the paper by Christensen and Lettenmaier, 2007

p5580L5 This is a hydrology journal, please, spell out AMO, PDO and SOI

p5581 Please make more clear what the novel contribution of your paper is

Figure 2: Difficult to place on the world (unless you know it). Add lat, long Or a small map of north America

p5582L5-11 Please consider relevance to scientific objective of this paper

p5586L9-10 acronyms in these lines seem to be unused

p5586L13 Please give some performance statistic of the model using this calibration. Is this calibration a error updating method? Please provide reference.

p5587L18-21 Please provide evidence (beyond personal communication) for the values in the equations. A quick check of GTS stations in the area seem to suggest some uncertainties on these values. They are important for you climate projections in particular for your evaporation. Please indicate impact of these assumptions.

p5590Section 2.5 I do not understand your post-run bias correction. It will severely damage the water balance and have no influence on the temporal structure of the hydrographs. Please provide some performance indicators of your bias correction (beyond the once you have) e.g. Nash-Sutcliffe. I am uncertain, why a model in which the parameters are well calibrated is in need of such a correction. You do establish non-stationarity, which will also be impacting your bias correction. Please present a plot of the bias correction factors.

Figure 3 are these differences statistical significant? (also a question for figure 6)