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Comment on bg-2021-152

Anonymous Referee #1

Referee comment on "Resolving temperature limitation on spring productivity in an evergreen conifer forest using a model–data fusion framework" by Stephanie G. Stettz et al., *Biogeosciences Discuss.*, <https://doi.org/10.5194/bg-2021-152-RC1>, 2021

Exploring the exist but less studied temperature limitation on spring productivity is an important task to improve the realistic of ecosystem models. The authors applied a model–data fusion framework to discuss the uncertainty in such limitation, mainly for the subalpine evergreen forest in Colorado USA. They found that i) the GPP was gradually inhibited at temperature below 6.0 °C and completely inhibited below -7.1 °C. ii) cold temperature limitation has an important influence on spring GPP, while not the case for integrated growing season GPP. Other environmental controls, such as precipitation, play a more important role in annual productivity.

Overall, this study seems to be a nice attempt to address this topic, while the most apparent weakness is that this work solely depends on a single site/tree species, whether the conclusion would be fine for subalpine evergreen forest in another region is unclear.

As expected, the analyzed TBM-MIP models have very different performances regarding the reproduce of spring and annual GPP, see Figure 7 and Table. 2. The authors are recommended to explain whether the parameter sets of these models are optimized using a specialized dataset or the observation of this study.