Weather Clim. Dynam. Discuss.,
https://doi.org/10.5194/wcd-2020-22-RC1, 2020

Interactive comment on "Influence of ENSO on North American subseasonal surface air temperature variability" *by* Patrick Martineau et al.

Anonymous Referee #1

Received and published: 7 June 2020

In this study, the authors investigated the influence of ENSO on North American subseasonal surface air temperature (SAT) variability in boreal winter. The dominant mode of covariability between 10-60 day band-pass filtered SAT variability and winter-mean SST over the North Pacific sector was identified using an SVD analysis. It was found that La Nina conditions tend to enhance the subseasonal SAT variability over western North America. Detailed analysis of energetics of subseasonal edides was carried out. The results are in agreement with previous studies. An interesting finding is that changes in vertical structure of the subseasonal anomalies are important for energy conversion through heat fluxes. The topic is interesting and the manuscript is in general clearly written. It may contribute to the understanding of subseasonal SAT variability and its related extreme events. I think this manuscript is publishable subject to some

minor revisions.

Specific comments: 1. This study deals with ENSO influence on the North American subseasonal SAT. However, the area chosen for the SST in the SVD analysis is mainly the North Pacific region. The resulting seasonal mean SST anomaly has a strong signal in the North Pacific, which may not be related to ENSO. It would be more reasonable to use the tropical Pacific area, e.g., 30S-30N. 2. In the paragraph starting from line 221 and Fig. 7, it should be justified why the two points, Alaska and Colorado, are selected to perform the lagged regression calculation. Is it based on the variance? Are the results sensitive to the choice of base points? Are these subseasonal patterns consistent with previous studies (e.g., Lin 2015)? 3. What is the implication of this study to subseasonal predictions of surface air temperature in North America?

Reference: Lin, H., 2015: Subseasonal variability of North American wintertime surface air temperature. Climate Dyn., 45, 10.1007/s00382-014-2363-6, 1137-1155.

Interactive comment on Weather Clim. Dynam. Discuss., https://doi.org/10.5194/wcd-2020-22, 2020.