

## ***Interactive comment on “The Spring Transition of the North Pacific Jet and its Relation to Deep Stratosphere-to-Troposphere Mass Transport over Western North America” by Melissa Leah Breeden et al.***

**Anonymous Referee #2**

Received and published: 22 October 2020

This is one of the most polished papers I have reviewed in several years! The investigation is comprehensive, well motivated, and the text and figures are of high quality. It is an excellent contribution to the field and was a pleasure to read. Many thanks to the authors for the careful and considerable work put into this manuscript! I have only a handful of comments/suggestions outlined below.

Lines 41-44: It seems that an annual cycle of tropopause altitude would also be relevant here. Perhaps it frequently reaches a minimum in late winter/early spring.

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Line 82: Why is  $2.5^{\circ}$  resolution data used instead of finer data that is available? It seems reasonable to me since JRA-55 is used mainly for context, but a simple justification along those lines would be nice to include.

Lines 116-127: The mention of "dynamic tropopause" here is sudden. I would recommend simply specifying the range of PV thresholds used in these studies. Otherwise, the discussion could become confusing and is a bit nuanced as is.

Line 180: I recommend citing Rossby wave breaking studies supporting this statement.

Line 307: I would recommend also pointing out that the ENSO-jet relationship is consistent with Rossby wave breaking activity given the occurrence of the jet breaks during La Niña.

Line 339-347: Excellent points here! :)

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