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Interactive comment on "Regional influence of ocean-climate teleconnections on the timingand duration of MODIS derived snow cover in British Columbia, Canada" *by* Alexandre R. Bevington et al.

Anonymous Referee #1

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General comments

This study investigates the impact of Oceanic Niño Index (ONI) and Pacific Decadal Oscillation (PDO) on snow cover characteristics in British Columbia. The results indicate that the end duration of snow cover are strongly negatively correlated with ONI and PDO. This result is in agreement with previous studies in the region, but the novel contribution of this study is the evaluation of regional and seasonal patterns of this relation. The regional patterns show that the most correlated regions are in the northern and southern part of British Columbia.

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Discussion paper

Overall the study is clearly written and the topic fits well to the scope of the journal. The study is original, however my main concern is somewhat unclear/confusing formulation of the significance and novel scientific contribution of the results. As the authors clearly state the results are consistent with many previous studies evaluating the impact of teleconnections on snow characteristics in the study region. I wonder to what extent are the emerged regional patterns significant in terms of novel scientific contribution and how can these result be generalized to other regions or time periods. The novel method used for cloud filtering (by using LOWESS interpolation) is somewhat hidden in terms of formulation of the novelty. I would suggest to extend the discussion section and compare the results with some relevant previous studies (e.g. McClung, 2013, Barton (2017)) to indicate more clearly how do the new results fit to previous studies and how the interpolated (cloud reduced) MODIS datasets can improve (are improving) the prediction of the impact of ONI and PDO. Are the mean absolute errors of prediction comparable/small/large compared to results of previous investigations?

Specific comments

Section 4.1. (MODIS processing). Why not to use also MOD10A1 data from 2001 and 2002? Will it have some impact on the results? MODIS mapping accuracy. It will be interesting to see the overall accuracy of the cloud reducing (interpolation) method (based on comparison of MODIS and ASWS). This will allow to put in more context the results of error assessment of the start, end and duration of snow cover.

References

McClung Journal of Glaciology, Volume 59, Issue 216, 2013 , pp. 783-792

Mark Barton (2017) Twenty-Seven Years of Manual Fresh Snowfall Density Measurements on Whistler Mountain, British Columbia, Atmosphere-Ocean, 55:3, 144-154, DOI: 10.1080/07055900.2017.1331157

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