

Interactive comment on “Evidence for spring mountain snowpack retreat from a Landsat-derived snow cover climate data record” by C. J. Crawford

Anonymous Referee #2

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The author uses snow cover extent data derived from a somewhat lengthy dataset of Landsat imagery over a small portion of Idaho and Montana to examine extent changes. This includes correlating extent with surface air temperatures and using the relationship between the two variables to extend the snow estimates back into the early 20th century. Results find a reduction of spring snow cover since the mid 1980s. Relationships between extent and snow water equivalent and March precipitation were also noted.

While the study is interesting and adds some value to the literature regarding snow cover trends as well as western North American climate variability and change it is not a significant advancement. The author never makes a compelling case for the

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Landsat snow cover data and to correlate this with only a long term temperature record doesn't add too much value. A major issue with this reviewer stems from the lack of information regarding the snow cover record, something the author calls a climate data record but provides little evidence that it adheres to such qualifications. How is the dataset generated? How much cloud contamination interferes with assessments (beyond the 9 years that are missing within the time series due to clouds or missing imagery)? How does the long lapse between overpasses impact the ability to generate an accurate depiction of snow cover loss?

It appears that the snow cover loss (as generated from the temperature relationship) is a percent or so during the 20th century to near present (figure 5c). Is this truly significant?

The author is encouraged to reconsider whether the snow extent data derived from the Landsat imagery is worthy of being utilized in such a study. If they are confident that the answer is yes, then they are encouraged to justify this further within the text and further explain the significance of their results. They might also consider “localizing” the region of their study within the title.

Interactive comment on The Cryosphere Discuss., 7, 2089, 2013.