

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

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In this study a Landsat snow cover CDR (i.e., Landsat spring SCA) was compared with ground-based SNOTEL SWE measurements and mean surface temperature and total precipitation observations. The results show that Landsat spring SCA on 1 June was positively correlated with 15 May and 1 June SWE and March precipitation, negatively correlated with spring temperature; and SCA data reconstructed in the manuscript reveal a centennial trend towards decreasing spring SCA with estimated losses of -36.2% in the study area since 1901. This is an interesting and helpful research on longer-term snow cover dynamics using the SCA reconstruction approach.

However, the paper has some issues that must be addressed before publication. The spring SCA data reconstruction approach only used in a regional scale, could it extend

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to a grid scale (e.g., $0.50^\circ \times 0.50^\circ$) corresponding to the CRU surface temperature and precipitation grid? It is anticipated that the author can analyze and discuss it.

Minor revisions: In section 2.3, the author should clearly demonstrate how many pairs of Landsat SCA-SNOTEL SWE comparisons were utilized in the study.

In figure 6A, it might be better for spring SCA reconstruction model verification to show the scatterplots, linear fits, and correlation coefficients between Landsat SCA and reconstructed SCA using instrumental spring mean temperature.

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