

***Interactive comment on “Northern Hemisphere
spring snow cover variability and change over
1922–2010 including an assessment of
uncertainty” by R. D. Brown and D. A. Robinson***

Anonymous Referee #1

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The manuscript is well written and clear in its presentation. This work adequately covers many of the shortcomings of previous efforts to describe snow extent trends by way of, for example, employing multiple data sets and applying appropriate statistical tests. It is unfortunate that the assessment is limited to two calendar months, and I was not entirely clear on why, but the authors do note that they were forced to limit the work to this time period - although fortuitous that March and April are primary melt months for the seasonal snow cover in most locations.

On page 2494, beginning on about line 13, the authors do note that snow cover extent is only part of the total snow cover story, with volume or mass being the elusive

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parameter that continues to be difficult to impossible to evaluate over large areas with any high accuracy. They note that although there is the obvious and direct connection between snow extent and air temperature at this time of year, snow mass is certainly playing a role in the rate at which the snow disappears in March and April. With respect stream flow volume, It might be good to acknowledge that the trend for an earlier disappearance of snow in April may be an indication of change in the timing of maximum runoff, but without correlation with snow depth or water equivalent it doesn't tell the whole story in terms of hydrology. Perhaps this is in the category of “suggestions for future work”.

In summary, this paper represents an important and practical contribution to the overall understanding of the response of the Northern Hemisphere seasonal snow cover to a changing climate. I do not have any technical corrections for this paper.

Interactive comment on The Cryosphere Discuss., 4, 2483, 2010.

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