

Interactive comment on “Observed snow depth trends in the European Alps 1971 to 2019” by Michael Matiu et al.

Anonymous Referee #3

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General comment. I was delighted to see this compilation and analysis of snow records from the whole span of the European alps. Previous country-based studies have used different methods that prevented aggregate conclusions, and the efforts the authors have undertaken to compile this comprehensive dataset represents an important breakthrough that paves the way for a much improved understanding of the consequences of warming for snow in the European alps. Having assembled three datasets (with more similarities than those here) from different jurisdictions for some of my work, I can appreciate the magnitude of the task.

Two referees have provided some technical corrections, to which I add the following.

Abstract - lines 49-51 are an attempt to represent much of the information in table 3 in a line of text, but the result is insufficiently specified and confusing. I suggest reducing the

amount of detail and focusing on the key numerical message, and delivering it clearly. Perhaps one number for the DJF all-station average and one for the MAM all-station average. The next level of detail would be to list the average trends by elevation bands, but it's less confusing to put the elevation band first: "for 0-1000m, -1.1cm/decade; for 1000-200m, ..." Including the ranges is too much detail for an abstract, and places undue emphasis on outliers.

IPCC 2019 - follow the citation convention specified at the beginning of the report

There almost seems to be a straight line through the loadings of PC2-5 (Fig 3) at about 47.5°N, straighter than the topography would suggest. It's suspiciously close to the Germany-Austria border. Can you convince me that it's not a data artefact?

Fig B1 is very important for the interpretation of the loadings; I strongly suggest moving it to the main paper

Line 401: state the p-value of significance

Section 3.3 - I see no real reason to shorten the record and present 30-year trends, except to calibrate the variability of shorter trends. I see another reviewer provided extensive comments on this.

Interactive comment on The Cryosphere Discuss., <https://doi.org/10.5194/tc-2020-289>, 2020.

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