Revision of

"Synoptic control over winter snowfall variability observed in a remote site of Apennine Mountains (Italy), 1884–2015"

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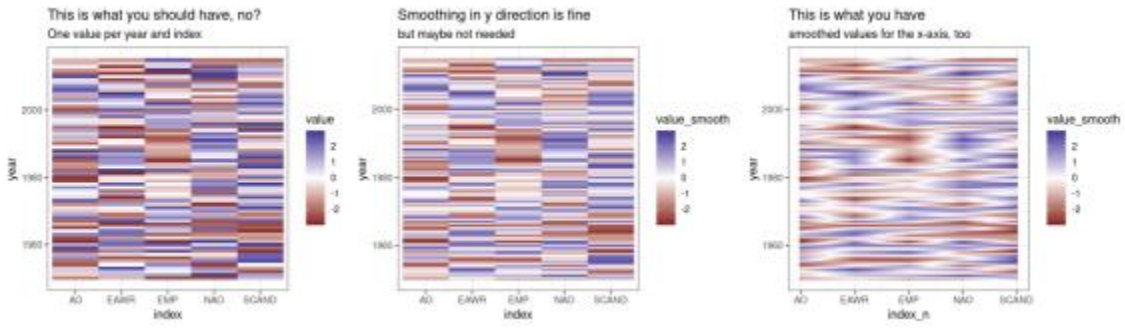
RC = Referee comment
AR = Authors' reply
Note that in the new manuscript version, all changes are marked in yellow.

REVIEWER #1

RC (1): The authors are to be commended for the effort that they have put into revising the manuscript. They addressed all comments and included all my suggestions. Thank you. The manuscript has considerably improved. One thing I still do not agree with is the Hovmöller-type diagram. Please correct me if I'm wrong, but I think you have annual values for all five teleconnection indices? So what is shown between, e.g., AO and EAWR for one year? For me it looks like a gradient between the two winter values of AO and EAWR, but this does not make sense. I agree with the authors, that the plot could serve as a nice overview between all teleconnection indices and HNS, but I think it's technically wrong and thus potentially misleading. You can still keep the type of plot, but need to separate the x-axis into a discrete one. See also the figure below (with some random values):



AR (1): Dear Reviewer, we are very grateful for his/her positive evaluation about our revision work. We are also grateful for your further comments, which help us to improve our paper.
We agree with your remarks about the Fig. 10 and we have modified it following your precious suggestions (see below). Note that we have applied a light smoothing in the y direction.

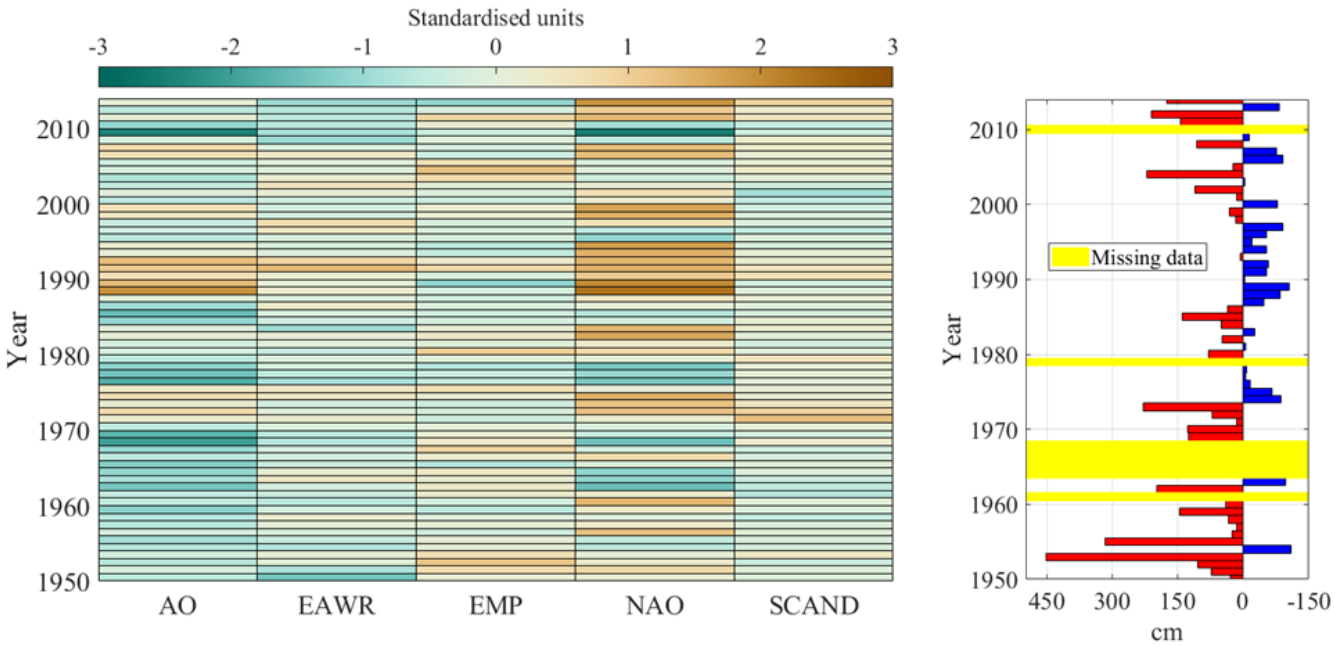


Figure 10: The left panel presents the behaviour in time of the teleconnection indices adopted in this study. More specifically, in the x-axis the winter value of Arctic Oscillation (AO), Eastern Atlantic Western Russia (EAWR), Eastern Mediterranean Pattern (EMP), North Atlantic Oscillation (NAO) and Scandinavia pattern (SCAND) is show from left to right. The indices values are color-coded according to the horizontal bar and are expressed as standardized units. The right panel shows the winter (December to February) time series of total height of new snow, expressed as anomalies (in cm) with respect to 1981-2010 period. Red bars highlight winters with positive anomaly (in cm), blue bars winters with negative anomaly. The missing data are marked as yellow bars. For both panels, the period 1950/51-2014/15 is considered.

RC (2): Regarding the monthly sums: Did you calculate them only when all (28-31) daily observations were available? Did you not have any gaps of few days in between? Usually, one calculates monthly means, if 90% or 95% of daily observations are available.

AR (2): We have calculated the monthly values if the 95% of daily observations are available. We have clarified this point in the revised manuscript (See Line 140).

RC (3): New Figure 4: the top right panel should be "moving average" without "standard deviation", no?

AR (3): Yes, we apologize for the typo. We have corrected the legend of this figure.

RC (4): Table 3: Please add one column with the correlations using all years.

AR (4): Ok, we added a column in Table 3 with the correlation values computed over all considered time interval.

RC (5): All correlation tables: The choice of using a soft grey colour for denoting $0.05 < p < 0.1$ is unlucky, since the natural visibility order would be bold, normal, grey. I think one p-value threshold is enough. For correlations 0.1 (90%) is well accepted, especially since you have only 20 observations (time

periods) in some cases. Then you can use bold for significant and normal for not. You can use 0.1 (90%) consistently for all correlation tables (now you have sometimes only 0.05, and sometimes both 0.05 and 0.1).

AR (5): According to the referee's suggestion, for all correlation tables (i.e. Table 3, Table 4 and Table 5), we have considered 0.1 (90%) as reference p-value for significance test and we used bold to indicate the significant values and normal for not significant ones.

RC (6): L395ff: Again, t-test is standard, so no need to specify hypotheses. But the t-test is a pair comparison. From the response to the comment to referee 2, I understand what you did, but not from what you wrote in the manuscript. Maybe you can clarify into something like "HNS was significantly different between the high (STx, STy, Stz) and low group (ST...) ($p<0.05$, t-test)."

AR (6): In the revised manuscript version, we have better clarified this point as follows (see Lines 396-398 in the main text): **"**It should be pointed out that the average HNSd found for ST1, ST2 and ST4 significantly differ from the HNSd values found for ST3, ST5 and ST6 (i.e. according to the t-test, $p<0.05$ for all ST pairs, for example ST1 vs. ST5 and ST2 vs. ST6)."

REVIEWER #2

RC: The revised manuscript addresses the primary concerns of both reviewers. I particularly appreciate the authors' inclusion of a more explicit discussion section and manner in which they have handled the suggestions to revise their sub-period selection (Sec. 3.1). Additionally, the delineation of the sub-periods in the figures really helped me with the interpretation of the authors' results. Personally, I really appreciated the higher resolution photo presented in Figure A1 -- what a cool snow data source rich in human history!

The revised manuscript more adequately contextualizes the results in a broader cryosphere perspective, while also employing more robust methods. I believe a broad audience of TC readers will enjoy and take interest in this work.

I would suggest some technical corrections to the language in the manuscript prior to publication.

AR: Dear Dr. Hancock, we are very grateful for your positive comments about our revision work. We thank you again for all suggestions and remarks and for the time you spend for the revision of our work. Thank you in advance for the technical language corrections.

Best regards.