Hydrology and Earth System Sciences Discussions

Hydrol. Earth Syst. Sci. Discuss., referee comment RC1
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Comment on hess-2022-32

Anonymous Referee #1

Referee comment on "Seasonal forecasting of snow resources at Alpine sites" by Silvia Terzago et al., Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2022-32-RC1, 2022

Terzago et al. present some encouraging results on seasonal forecasting of snow at levels that could be of commercial use. There are overlaps with the aims of the PROSNOW project (http://prosnow.org/); I haven't seen a published demonstration of seasonal forecasting from that project, but Koberl et al. (2021) on the market for seasonal forecast services for ski resorts is relevant.

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The conclusion that bias correction of precipitation forecasts has little influence on snow depth skill scores might be surprising, or it might be misleading as no observations are used in the bias correction of precipitation (which is not mentioned in the abstract).

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The GEM15 forecasts used by Bellaire et al. (2011) were only out to 48 hours and were found to overestimate precipitation, so differences in conclusions from this study might be expected. Forster et al. (2018) is a much more direct precursor of this study.

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"this study" would more accurately be described as "that study", i.e. Forster et al. (2018), not Terzago et al. (2022).

109
As stakeholders were involved in designing the prototype system, it is curious that none are included in the author list or acknowledgements.

Table 1

6 decimal places in latitude and longitude locate the stations to within 10 cm, which seems unnecessary.
"Total radiation" here is, I think, net radiation.

Table 2 contains only a small amount of information that could easily be incorporated in the text.

2.3.1
I find the bias correction hard to understand. What is the elevation of the ECMWFS5 temperature forecast in Figure 2a? Is it surprising that there is such a large *cold* bias compared with a station at 2410 m elevation? If the green line was produced by quantile mapping the raw data onto the ERA5 CDF, why is it further from ERA5 than the raw data? If the discontinuity in the green line is due to the monthly quantile mapping, why does it only appear in mid-February?

Table 3
Use superscripts for W/m2

Figure 2
The x-axis is labelled in months, not days. "Downscaled data" means different things for temperature and precipitation that is not apparent from the figure or caption. Why does cumulated precipitation appear to decrease in mid-February?

264
(missing before Matheson

276
subscript perf

Figure 3
The blue and dark blue lines are hard to distinguish when printed.