

Earth Syst. Sci. Data Discuss., referee comment RC2
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Comment on **essd-2020-346**

Anonymous Referee #2

Referee comment on "A high-resolution gridded dataset of daily temperature and precipitation records (1980–2018) for Trentino-South Tyrol (north-eastern Italian Alps)" by Alice Crespi et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2020-346-RC2>, 2021

The manuscript "A high-resolution gridded dataset of daily temperature and precipitation records (1980 – 2018) for Trentino – South Tyrol (northeastern Italian Alps)" submitted by Crespi et al., presents a novel and well prepared precipitation and temperature gridded dataset for the Region Trentino-South Tyrol in North-East Italy. The main strengths of the dataset in comparison to previous works are the spatial resolution, the temporal extension up to 2018 and the aim of the authors of keeping it up to date.

I did not find particular issues in the proposed methodology and the dataset is publicly available. I consider therefor the work of interest for the readers of the journal and useful for the scientific community. Some minor comments and suggestions are listed below:

- Some more information (e.g., resolution, accuracy, measurement error) about the quality of measured temperature and precipitation time series would be important to better appreciate the quality of the interpolated results. In fact, it seems that the interpolation error is in the same order of the measurement error, which is a nice attribute of the dataset.
- I did not get why the dataset was compared with snow-cover maps instead of (for example) other gridded products (e.g., Adler et al., 2015) or remote sensing products. P and T datasets for large parts of the region in fact were investigated in recent works such as:

Mei, Y., Anagnostou, E.N., Nikolopoulos, E.I., Borga, M., 2014. Error analysis of satellite precipitation products in mountainous basins. *J. Hydrometeorol.* 15, 1778–1793.

Duan, Z., Liu, J.Z., Tuo, Y., Chiogna, G., Disse, M., 2016. Evaluation of eight high spatial

resolution gridded precipitation products in Adige Basin (Italy) at multiple temporal and spatial scales. Sci. Total Environ

Maybe the authors could better justify this choice and/or they may find these references useful for section 2.1.

- Line 71 please specify which local gradients you mean
- Lines 113-116 since the focus is on precipitation and temperature, and the area investigated is larger than the Adige basin itself, I think these lines could be removed.
- The correction of 48 precipitation time series gives a particular relevance of this step to the entire process, in my view. Some more information about how the correction factors were applied from monthly to daily time series and how large were the applied adjustments would be interesting.
- I suggest to improve figure 3 providing also information about the relative areal contribution of each elevation range. For example, a second x-axis with the cumulative area of the studied region.
- Sections 2.3.1 and 2.3.2 are a bit difficult to follow. I understand that providing too much mathematical details in the main text would make it probably too long, but in my view an appendix with a more rigorous description of the procedure would be beneficial.
- Figure 5, the color-code to interpret the heat map is missing.