Interactive comment on "A high-resolution air temperature data set for the Chinese Tianshan Mountains in 1979–2016" *by* Lu Gao et al.

Anonymous Referee #3

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This is an interesting piece of research that are focusing on downscaling temperature data for one mountainous region in China. The study is clearly written and the data/method is solid. I recommend a "minor revision" for this paper. Below is my comments and questions. 1. Needs a short introduction of the mechanism of the method mentioned in line 31, page 2. 2. The labels for stations in figure 1 are not very clear, please use another color. 3. In figure 2 and 4, why Nos.10, 24, 9 and 15 stations are chosen for comparison? Are they the most representative ones? 4. Although the author mentioned that the temporal resolution of the new dataset is 6 hours, non of the analysis is focused on the temporal variations of the temperature. Needs at least some analysis to address the temporal accuracy of the new dataset. 5. Page 9, line 23, delete "there are". 6. How the comparison error statistics are sensitive to the "down-

scaling resolution" you have chosen? Why the final product is set to 1 km grids? 7. Have you considered the diurnal changes of the situation in mountainous areas. Since the data you have corrected is at 6 hour resolution. In mountainous area, you may expect temperature inversions during night time.

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