

## ***Interactive comment on “Evidence for elevation-dependent warming from the Chinese Tianshan Mountains” by Lu Gao et al.***

**Anonymous Referee #1**

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This study intends to reveal EDW in the Chinese Tianshan Mountains using a high-resolution data that are developed in the previous study based on ERA-I data in combination with topographic correction method. Despite merits such as clear structure and better writing to be easy to follow, I have three comments in the following:

(1) My major concern is the accuracy of data used. This paper does not do a detailed introduction to the high-resolution data, which results in that I cannot evaluate its accuracy or reliability. After a look at the reference provided, it shows that the high-resolution data are based on ERA-I reanalysis. ERA-I is developed based on model simulation in addition to weather station observations, so it generally has large uncertainties in such a small region, especially for mountainous region. Because ERA-I includes in situ observations at some weather stations, it may be unsurprising there

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are very reasonable performance for evaluation using observed data from perhaps the same weather stations.

(2) This paper discusses the mechanism only, if data can be used to reveal some mechanism in the research region, it will be a better progress. The mechanism discussed may be suitable for other regions, but is not always in the case for the research region in the present study.

(3) Some expressions are not very rigorous. Such as Line 83-85, the author says that satellite data have low spatial resolution, which is questionable. Some satellite data with 1 km resolution are the same resolution as data used in this study. The author also says large system errors with satellite data, which needs analyses or references to confirm.

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