

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

**Bo Chen**

bochen@bnu.edu.cn

Received and published: 29 August 2020

Climate change likely alters regional hydrologic regime and affects access to water resources. Using a unique high-resolution (1 km, 6-hourly) air temperature data set (CTMD) produced by previous studies, this work investigated the existence of the elevation-dependence warming (EDW) in the Chinese Tianshan Mountains (CTM) at the monthly, seasonal, and annual time scales, which is of significance for understanding glacier melting and water resources management in the vast arid area around CTM. The authors found that EDW was significant at different altitudes on different time scales. Overall, the present study is an interesting forward attempt to deepen our understanding of EDW phenomenon. Few queries to the authors, which might be helpful to improve this manuscript are given below:

C1

1. In sections 3.1 and 3.2, the authors provided the significance of the linear regression models (equation (1)), it would also be helpful to report if the trends (coefficient alpha) were statistically different from zero (or to report the confidence intervals of the trends).
2. Please explain the definition of seasons by grouping months in CTM region (this may be helpful for international readers).
3. Please elaborate a bit on how the trends for CTM (Table 1 &2) and China were calculated. If my understanding were correct, the authors applied equation (1) to estimate the trend for each pixel, but I am not clear how they aggregated the pixel-scale trends to the trends for CTM.

---

Interactive comment on The Cryosphere Discuss., <https://doi.org/10.5194/tc-2020-188>, 2020.

C2