

## ***Interactive comment on “Climate-driven desertification triggered the end of the Ancient Silk Road” by Guanghui Dong et al.***

### **Anonymous Referee #1**

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This paper try to understand the climate impact on the closure of Jiayuguan and demise of the ancient Silk Road in 1539 AD during Ming Dynasty. The science provided in this study seems to be valuable to the relevant study communities. Some issues that authors may be interested in for the improvement are provided as below:

Major comments:

1. The authors say the Jiayuguan is finally closed in 1539 AD and this is the end of the Ancient Silk Road on land (Line 213-215). However, Fig 2 b-c show the tribute trades through the Jiayuguan Pass still exist after 1539 AD. The authors should give more details and explanation on this contradiction. 2. The Jiayuguan Pass was first closed in 1524 AD and finally closed in 1539 AD. In Fig 2 f-g, the tree-ring based precipitation and streamflow reconstructions show the drought climate condition is during 1450-

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1510 AD and the hydroclimate returns to average since 1520s. This indicates that the rainfall is normal during 1524 to 1539. Moreover, the driest decade is around 1460s (Fig 2f-g) and 1490s (Fig 2f) and there are several trade teams in these intervals. This means that it is possible for people to reach Jiayuguan under the worst climate condition. Therefore, there must be other critical factors for the closure in 1539. More evidences are needed to prove which factor is the most important one. 3. The author should provide some quantitative evidences of the oasis fragile. For example, how many years continuous drought could destroy it and could the oasis recover when climate return to better condition. There are also many extreme drought years occurred before 1450s but the Silk Road is not interrupted. 4. Which season do most the trade teams passed through the Hexi Corridor? Or do they move in all seasons? The authors say LOI and Rb/Sr profiles represent the spring and autumn period (Line 346). How about other proxies in Fig 2 and 3? 5. The topic of the paper is the end of the Ancient Silk Road in Mid-Ming Dynasty while the main data is a sediment core that only has one dating sample since Ming Dynasty. More high resolution data should be included. Authors may be interested in recently published paper. Hao et al. (2019) Climatic changes during the past two millennia along the Ancient Silk Road. Progress in Physical Geography.

Minor comments: 1. Line 146, 270 m should be 270 cm. 2. Line 340, Fig2 should be Fig3.

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