Thank for firstly the editor to give me this chance to discuss with referees on the manuscript. Secondly, I will thank for the referee reviewing the manuscript and give so many useful suggestions. Till now, little research on the permafrost distribution has been done in the study area and even in a larger area, although the spatial distribution and the change of permafrost will definitely have great influence on the hydrological, ecological, and environmental conditions in downstream inland areas. This paper evaluated quantitatively the individual effect of latitude, elevation, slope and aspect and their total effects on the distribution of permafrost in a drainage basin scale and got the relative results and conclusions. Therefore, I do not agree with him that this manuscript is rejected. I think the conclusions are valuable, and the results make knowledge of the permafrost distribution for the study basin. As far as the limited data are concerned, they are acceptable due to the inconvenience of transportation and the inaccessibility of drilling machines. I think the data are limited, but they are valuable. During sampling, the representativeness of boreholes was considered firstly, thus, the basis of the model is substantial. In addition, compared with the previous studies, the effect of latitude on permafrost development was evaluated. The results prove that although the small scale of latitude the study area go through, its effect on the distribution of permafrost could not be ignored. The conclusions were also obtained that the altitude was the major factor controlling the distribution of permafrost in the upper area, and the influence of solar radiation on the spatial distribution patterns of permafrost was small and focused on the local shade areas at lower altitudes. Therefore, I insist on that the work is valuable and should not be rejected.

I'm sorry to bring trouble for the referee to review this manuscript twice.
For the questions, the answers are the following.

Questions 1,

It is not clear, how the values presented in tables or Figure 3 were obtained and how representative they are.

In order to satisfy the representativeness of boreholes, their locations were selected purposely in the field investigation. The sentences were in P5247L21- P5248L7. The values of ground temperatures, soil moisture and vegetation cover were obtained using a thermistor probe, time domain reflectometry (TDR) of soil moisture and quadrats measurement respectively. The sentences were in P5248L8-17.

Questions 2,

The "steadiest ground temperatures" of "four measurements [: : :] from early of June to the end of November" is not sufficiently accurate.

During drilling the boreholes, the heat balance in the ground was damaged and it need long time to restore. The ground temperatures were measured four times since the boreholes were drilled. From the ground temperature curves, it was can be seen that the values decreased from the early of June, when the boreholes were drilled, to the end of November. This proved that the temperatures of ground was restoring. There were totally four measurement values of ground temperatures, when we constructed the model, and the steadiest ones, that were the fourth measurements, were adopted.

Questions 3,

It is unclear what single date or temporal granularity the presented measurements of soil

moisture are based on – this is a strongly fluctuating parameter.
The soil moisture values were obtained with a quadrat measurement method in the same days. Taking the borehole locations as the center, four measuring units, 1×1m, 2×2m, 5×5m, and 10×10m, were used and the mean values were computed. These values were used to illustrate the relatively uniform moisture conditions on the ground surface of the study areas.

Questions 4,

These measurements do not support the conclusion "Therefore, it was thought that the topographic conditions were the main controlling factors for the distribution of permafrost in the study area", especially not when comparing boreholes in a narrow elevation range.
Yes, it's true. I will delete the sentence in the reviewed paper.

Questions 5,

Model: A model with different components is presented, but not at all evaluated.
The evaluation of the model was made via the Gauss curve. The curve was proposed by Cheng (1982) to model the spatial distribution of permafrost lower limit in Northern Hemisphere, and was thought as a common method modeling the spatial distribution of permafrost in China (see reference *Li, X. and Cheng, G.*).

Questions 6,

The basis for the model is questionable, e.g. the regression presented in Fig. 4 is based on four points, only. Additionally, these points stem from an extremely narrow elevation range and the lapse rate of 3.8 _C/km is very low when compared to average atmospheric conditions, posing problems for the huge vertical extrapolation. Furthermore, the "Gauss curve model" is only published in Chinese and the validity of its use here cannot be traced by most reviewers or readers of HESS. Reading between the lines, the "Gauss curve model" seems to be designed to explain global distribution patterns and not local patterns in mountain basins.
Based on the previous studies on the Qinghai-Tibet Plateau, it is proved that there is a linear relationship between ground temperatures of permafrost and elevation. Therefore, the four points here were not used to confirm the linear relationship between ground temperatures of permafrost and elevation but to find out the gradient of ground temperatures with elevation. From this point of view, the four points are enough. As for the lapse rate, it is almost the same as the value in the mid- and eastern part of the Qilianshan Mountains (see reference *Zhou, Y., Qiu, G., Guo, D., Cheng, G., and Li, S.*).
The "Gauss curve model" is not only published in Chinese. the paper VERTICAL AND HORIZONTAL OF HIGH-ALTITUDE PERMAFROST written by Cheng was published in English in the proceedings of the fourth International Conference on Permafrost. In the paper, the construction and application of the Gauss curve model were demonstrated in details. It was used to explain global and regional distribution patterns. In the manuscript, it was only used to evaluate and validate the regional distribution model of permafrost.

Questions 7,

Conclusions: Altitude control on ground temperatures in steep mountains is a trivial fact.
The conclusion will be deleted after it was reviewed.

Questions 8,

Conclusions about latitude or shading are not supported by the model presented, since it has a questionable theoretical basis, a data basis that is insufficient and no evaluation. Similarly, the statistical characterization of the investigated basin using this model are of little value.

For the effects of latitude or shading, four points are not enough to construct a model. However, the first-stage work has finished and the data were all. Maybe in the future work, more data will be obtained and the basis of the models can be improved.