

Response to Referee #2

RE: Comprehensive evaluation of typical planetary boundary layer (PBL) parameterization schemes in China. Part II: Influence of uncertainty factors

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Q1: My only one question is about the vertical resolution of the meteorological sounding data below 2000 m. The modeling validations of vertical resolution are compared with the meteorological sounding data below 2000 m. If the vertical resolution of sounding data below 2000 m is too coarse for the both sensitivity experiments from 21 to 35 levels below 2000 m, please modify the relative conclusions on the effect of vertical resolution on modeling.

R1: Thank you for your positive comments and valuable suggestions to improve the quality of our manuscript. It is true that the two vertical resolution settings, 21 and 35 levels, are coarse compared to the observed data, but the uncertainty analysis here focuses on how much further refinement of the vertical resolution in the model affects the uncertainty in the model results. And in the process of comparing the results of the model with the observations, the heights of the selected observations and the heights of the model layers are in one-to-one correspondence. It is certainly possible to set a finer vertical resolution in the model, which is undoubtedly a great challenge for computer resources. According to the

current conclusion, the addition of 14 levels below 2000 m does not have a great impact on the improvement of the model results, but the computational resources and data storage have increased a lot compared with the previous ones. Therefore, in the results of the current sensitivity experiments, the conclusion is applicable to the present comparison.