

## ***Interactive comment on “WRF simulation of a precipitation event over the Tibetan Plateau, China – an assessment using remote sensing and ground observations” by F. Maussion et al.***

**Anonymous Referee #2**

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General comments:

In the manuscript, the authors evaluated the capability of WRF model in reproducing the snow and precipitation over the Tibetan Plateau, China. This topic is very interesting, and is important to numerical weather forecasting over TiP region. However, the numerical experiment designed in this study is not suitable, and the results are not quite convincing. It is recommended for publication after major revision.

Specific comments :

1. The authors intent to evaluate the performance of WRF model over Tibetan Plateau, C1739

especially for precipitation. But they only use one special case in the manuscript. The general conclusion can not be drawn by one case, especially over Tibetan Plateau with complex topography. It is suggested to statistically evaluate the long-term simulations, such as one year or at least three months. And it should include some heavy precipitation events, and some light precipitation cases.

2. The WRF model is performed with 3 nested domains (30, 10, and 2km). But the authors did not discuss much about the performance of WRF2, only in section 3.3. It should be very interesting to analyze the model performance at such high resolution. And I suggest to compare the time-series and diurnal cycle of precipitation between WRF output and observation.

3. I am not so clear about the comparison of snow data between WRF output and MODIS. First, how to define the snow amount and snow cover from WRF output? Second, Why the threshold values are so different from the same WRF10 experiment but just over medium and small domain (Figure 4.)? The authors get the 7mm threshold from the best HSS score of WRF10, so how about the threshold for WRF30 and WRF2? I do not think that this threshold is physically reasonable.

4. As to the influence for model physics, only precipitation and snow scores are used to evaluate the impact of different model physics on WRF simulations. More statistical evaluation should be done. It is very interesting that the thresholds of snow from HSS max vary largely among different physical schemes, especially for WRF2 experiments. Are there any physical reasons to explain it?

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