

Interactive comment on “Precipitation measurement intercomparison in the Qilian Mountains, Northeastern Tibetan Plateau” by R. Chen et al.

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Comments: At beginning, I do not agree to first sentence of abstract "Systematic errors in gauge measured precipitation are well-known but no reports have come from the Tibet Plateau"! Yes, it is important issue, but there have a lot of reports on bias correction in Tibet. It is clear that we may not able perform experimental observation at everywhere on the world, but we could correct bias employ the procedure recommended By WMO, in which the correlation of various loss to the climatic parameters have been dressed. What we should pay attention is that classification of precipitation

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type, say rain, snow or mix, that formulas is deal to be local due to it relating to the geophysical condition.

Answer: Thank you very much for your good revisions. 1) The sentence "Systematic errors in gauge measured precipitation are well-known but no reports have come from the Tibet Plateau" is really not accurate. There is no contrastive field experiment using DFIR as referee in the present literature, but there has built up some DFIR in recent years at some sites (for rainfall, the PIT has also been used and reported in Tibet in the past years), and there are several reports on bias correction by using the WMO equations. We will correct the related description. 2) The WMO equations should be revised locally. The reviewer 1 has advised us to use and revise these equations. We will try them out.

Comments: Had reviewing the present manuscript, the recommended procedure was clarified. It is fine we could improve the result. However, the formulas for classification of precipitation type, the result published on 1999 still using, that should be improved using local observation result.

Answer: For classification of precipitation type, in the past, we have used the two critical air temperature method like: (1) $T_0 < T_s$, $P_s = P$; (2) $T_0 > T_l$, $P_l = P$; (3) $T_s < T_0 < T_l$, $P_s = (T_0 - T_s) * P / (T_l - T_s)$, $P_l = P - P_s$. Where T is the air temperature, P is total precipitation, Suffix 0 , s and l means the actual, critical value for snowfall and critical value for rainfall, respectively. However, the T_s and T_l varies largely in spatial and temporal. On daily scale, we have acquired these two values by using statistical method and measured data all over China (J. Mt. Sci. (2014) 11(4): 917-925). On hourly scale, based on our limited field observation in Qilian mountains, the critical values for classifying snow, mix and rain is about 0 and 3C . Because the precipitation events are limited in this paper, it is difficult to get the critical values for classifying precipitation into snow, mix and rain. It needs large amounts of precipitation event which occurs when the air temperature is around the critical values. Therefore, in this paper, we will try your advices and at last may not give the new methods to classify the precipitation into snow, rain and mix, and

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may just use the observation facts.

Comments: Thereby, I would like to recommend the manuscript to published after major revision.

Answer: Thank you very much for your recommendation. We will add new observation data till April 30 2015 and revise this paper according to your and other's comments. Now we are using the new data to revise the paper according to your and the first reviewer's advices. The new result will appear in the revised version. If it is necessary, we will upload the new results relating to all the comments by using table, figure or equations, when the new results appear. Here is just the rapid reply.

Interactive comment on The Cryosphere Discuss., 9, 2201, 2015.