

## ***Interactive comment on “Evaluation of GPM IMERG Early, Late, and Final rainfall estimates with WegenerNet gauge data in southeast Austria” by Sungmin O et al.***

### **Anonymous Referee #1**

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Evaluation of GPM IMERG Early, Late, and Final rainfall estimates with WegenerNet gauge data in southeast Austria by Sungmin O et al.

The comparison study provides very useful information regarding the performance and issues of GPM IMERG products at the pixel level. Such high-density gauge network is very rare around the world for ground validation (GV) and the results should be very interesting not only for algorithm developers but also for other researchers and application users. The manuscript is well written and the research was well planned. However, I do have some concerns and questions that could improve the manuscript. For such reason, I recommend some major revisions are needed.

C1

#### Major issues:

Fig. 2 is very useful to characterize the uniformity of gauge rainfall measurement. Is that possible to expand the rain rate above the current  $\sim 0.16$  mm/30-min?

In Figs. 7 and 8, is it possible to add the analysis for PMW-based and IR-based rainfall estimates by using HQprecipitation and IRprecipitation data that come with the three datasets (E, L, and Final Runs) and quantify the contribution from the two (PMW and IR) measurements? The co-author, J. Tan, has done such work before. So far, the conclusion was only based on the work done by others.

What can we do to correct the large positive biases in E and L Runs datasets since gauge data are not available at the time when the data are available?

The discussion part on some issues is missing. For example, are the results unique to Austria or can be applied to other places? It would be nice to discuss and compare your results with other studies that are already published. Major differences between v03 and v04 need to be discussed since v03 is obsolete. Morphing algorithm refinement, etc.

#### Minor:

Abstract: Please add the version number of the IMERG products to avoid confusion when new version is released in future. I assume it is Version 03.

P2. Line 5. Would be nice to add a description about the differences between the 3 IMERG datasets (E, L, and F runs) from the algorithm point of view in case readers are not familiar with these datasets.

Figure 1. What is the red dot in the map? Does it contain the two grids in red?

P3. Line 21. landslides => landslide?

P4. Line 1. Why? Any comments on the no major change?

C2

Figure 2. What time period? It is not clear.

Table 1. Why don't have two seasons (warm and hot) for comparison?

P4. Line 27 the units are needed for 0.05

P. 6. Lines 12-17. Would be nice to give some weather conditions for both warm and hot seasons such as average surface air temperatures.

P. 8. Line 80. Any analysis on PMW observations? All datasets contain such parameters. I don't see any analysis here.

P. 9. Line 12. Why the time offset begins from -20 min not -60 min?

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