

Interactive comment on “Precipitation estimation over radar gap areas based on satellite and adjacent radar observations” by Y.-R. Lee et al.

Anonymous Referee #1

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General comments:

This paper presents a merging method of radar and satellite QPE for gap area. The idea is inventive and describes the objectives of the research well, but the manuscript is not organized well and some sentences are repetitive. There are also some significant problems that evaluation of a proposed algorithm is very weak. This paper can be accepted with some major technical modification.

Specific comments:

1. At line 13 of page 6304, it is mentioned “. . . time span of approximately one hour prior to the designated retrieval time”. But 1.5 hour and 2 hour prior data are used for test (Table 1). Is there any reason?

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2. At test data of table 1, time differences of prior database are very different. some case time difference are 10 or 15 min and some are 30 or 40 min. Is there any reasons for different time step?
3. At Line 26 of page 6304, “. . . have a smaller weight than the matched one. . .”. How much is smaller? Please define “smaller” with quantitative values.
4. At Figure 3, could you let me know why 6.7 mm is very different with other channels? And why in case of greater than 40 mm/hr it is fluctuating?
5. Original radar rain rate and rain rate merged with satellite or AWS data are compared. For this evaluation, first original radar rain rate and AWS comparison should be performed. This comparison will provide understanding of how much original radar rainfall and AWS rainfall are biased or scattered.
6. At figure 10, twelve cases are compared here. But they are not explained anywhere. Are these cases are different with previous four cases?

Minor comments:

1. Line 6-7 of page 6303, it will be better to use “southwestern” than only “west”.
2. Eq(2), eq(3) and eq(7) use same character for weight. But it make confusing. It will be better to use different character.
3. Line 23 of page 6309, terminology, “radar rate” is not proper for radar based rain rate estimation.
4. Figure captions are not described properly. Some figures have (a),(b),. . . , but at caption they are not explained (ex, figure 4) and vice versa (ex, figure 8).
5. At figure 5 caption of page 6320, “Scatter . . . of the radar observed (???) and satellite . . .”, “observed” may be not proper.
6. Figure captions 6-10 have same issue. The terminology, “observed” or “observation”

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is not used for rain rate. Typically the terminology, “estimated or estimation” is used.

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