The article presents a 3DVAR assimilation scheme for w, which appears reasonable and has a positive impact based on results from a heavy-rain event and a 10-day batch experiment. However, there are some doubts:

1.From the batch experiment results, it was found that w assimilation has a small impact on the forecast. However, in the case study where w was assimilated in a cyclical manner, it led to significant improvements in the forecast. It is suggested that the authors also set multiple w assimilations in the batch experiment section.

2.As mentioned by the author, some studies assimilate w from total lightning data. In this article, however, the w observations are derived from radar reflectivity data. It is unclear how the authors obtained at the approximate magnitude of the w values using this method. In addition, were the authors able to compare the radar reflectivity-derived w with the w of the model background field to determine any differences in magnitude between the two values? If there is a significant difference, it may be necessary to remove the larger w values during the assimilation process.

Some minor revisions are as follows:

Page 1:

Line 21: Change “the result indicates” to “the results indicate”.

Line 22: The statement “leading to improved equitable threat score (frequency skill score) for the first 1 h (3 h) precipitation forecasts” may cause confusion, please describe it in detail.

Line 23: Change “assimilated” to “assimilation”.

Page 2:

Line 36: Change “allows they” to “allows them”.

Line 41-42: Delete “of vertical velocity”.

Line 48: Add “s” to the word “field”.

Page 3:

Line 75: Delete “real”.

Lines 89-91: This sentence is quite difficult to understand. I suggest that it be described simply and clearly.

Line 92: Delete “to assimilate w observation directly”.

Line 96: Add “s” to the word “adjust”.

Page 14：

Line 279: Change “wish” to “wishes”.