In this study, the authors present a Data Assimilation (DA)-hydrodynamic modeling framework where multiple gauge observations are integrated into the LISFLOOD-FP model to improve the performance of flood inundation mapping. The results indicate that the multivariate assimilation of point-source observations into hydrodynamic models can improve the accuracy and reliability of probabilistic flood inundation mapping by 5-7% while it also provides the basis for sequential updating and real-time flood inundation mapping. This paper is well written, well-organized and has practical meaning for inundation mapping, risk analysis and decision making. I have some minor comments for the authors to improve their paper.

Line 168: Xu et al., 2017 is used as a reference. However, this paper is not listed in the bibliography.

The text (e.g. names of counties and states) in Figure 1 is blurred. Please improve it.

Line 292-295: The channel roughness and bathymetry are two model parameters (l=2) and three point source observations including water discharge at gauge 1 and 2 as well as water stage at gauge 2 (n=3) are assimilated into the LISFLOOD-FP model (Table 1).

In Table 1 (Line 374), the summary of performance measures used in this study is presented instead of the assimilated observations. Please correct it.

In addition, the water discharge at gauge 1 and 2 as well as water stage at gauge 2 (n=3) are assimilated. The authors could also assimilate the water discharge and the water stage at gauge 1, 2 and 3 to further improve the performance. Is the data available?

Figures 6 & 7: the two figures presented the comparison between OL and EnKF. It would be better to add the real inundation map in the third column of the figures.

Line 542-545: Here, we used the EnKF data assimilation method in conjunction with a hydrodynamic model to account for different sources of uncertainties involved in different layers of model simulations, including the boundary conditions, model parameters, and initial condition, and generate real-time probabilistic flood inundation maps.
It is nice to consider different sources of uncertainty here. How the uncertainty fluctuates with ensemble size and error settings?

Figure 4: it would be better to add the predictive interval of open loop.

Line 112: the following paper may be a good reference for the SMAP soil moisture data assimilation.
Xu et al. Continental drought monitoring using satellite soil moisture, data assimilation and an integrated drought index. Remote Sensing of Environment, 2020, 250:112028.