Dear reviewer,

Thanks a lot for your great efforts to read through this paper and give very valuable comments. Here we have addressed the comments from you and the detailed description is attached in this document.

Best regards,

Qian Zhu, Xiaodong Qin, Dongyang Zhou, Tiantian Yang, Xinyi Song

Point 1: Line 66: "the study"-> "they".

Response 1: Thank you for your suggestion. This sentence has been re-edited:

Page 3 Lines 65-68: 'Su et al. (2020) assessed the IMERG products at multiple spatial and temporal resolutions by upscaling, and they summarized that degrading the spatio-temporal resolution improves the accuracy of IMERG products.'

Point 2: Line 124-127: The structure of these two sentences is suggested to be revised. The conjunction "so" in the beginning of the second sentence may be unclear.

Response 2: Thank you for your suggestion. This sentence has been revised:

Page 5 Lines 125-127: 'Concentrated storm events during the flood season cause frequent floods throughout the basin. Since the Xiang River basin is the most densely populated and economically developed area in Hunan Province (Zhu et al. 2020a), it is critical to accurately simulate and predict flood events in the region for effective flood risk management.'

Point 3: Line 139: "(hereafter CMA)" needs to be put behind "China Meteorological Administration".

Response 3: Thank you for your suggestion. This sentence has been re-edited:

Page 6 Lines 140: 'A precipitation product released by China Meteorological Administration (hereafter CMA),'

Point 4: Line 185: the reference "(AghaKouchak et al. 2013)" should be located behind the "HBV model".

Response 4: Thank you for your suggestion. This sentence has been re-edited:

Page 8 Lines 186: 'A lumped version of HBV model (AghaKouchak et al. 2013) is used in this study,'

Point 5: Line 230-233: please pay attention to the format of the variables, such as xt, and t.

Response 5: Thank you for your question. I am sorry for our carelessness; the format of the variables has been corrected:

Page 10 Lines 232-234: 'The inputs for the complete sequence $x = [x_1, ..., x_n]$, where x_t is a vector containing the input features of time t, and the dimension of the x_t corresponds to the number of grids of the precipitation data. The outputs for the complete sequence $y = [y_1, ..., y_n]$, where y_t is the streamflow of time t.'

Point 6: Line 268-269: please explain how the eleven historical flood events are selected.

Response 6: Thank you for your question. ***In 2.2 Data description***, we have explained how we choose flood events: "Fig. 2 shows the time series of the hourly streamflow and corresponding gauge-based precipitation between 2015 and 2017, where eleven historical flood events are selected with flood peak exceeding the threshold of 8,600 m^3/s in this study."
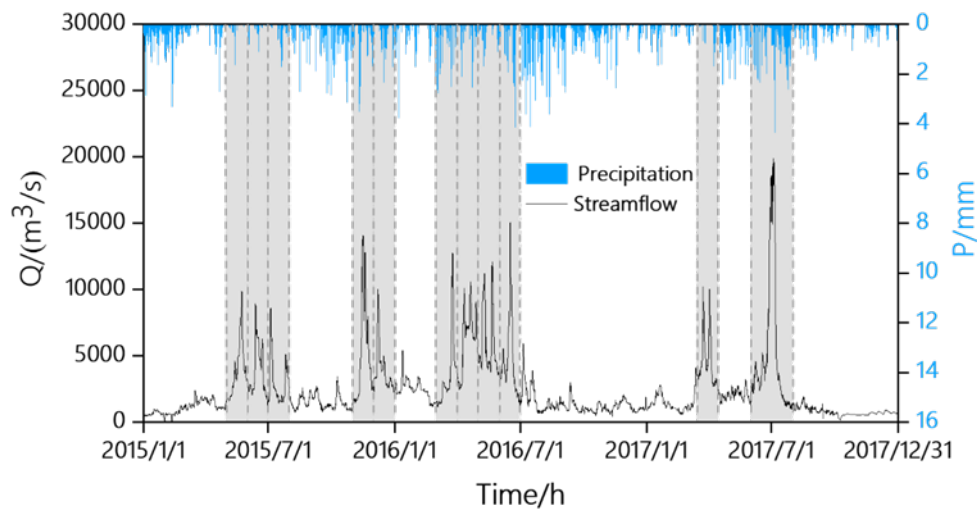
Fig.2. Time series of observed hourly streamflow in Xiangtan station and basin-average precipitation from CMA, with eleven selected flood events covered by shaded areas.

Point 7: Line 338: "as the resolution get coarser"-> as the resolution is coarser or as the resolution gets coarser.

Response 7: Thank you for your suggestion. This sentence has been re-edited:

Page 14 Lines 339-340: 'The performance of IMERG-F gets worse as the resolution is coarser,'

Point 8: Line 350-352: "However, the uncertainty of NSE, KGE and BIAS-P values of flood events simulated with IMERG is decreasing as the spatial resolution." As the spatial resolution what? finer or coarser?

Response 8: Thank you for your question. We are very sorry for the difficulty in reading. This sentence has been re-edited:

Page 15 Lines 352-354: 'However, the uncertainty of NSE, KGE and BIAS-P values of flood events simulated with IMERG decreases as the spatial resolution is finer.'

Point 9: Line 365: in most instances -> in most cases.

Response 9: Thank you for your suggestion. This sentence has been re-edited:

Page 16 Lines 366: 'The mean NSEs of LSTM are higher than 0.7 in most cases,'

Point 11: Line 407-408: "the same results" means the results are exactly the same, does that what the authors indicate? Otherwise, the same results -> the comparable/similar results or the results are almost the same.

Response 11: Thank you for your suggestion. This sentence has been re-edited:

Page 18 Lines 408-409: 'However, the CMA shows the similar results under two different calibration strategies in SWAT-based flood events simulation.'

Point 12: Line 417-418: the calibration strategy II is an effective way for training the LSTM model to obtain the best flood events simulation results -> the calibration strategy II is an effective way to train the LSTM model to obtain the best flood events simulation.

Response 12: Thank you for your suggestion. This sentence has been re-edited:

Page 18 Lines 418-420: 'When comparing the two calibration strategies, the calibration strategy II is an effective way to train the LSTM model to obtain the best flood events simulation.'

Point 13: Line 430: performs -> perform.

Response 13: Thank you for your suggestion. This sentence has been re-edited:

Page 19 Lines 431: 'The SWAT and DHSVM model driven by IMERG perform similarly under different spatial resolutions,'

Point 14: Line 431: please delete the "results". And please check the whole manuscript for this issue.

Response 14: Thank you for your suggestion. This sentence has been re-edited:

Page 19 Lines 432: 'which is consistent with previous research (Lobligeois et al. 2014, Huang et al. 2019),'

And we have checked the whole manuscript for this issue as you suggested. Thanks.

Point 15: Line 440: larger data set -> larger dataset. Isn't the "Fig. 9" shall be colored red to be consistent with other figures?

Response 15: Thank you for your suggestion. This sentence has been re-edited:

Page 19 Lines 440: 'which indicates that a higher spatial resolution (larger dataset) can improve the performance of flood events simulation.'

We have changed the color of Fig. 9 to make it consistent with other figures.:
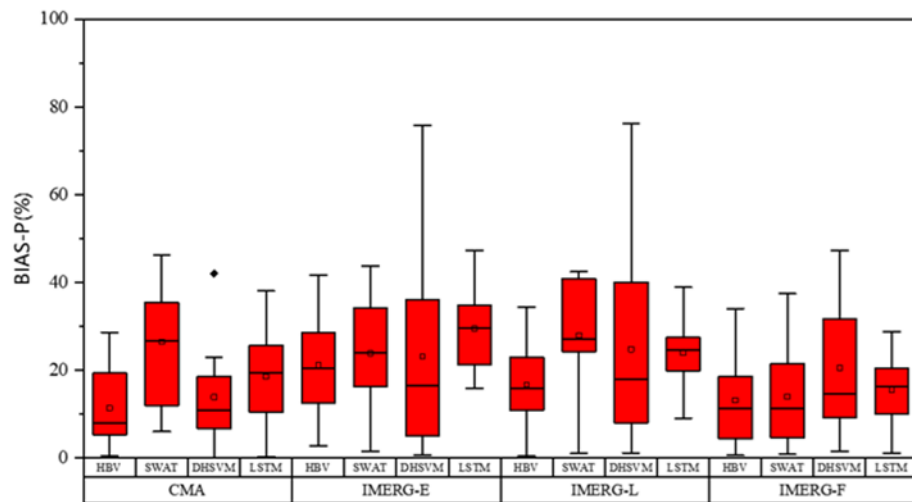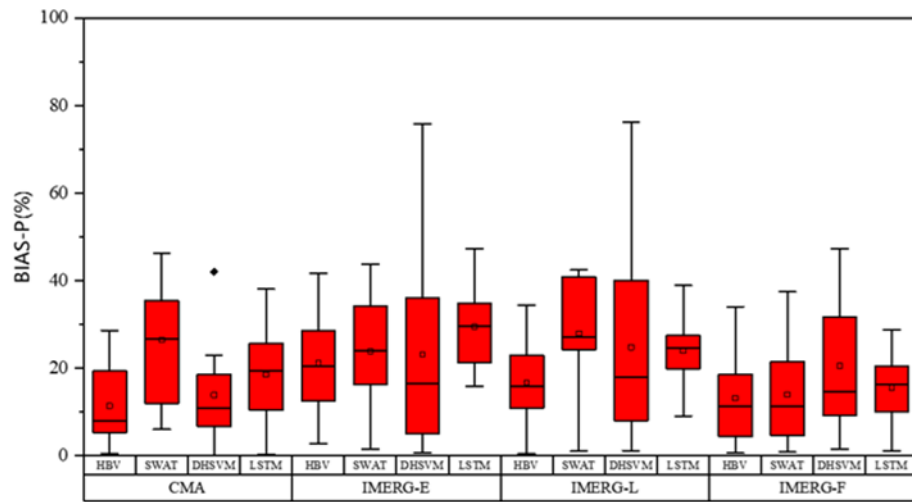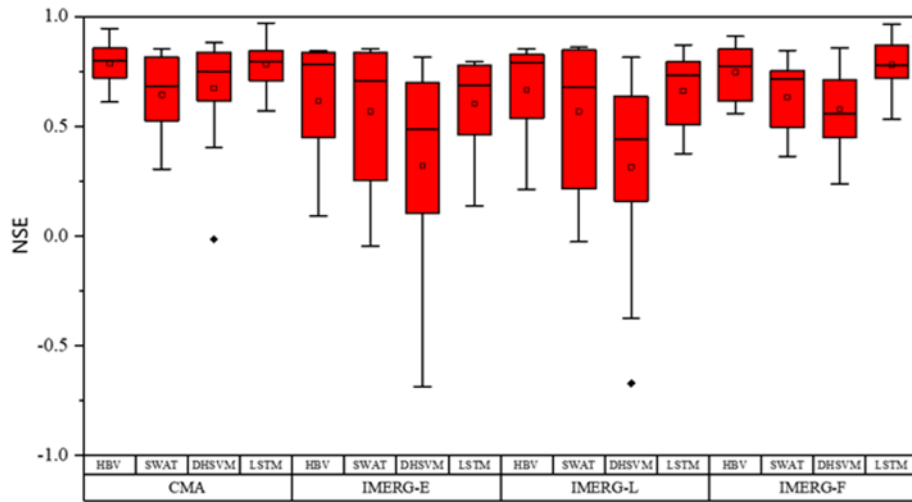
Fig. 9. The (a) NSE, (b) BIAS-P and (c) KGE of flood events simulation forced by CMA, IMERG-E, IMERG-L and IMERG-F using calibration strategies II. The box plots show the 25th, 50th, and 75th percentiles, and the mean value is given and shown by a square.

Point 16: The colors used in Fig.10 are not so easy to distinguish.

Response 16: Thank you for your question. We are very sorry for the difficulty in reading. We have changed the color of Fig.10 to make it easier to distinguish:
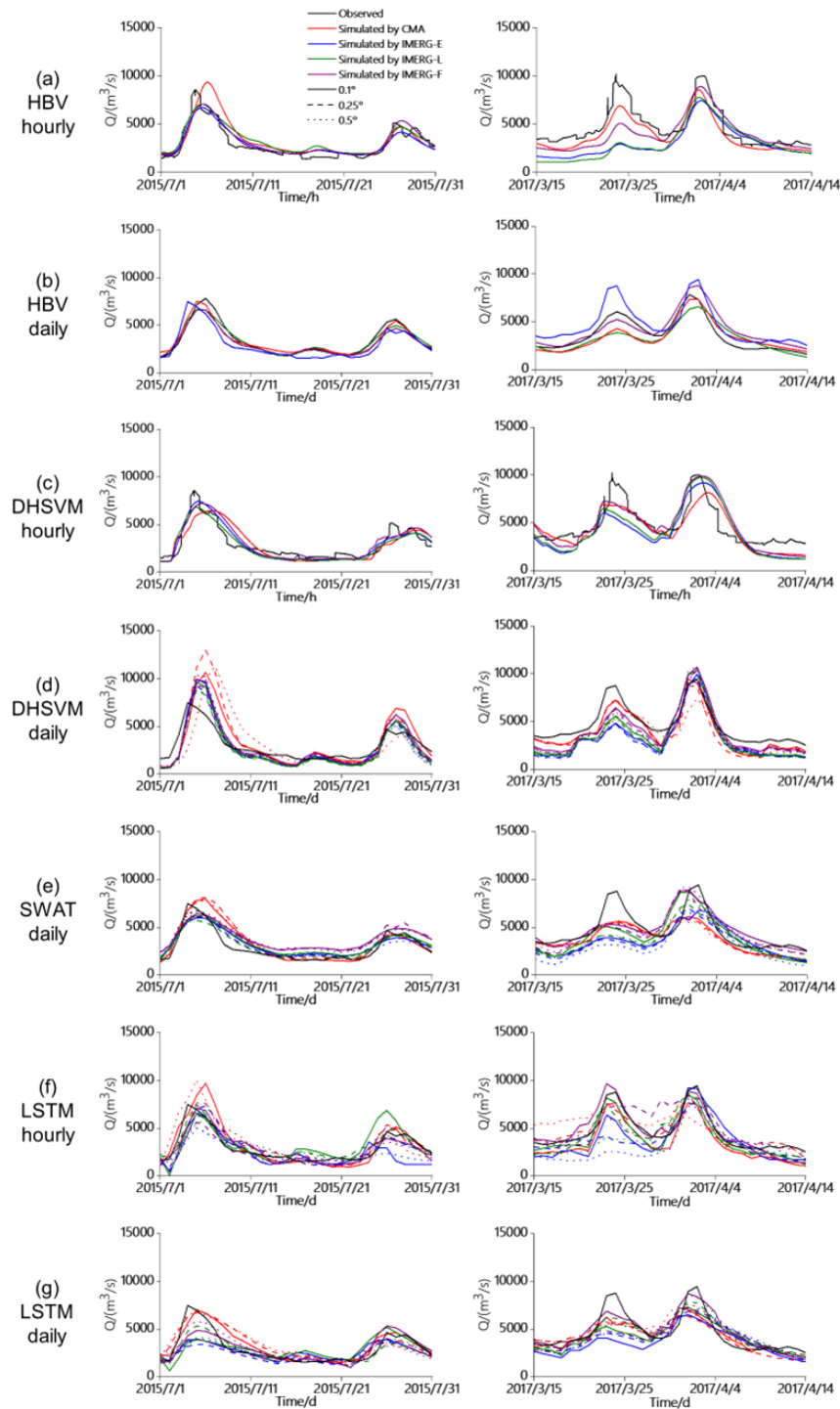

Fig. 10. Comparison of HBV, SWAT, DHSVM, and LSTM based flood events simulation from July 1st, 2015 to July 31th, 2015, and from March 15th, 2017 to April 14th, 2017 forced by CMA, IMERG-E, IMERG-L, and IMERG-F with different spatio-temporal resolutions.

Point 17: Same issue of Appendix C, and please refer to the comment #15

Response 17: Thank you for your question. We are very sorry for the difficulty in reading. We have changed the color of Appendix C to make it consistent with other figures.:
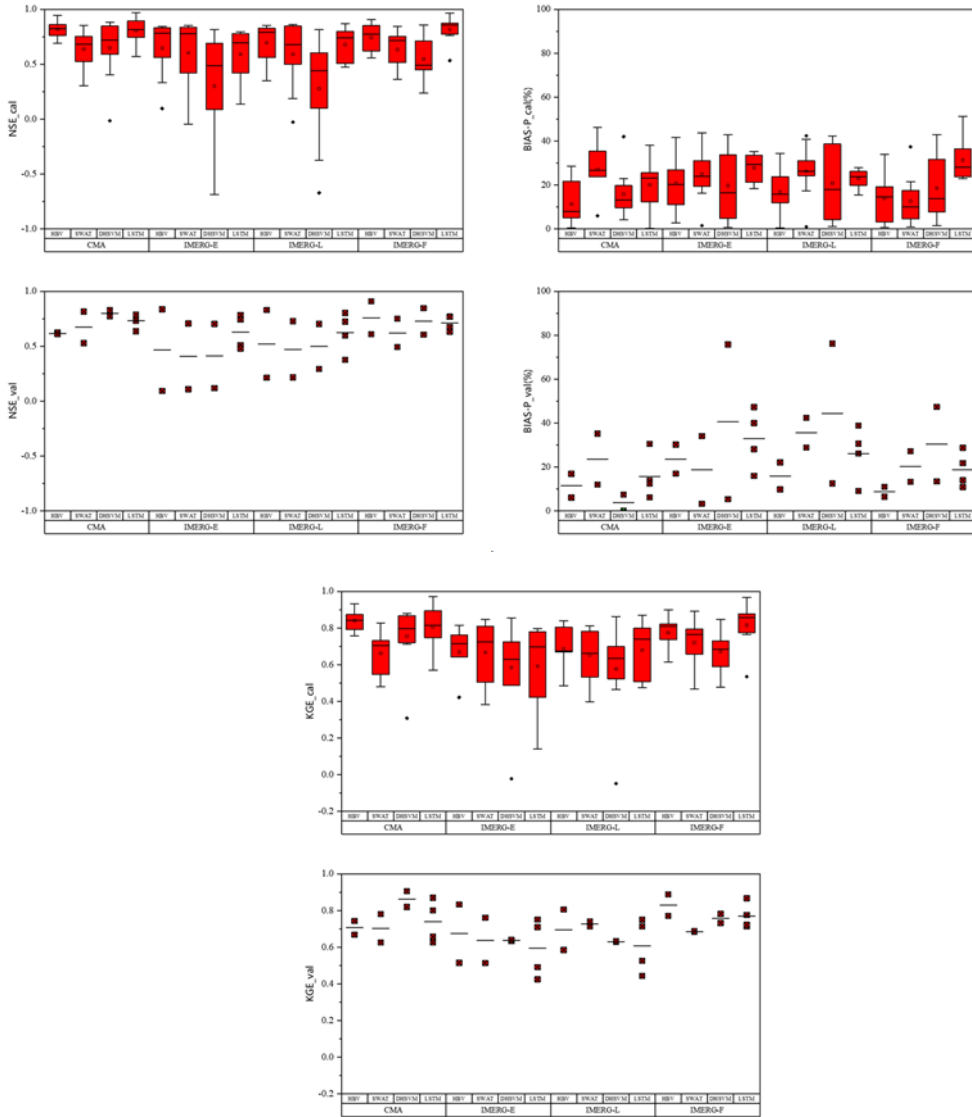

Fig. C0. Same as Fig. 9, but the results in calibration and validation periods are separated