EGUsphere-2025-2081 Review comment:

Title of Manuscript:

Integrating SMART principles in Flood Early Warning System Design in the Himalayas

Reviewer Comments and Suggestions for the Authors:

The paper addresses critical societal and scientific problems which is important to enhance flood early warning system. The authors have conducted a thorough review of related documents, and considering the local community's inclusiveness and participation through various techniques, as well as the involvement of stakeholders in the current study, is vital. However, there are many editorial corrections; the authors should review the manuscript to improve the coherence, consistency, and the overall paper quality. The following comments and questions are provided to the authors to improve the final document.

Abstract:

- Line 15: we employ the SMART principle… It is important to define abbreviations when first used. What is SMART? Please also consider the same comments for all abbreviations and acronyms as well.

- Line 19: Monitoring reveals that during a monsoon month, a 187 mm difference in rainfall… this sentence is not clear, rewrite the whole statement. Is this 187 mm difference, seasonal or monthly record? I think there is monsoon season not monsoon month.

- Line 23: secondary datasets failed to accurately capture the magnitude and heterogeneity of precipitation patterns,… what are the secondary datasets? It is good to disclose them if possible.

Introduction:

Improve this section to make it more consistent and coherent.

Line 61: Furthermore, there was a significant increase in global urban… you should use a more recent estimated data…(UN, 2011) is too old for such information.

Line 74: …to detect and predict FFs … Define abbreviations when first used FFs? And once defined use the short form consistently throughout the document e.g., Flood Early Warning Systems (EWS) used multiple time, such as Line 71, 76 and 96 correct it.

Line 100: We hope this study's findings will contribute… better if this sentence is modified in such way: The findings of this study is anticipated to contribute…

Line 110: *Figure 1 Figure 1:*

Based on Figure 1, the LULC map, it is understandable that the Watershed is urban watershed. Have you considered the effect of urban drainages systems, interactions of urban solid waste on the flood generations?

What is the source and ground resolution of DEM used in this study? As the watershed area is smaller the effect of DEM resolution used for topography analysis in such studies are important.

Line 143: Chandchak Bridge which covers an area of 3.0 km on the right bank and 2.7 km on the left bank….is this area or length/width? Or convert the Unit into km.sq.

Have you used a standard formula or procedure to select sample size of the survey 100? It may be important to indicate it in the manuscript how you decided to select 100 affected participants from the total population of the study area.

Line 155: What is Season diagramming? Is it seasonal analysis of the flood peak? So many new terms.

Line 173: If also achieves a maximum… Correction: It also achieves a maximum.

It is important to indicate the rain gauges and water levels recorders' detailed locational information, preferably in Table X and Y coordinates with altitude and period of data records as well.

Line 211: Performance Evaluation of Secondary Datasets, is it right to say secondary datasets or Global climate datasets? Please refer to use the right term. Remote sensing data are not secondary data.

Table 2 Five levels of flood alerts, their thresholds, and the action required. The Threshold used to define flood alert are very high and narrow ranges as indicated in Table 2. Can you visualize the difference in the flood threshold of 99.99 vs 99.9? Are this threshold economically feasible? Please also review related papers and field experience on this Table 2.

Figure 3 can be presented in a more improved way, with gauging stations, urban colonies and other important map features included in it.

Spatio-temporal variability

For depicting the spatial variability of rainfall over the catchment, it is also important to produce the spatial change in the form of map map-based spatial surface or preferably interpolated map with suitable techniques in addition to Figure 4.

Line 333: The above analysis, which part of the above? Please refer to the Figure or Table. Based on Table 4 Statistical comparison of secondary rainfall (GPM-IMERG and GPM) with observed rainfall, it shows the annual rainfall (mm) GPM 5306.53, and GPM 1495.8 mm significantly varied. Have you made a bias correction or downscaling analysis? It is important to bias correct global databases before application.

Line 383 to Line # 387, the statements are not clear, please re-write them.

In general leaf shaped or elongated watersheds generate less flood peak compared to oval or circular shaped watersheds, other factor kept constant. The current or Bindal watershed is more or less leaf shaped, I also assume that is why the peak flows a bit lagged the peak rainfall event evident from Figure 8. Can you please discuss this issues more based on the result obtained in the current study?