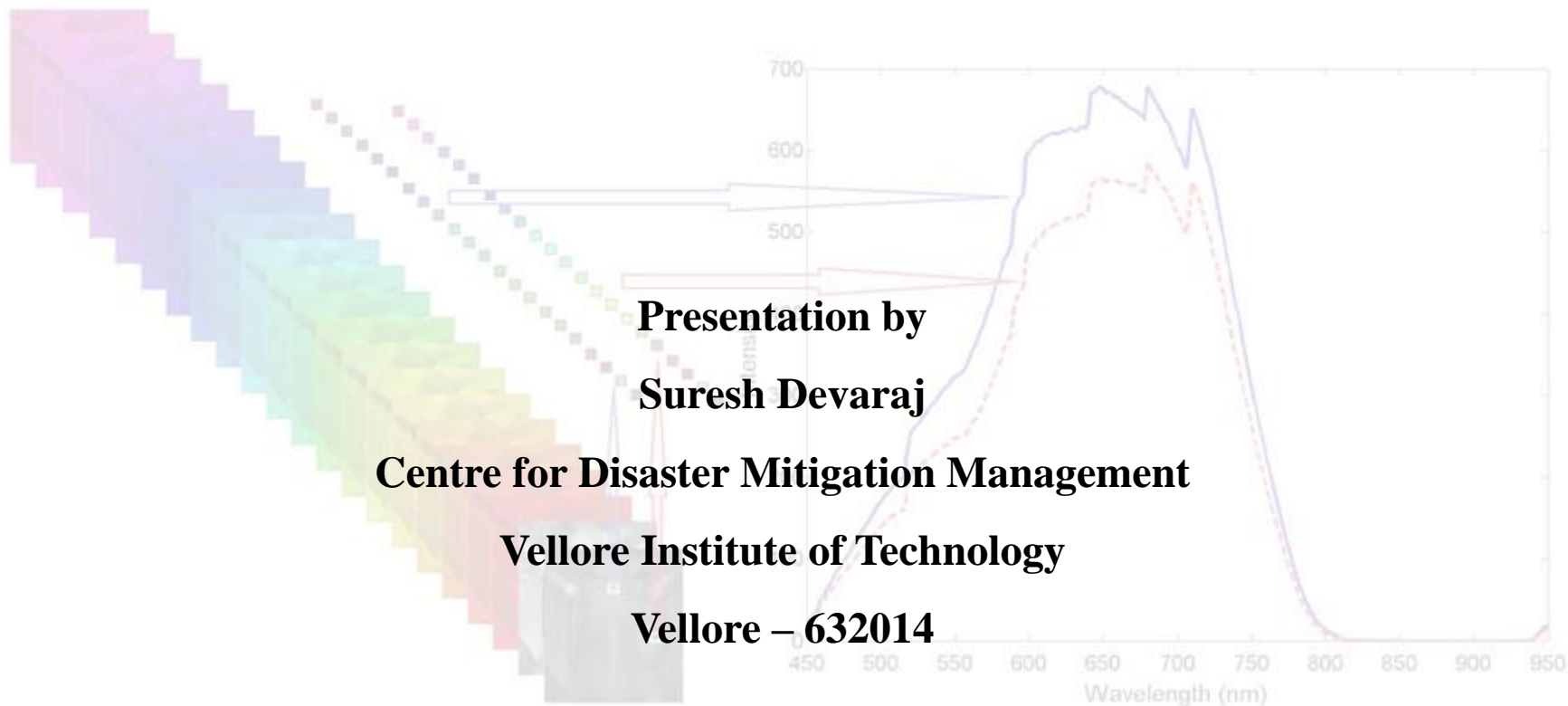




Comparative analysis of INSAT-3D derived precipitation data with IMD data products over Indian Sub-continent





INTRODUCTION



- Rainfall is a key physical process that transports water from the atmosphere back to Earth's surface and links weather, climate, and hydrological cycle.
- Especially for India, precipitation has serious importance in the regional climate, annual crop production, and various disaster events.
- Accurate estimation of rainfall is particularly vital for early warning system of flood forecasting, disaster management and mitigation.



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NEED FOR THE STUDY



- Rain gauge measurements provide the most direct measurement of rainfall, but considering a larger extent their networks are often spatially and temporally limited.
- Satellite rainfall products can potentially play a role in increasing the spatial coverage of rainfall and aiding in near real time analysis during disaster events.





DATASETS

DATA	SPATIAL RESOLUTION (Degrees)	CODE
Indian Metrological Department	0.25 * 0.25	IMD
Hydro Estimator	0.1 * 0.1	HEM
GOES Precipitation Index	1 * 1	GPI
INSAT Multispectral Rainfall Algorithm Technique	0.1 * 0.1	IMR

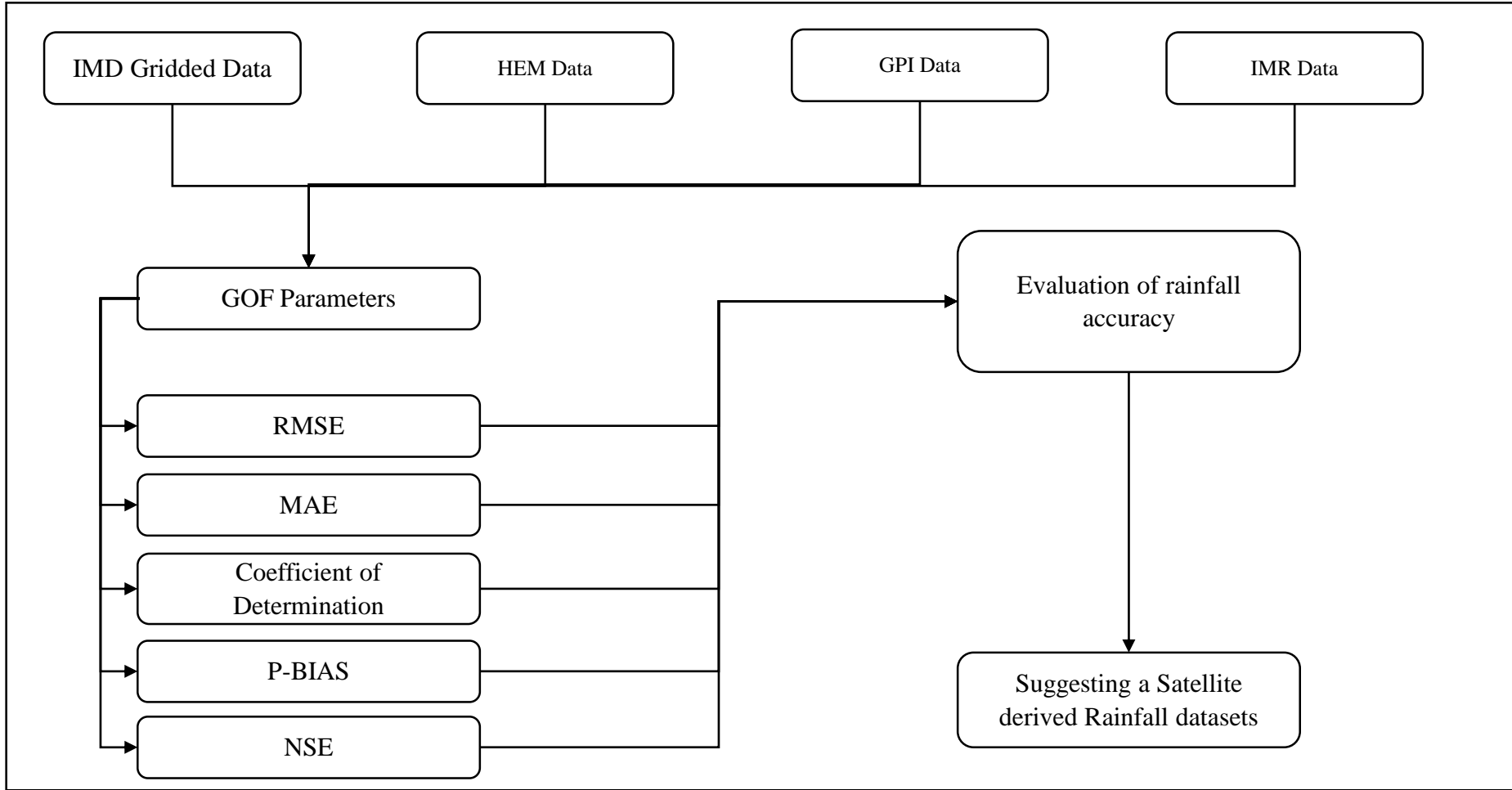


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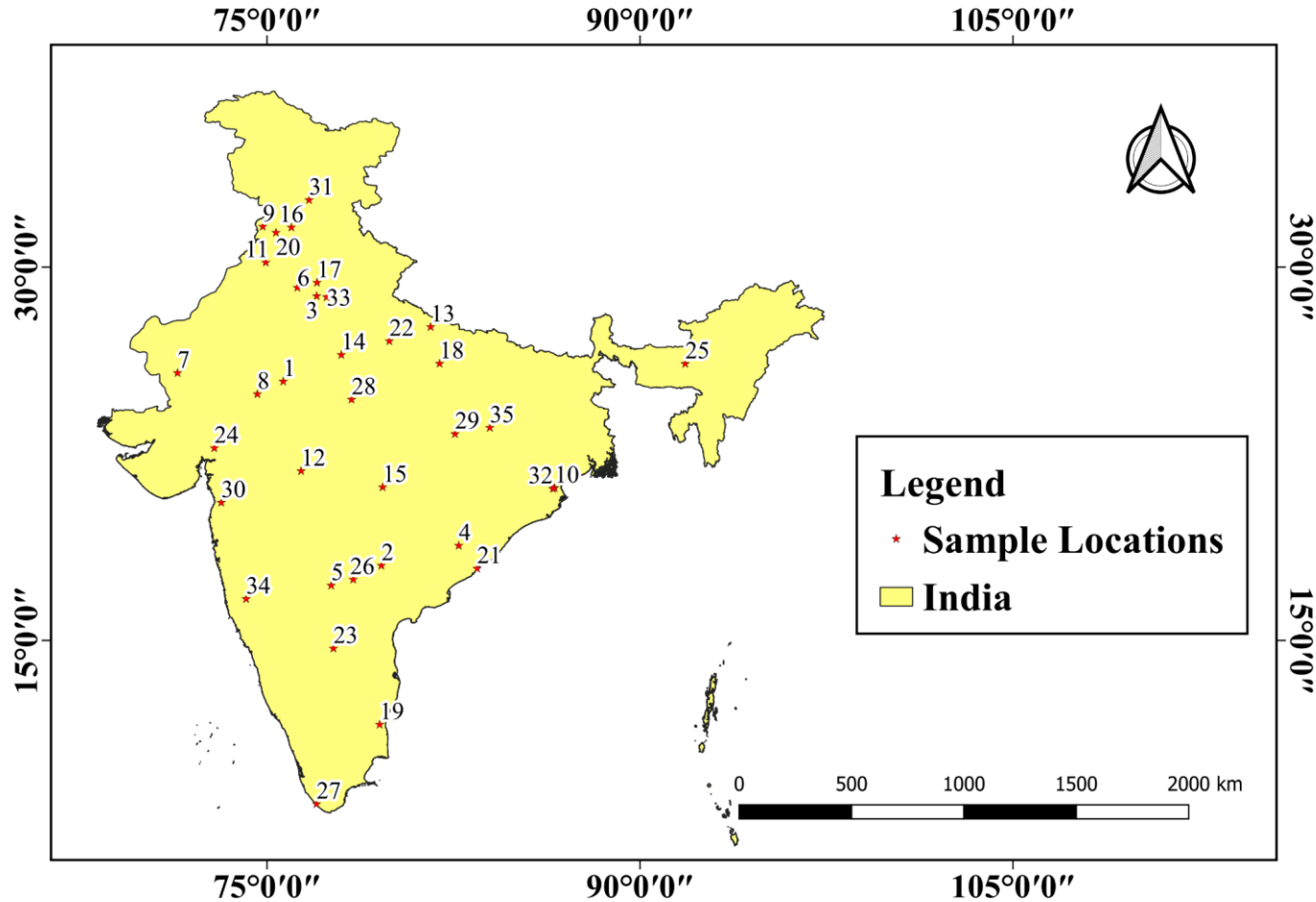
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METHODOLOGY





STUDY AREA



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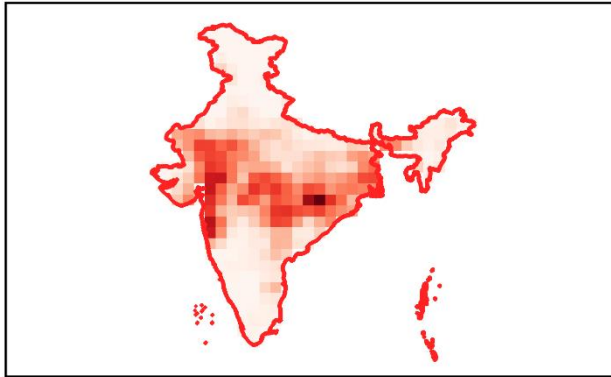
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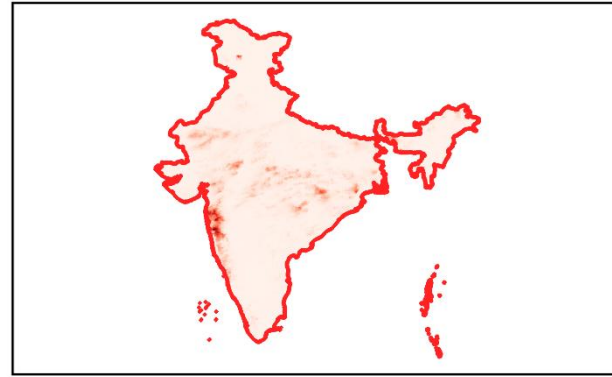


SAMPLE DATASETS

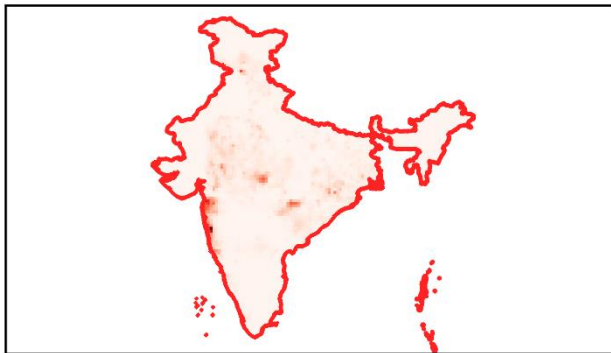
GPI



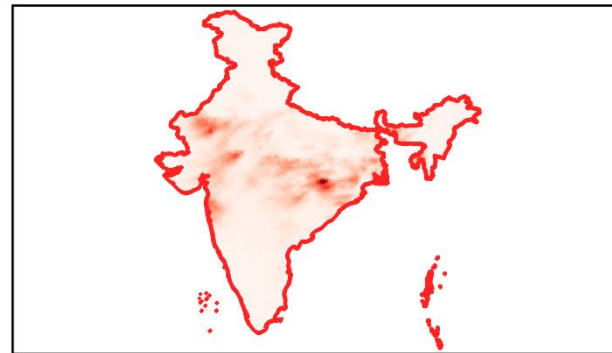
HEM



IMD



IMR



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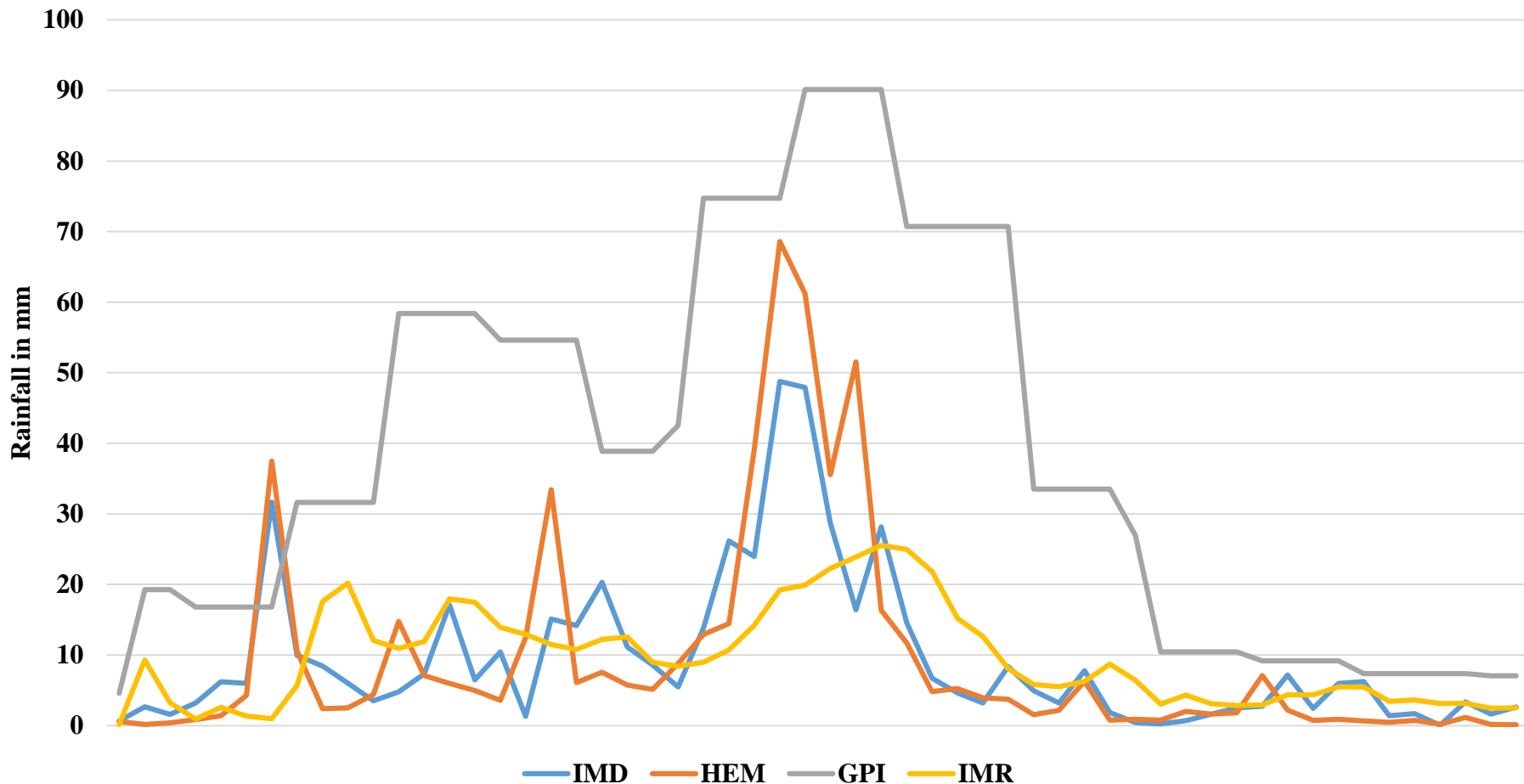
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COMPARISON OF RAINFALL DATASETS



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Comparison of Rainfall wrt to IMD data (Mean of 35 Points)



Parameters	HEM	GPI	IMR
MAE	5.03	29.01	5.86
RMSE	8.02	36.02	9.02
R ²	0.75	0.41	0.3
P-BIAS	1.9	305.3	1.1
NSE	0.44	-10.24	0.3



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CONCLUSIONS

- HEM shows a correlation of 0.75 (mean) which is within the acceptable limit compared to 0.3(IMR) and 0.41(GPI) datasets.
- With the threshold of P-BIAS and NSE within acceptable limit for both HEM and IMR, considering the requirement of satellite based rainfall datasets for near real time analysis, HEM rainfall dataset is recommended as the correlation of the data during peak events is high and during moderate and non peak events it is recommended to use IMR datasets.
- HEM derived rainfall datasets are highly accurate and can be used for rainfall analysis over IMSRA and GPI during disaster events for Mitigation and Management purposes.



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Thank you



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