

Supporting Information for

The changing magnitude and timing of riverine floods in India

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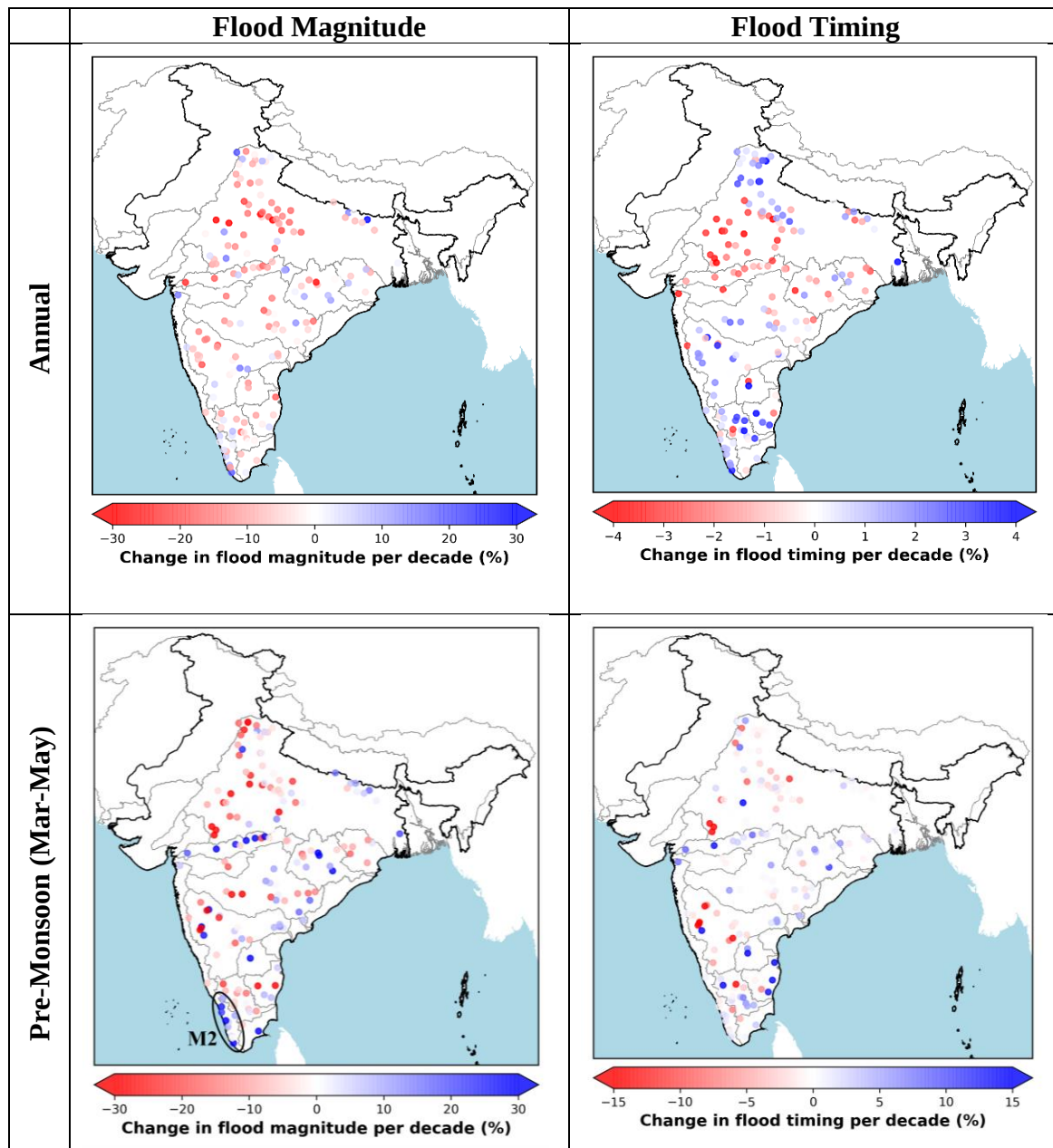
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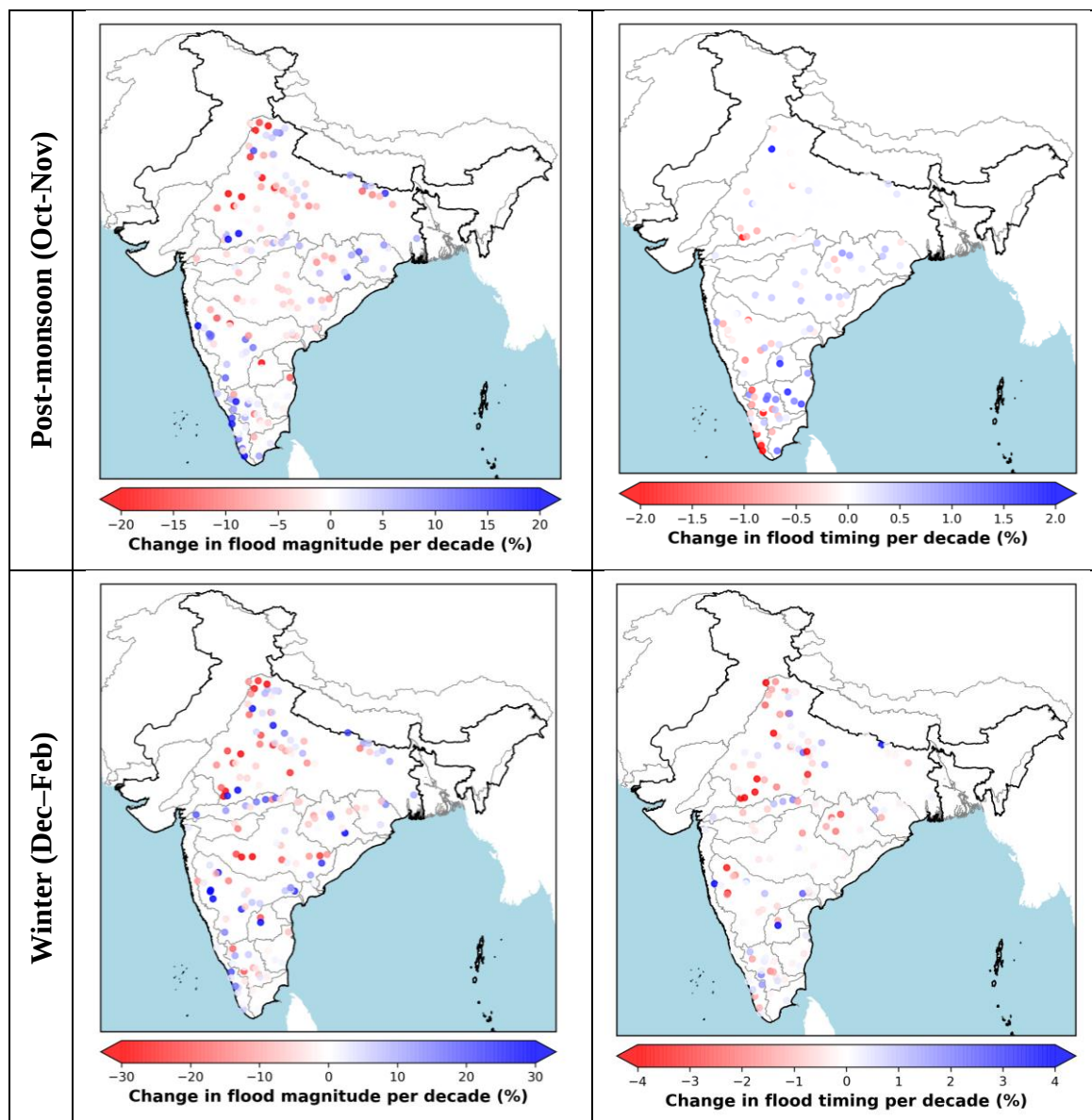
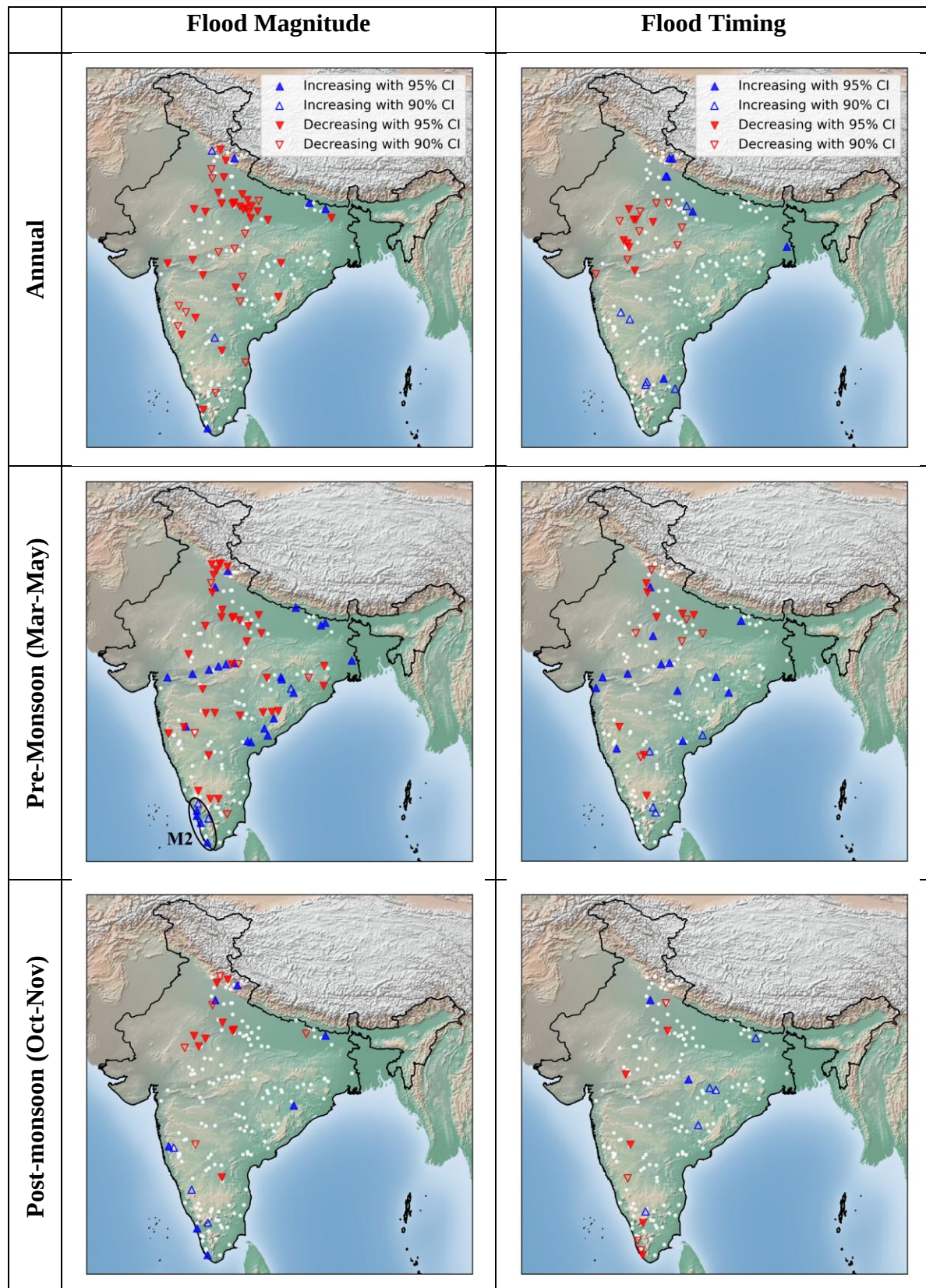


Figure S1: Annual and seasonal trends in flood magnitude and timing between 1970 and 2010 based on the Theil-Sen slope estimator.



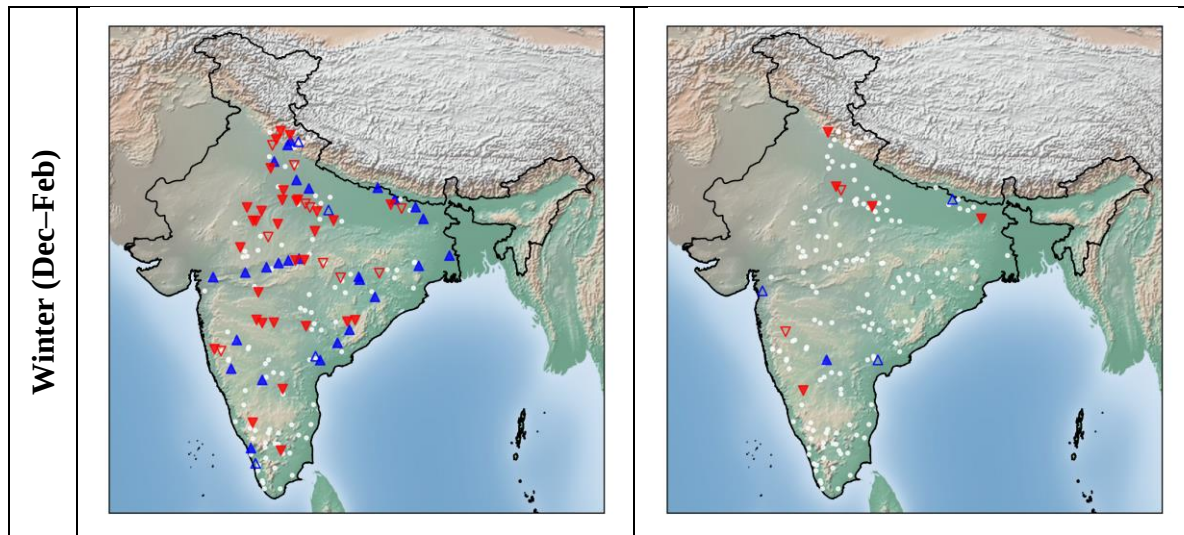


Figure S2: Annual and seasonal trends in flood magnitude and timing between 1970 and 2010 based on the Mann-Kendall test with 95% and 90% confidence levels (CL), i.e., $p < 0.05$ and $p < 0.1$, respectively.

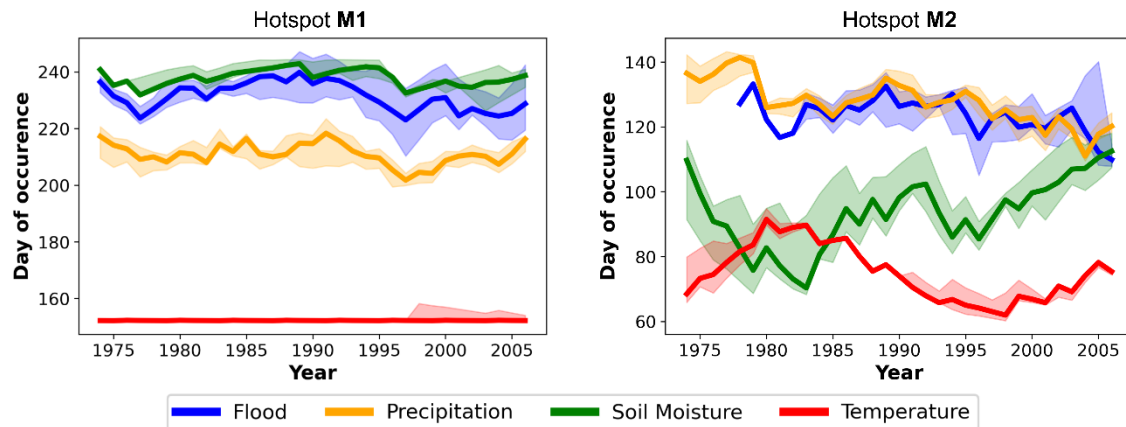


Figure S3: Long-term temporal evolutions of flood timing along with their drivers for hotspots with a clear regional pattern in flood magnitude (Hotspot M1, and M2). The data represents observed floods (blue), peak 5-day precipitation (orange), peak monthly soil moisture (green), and peak monthly temperature (red). Solid lines show the median, and the shaded region shows the variability within the hotspots (25th and 75th percentile). All data were subjected to a 10-year weighted moving average filter.

Table S1: Spearman's rank correlation coefficient (r) between the median of flood timing and their drivers over hotspots of catchments showing a significant trend in flood magnitude.

Hotspot	Timing	
	M1	M2
Precipitation	0.61	0.72
Soil Moisture	0.77	-0.20
Temperature	-0.07	0.05

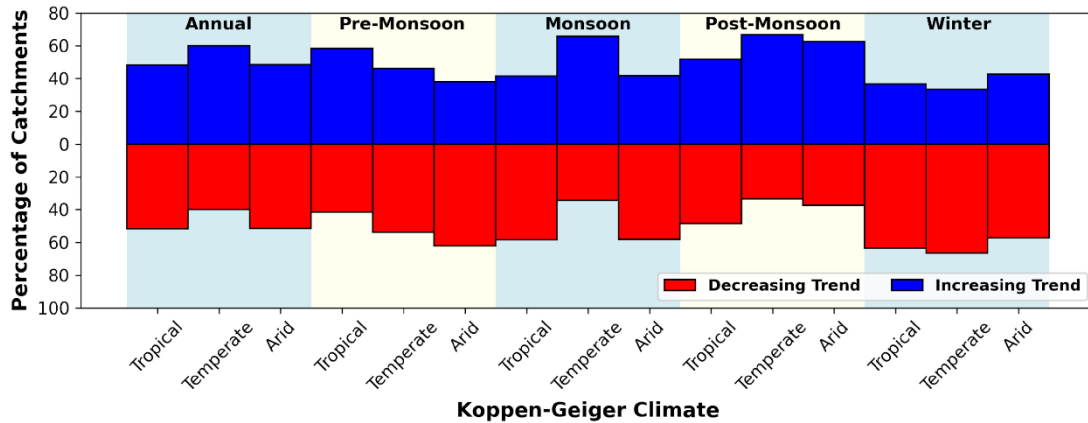


Figure S4: Percentage of catchments with decreasing and increasing trends in flood timing in each climate over different seasons.

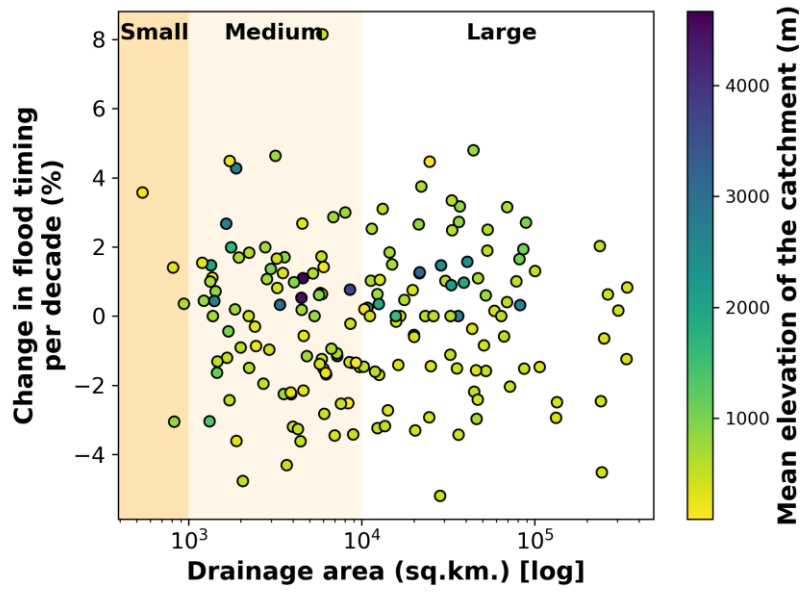
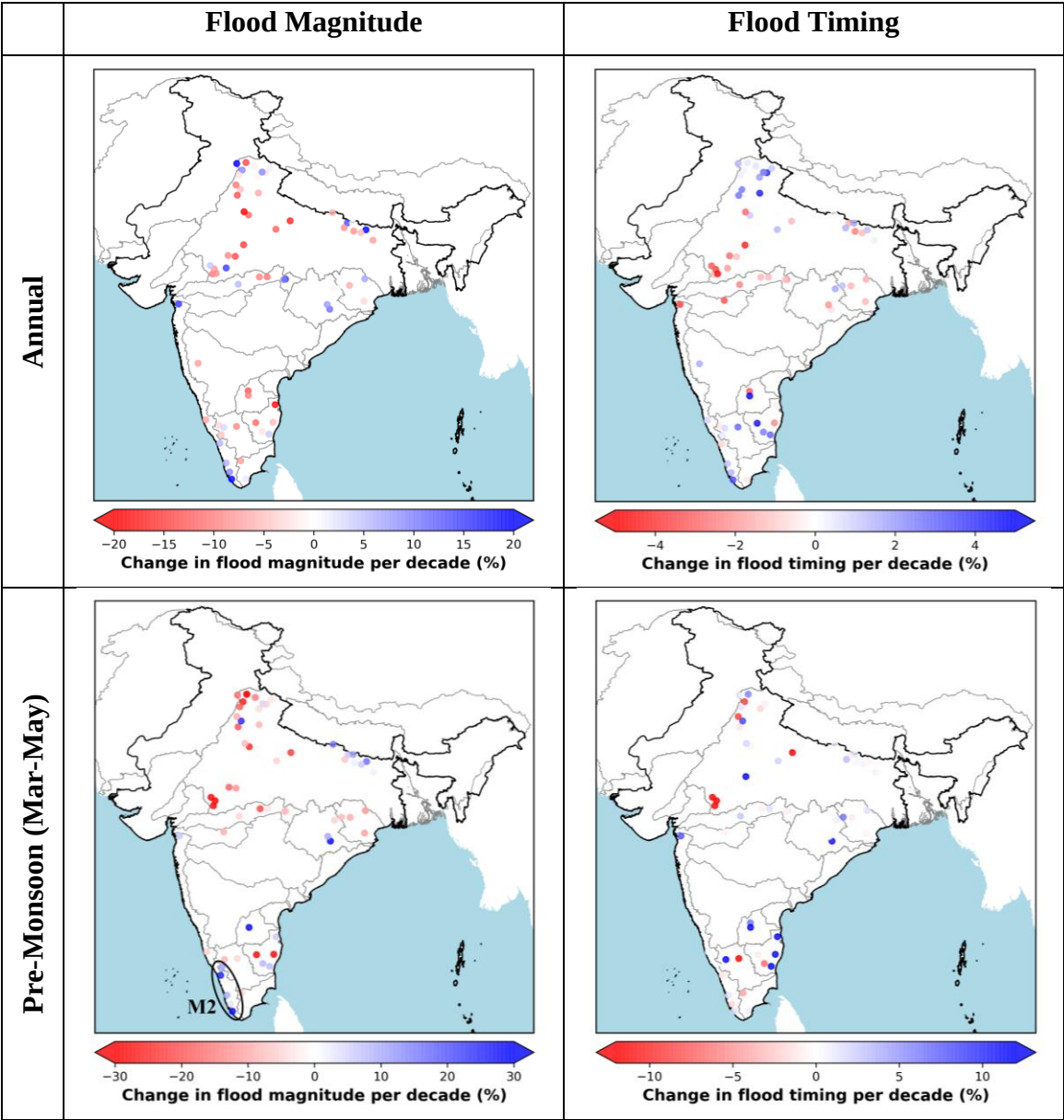


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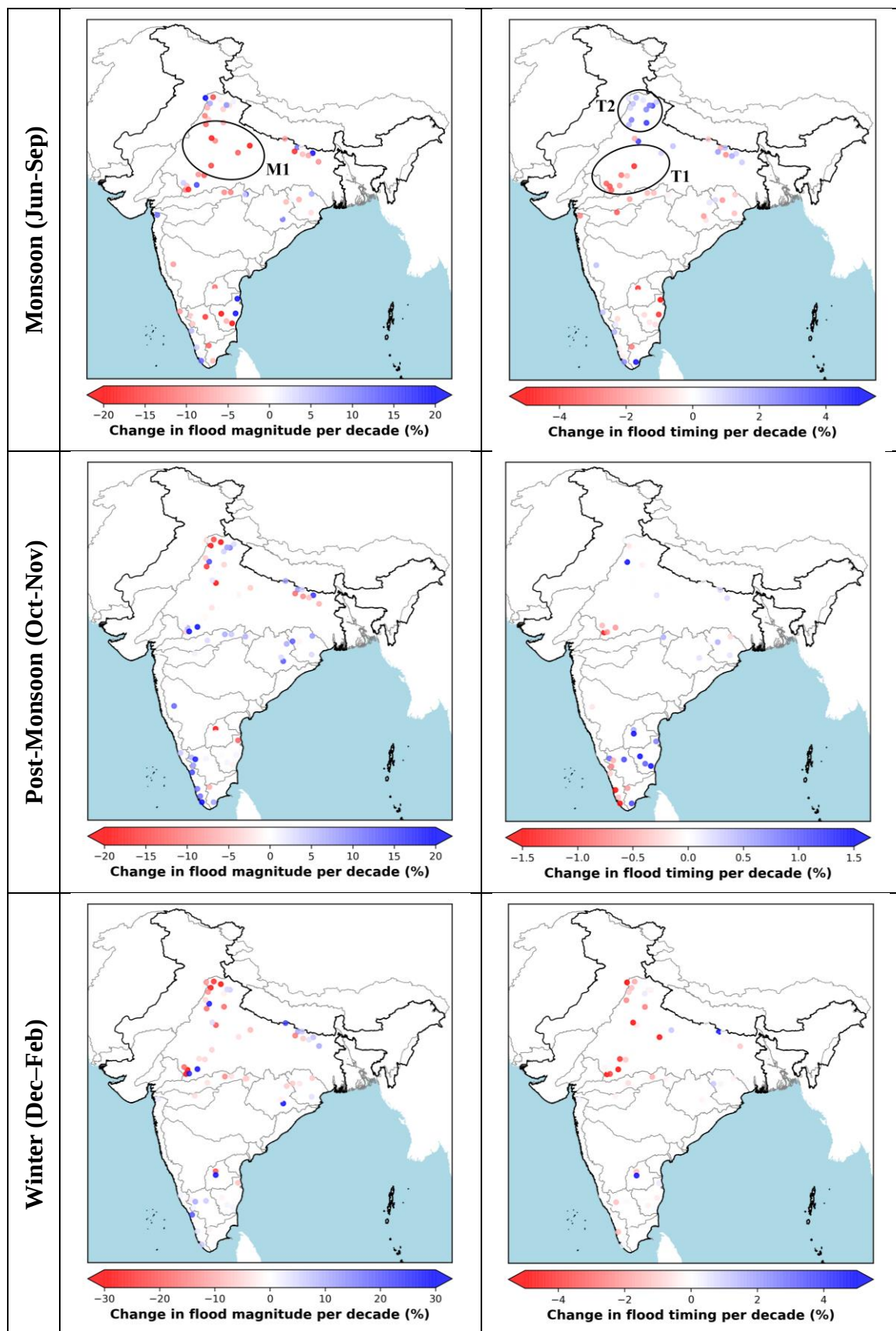
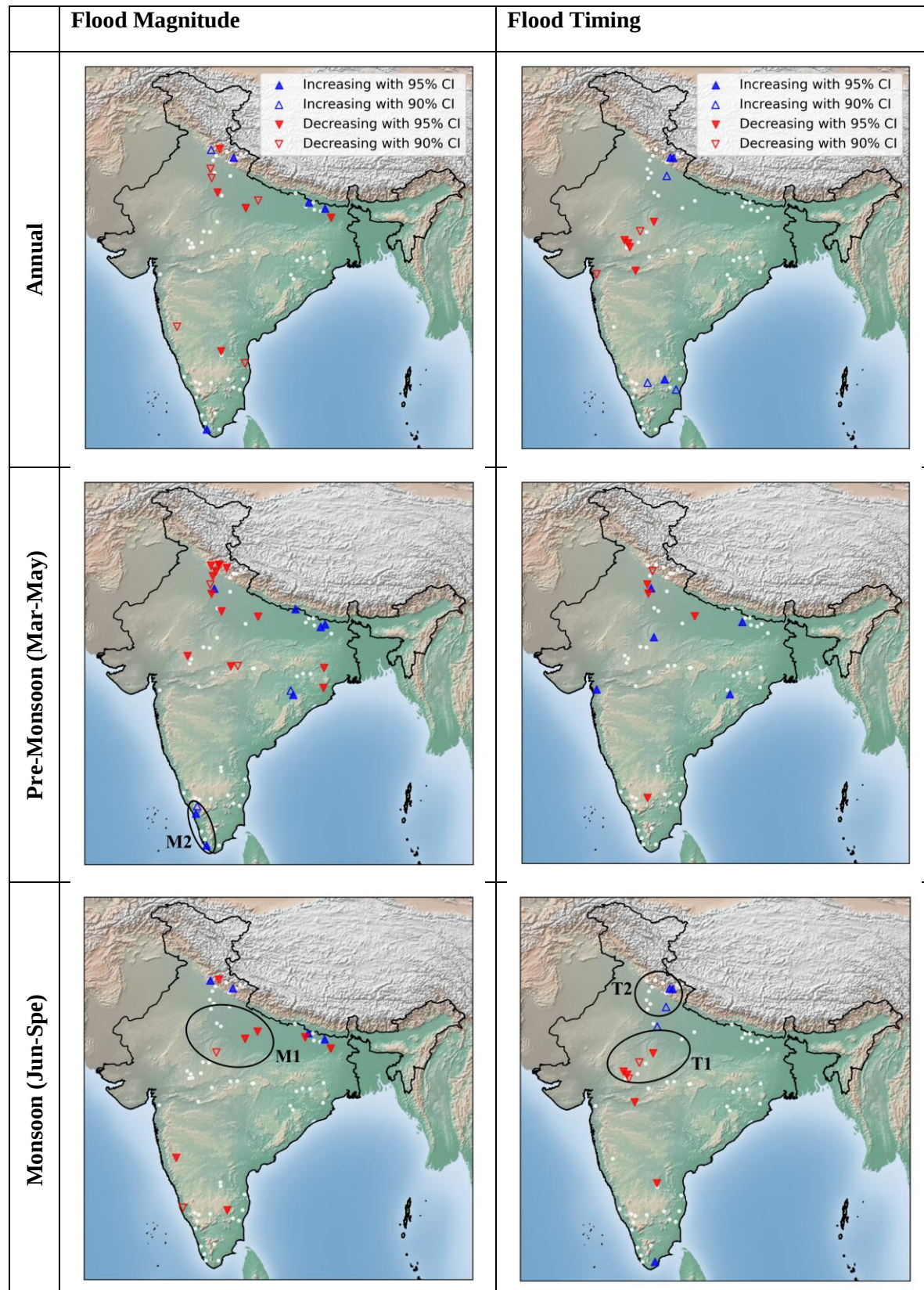


Figure S6: Annual and seasonal trends in flood magnitude and timing from 1970 to 2010, based

on the Theil-Sen slope estimator, for stations whose catchments do not contain any dams within their boundaries.



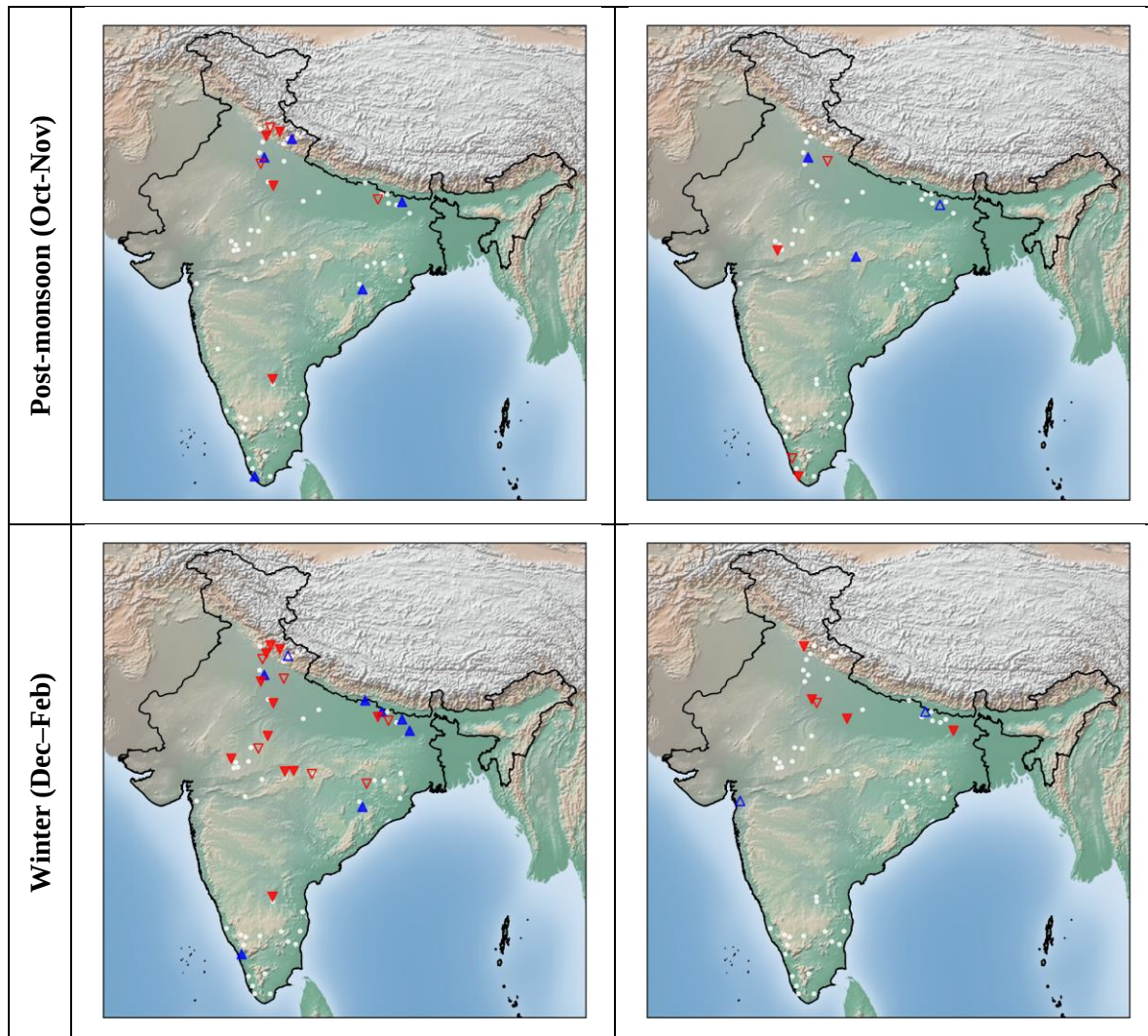


Figure S7: Annual and seasonal trends in flood magnitude and timing between 1970 and 2010, based on the Mann-Kendall test with 95% and 90% confidence levels (CL), for stations whose catchments do not contain any dams within their boundaries.