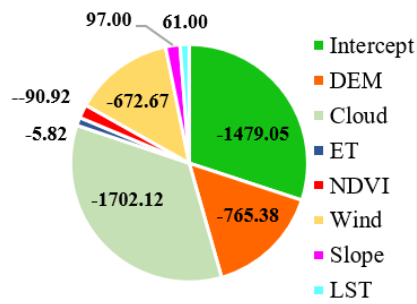


Supplementary Material

Table S1. Selection of stationary and non-stationary variables based on DIFF values.

Variables	Estimate	Min	Max	Diff of Criterion
Intercept	903.4717	-6372.29	7640.961	
DEM	-0.11224	-3.34609	9.669012	
Cloud	202.5349	-12624.6	14642.88	
ET	-0.19877	-1.73908	5.565363	
NDVI	951.2153	-2317.23	2100.574	
Wind	22.88844	-2757.97	2712.794	
Slope	-4.661409	-15.6504	8.355109	
LST	-8.567101	-64.0413	33.74321	



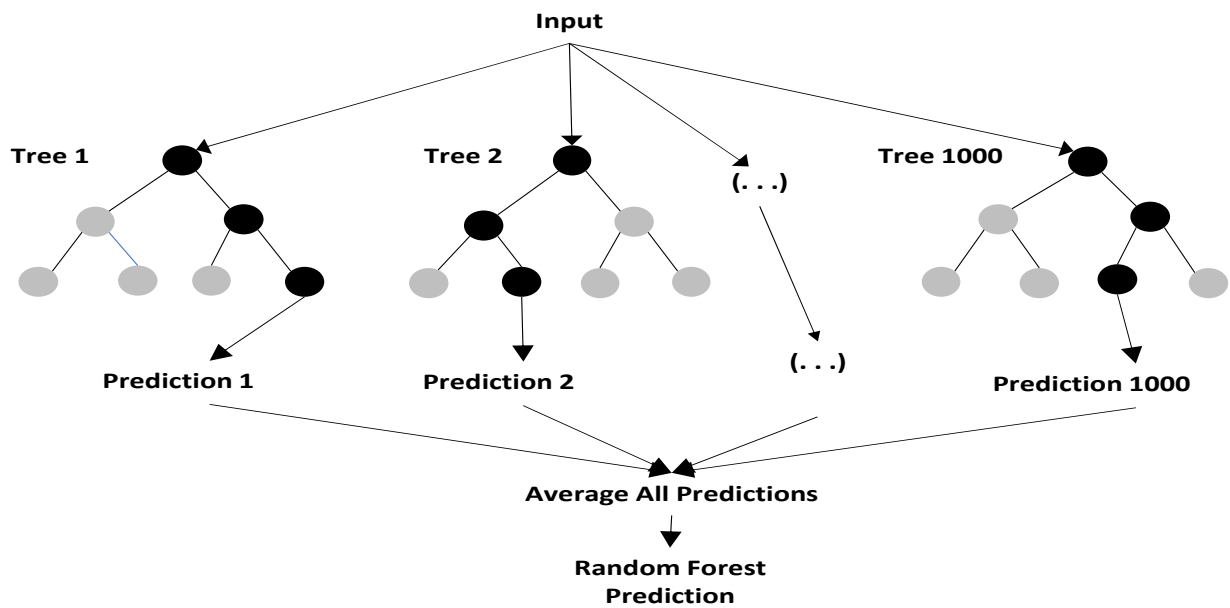


Figure S1. An overview of RF model computation.

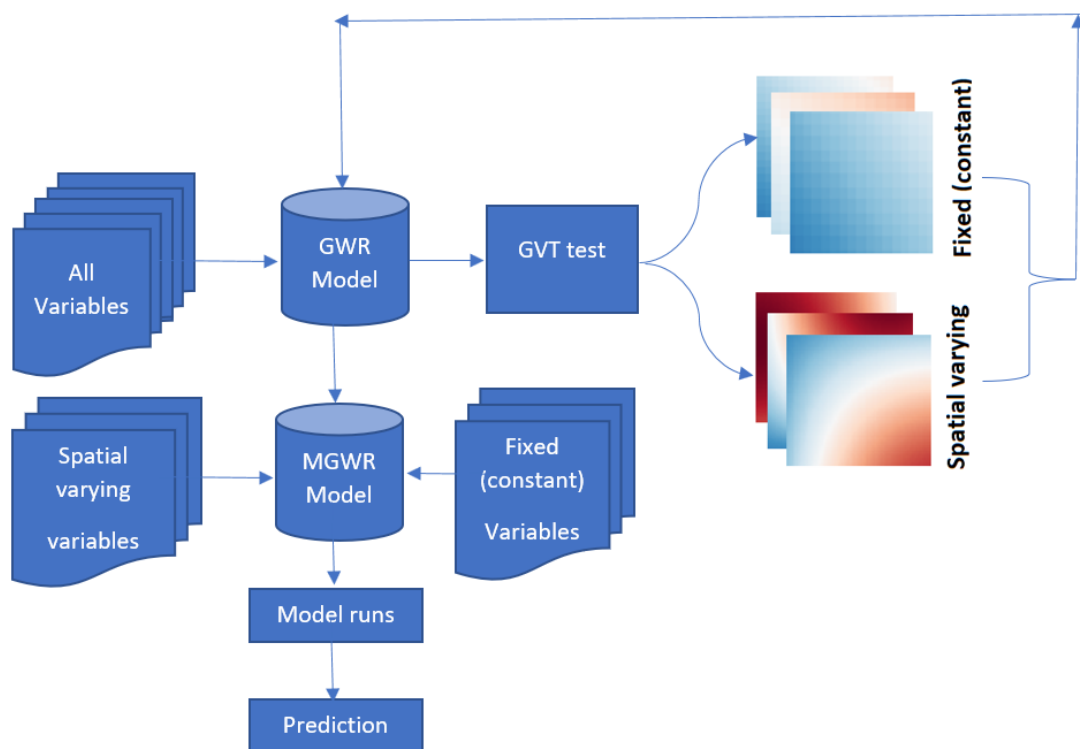


Figure S2. Building MGWR model based on GVT test.

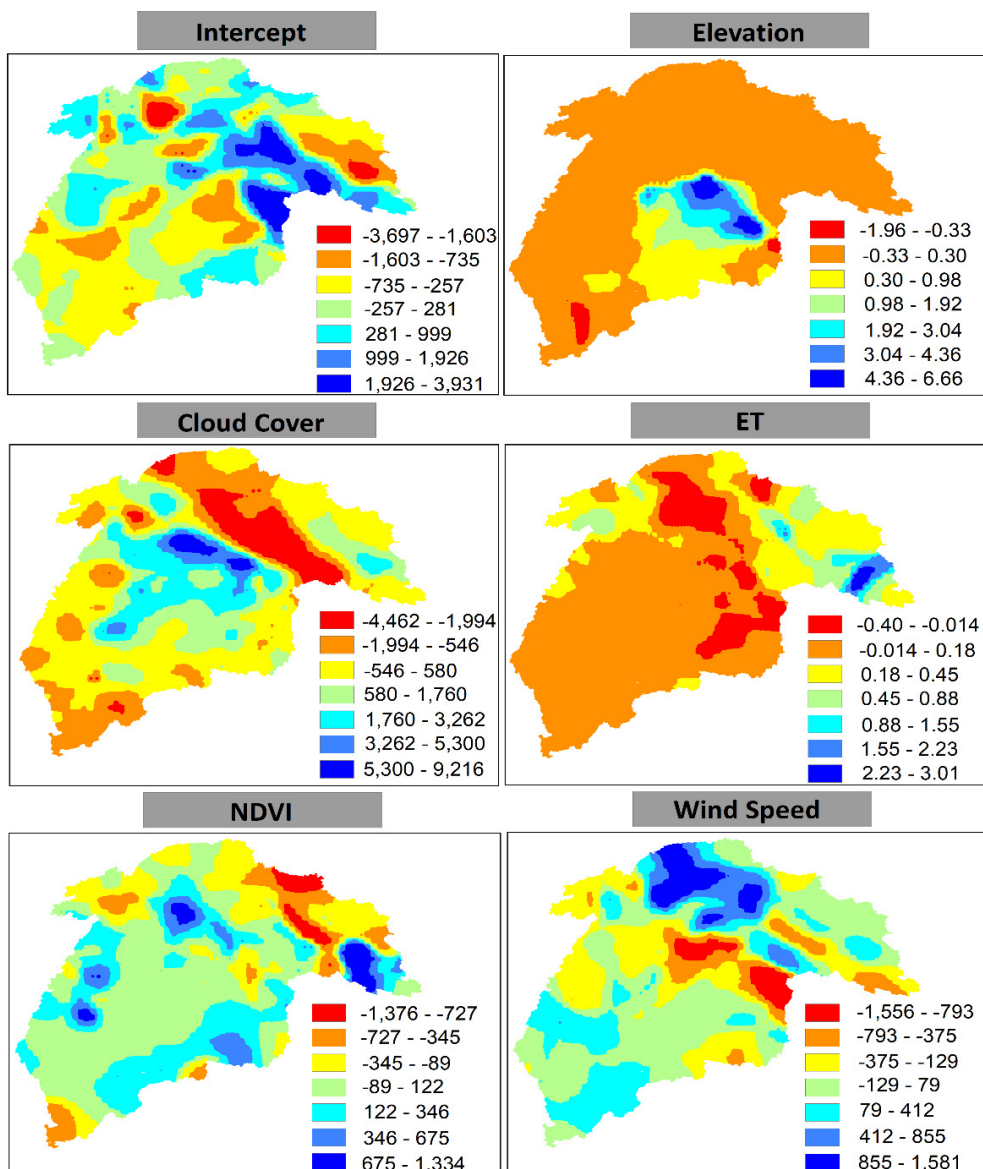


Figure S3. Regression coefficients interpolated at 1km resolution.

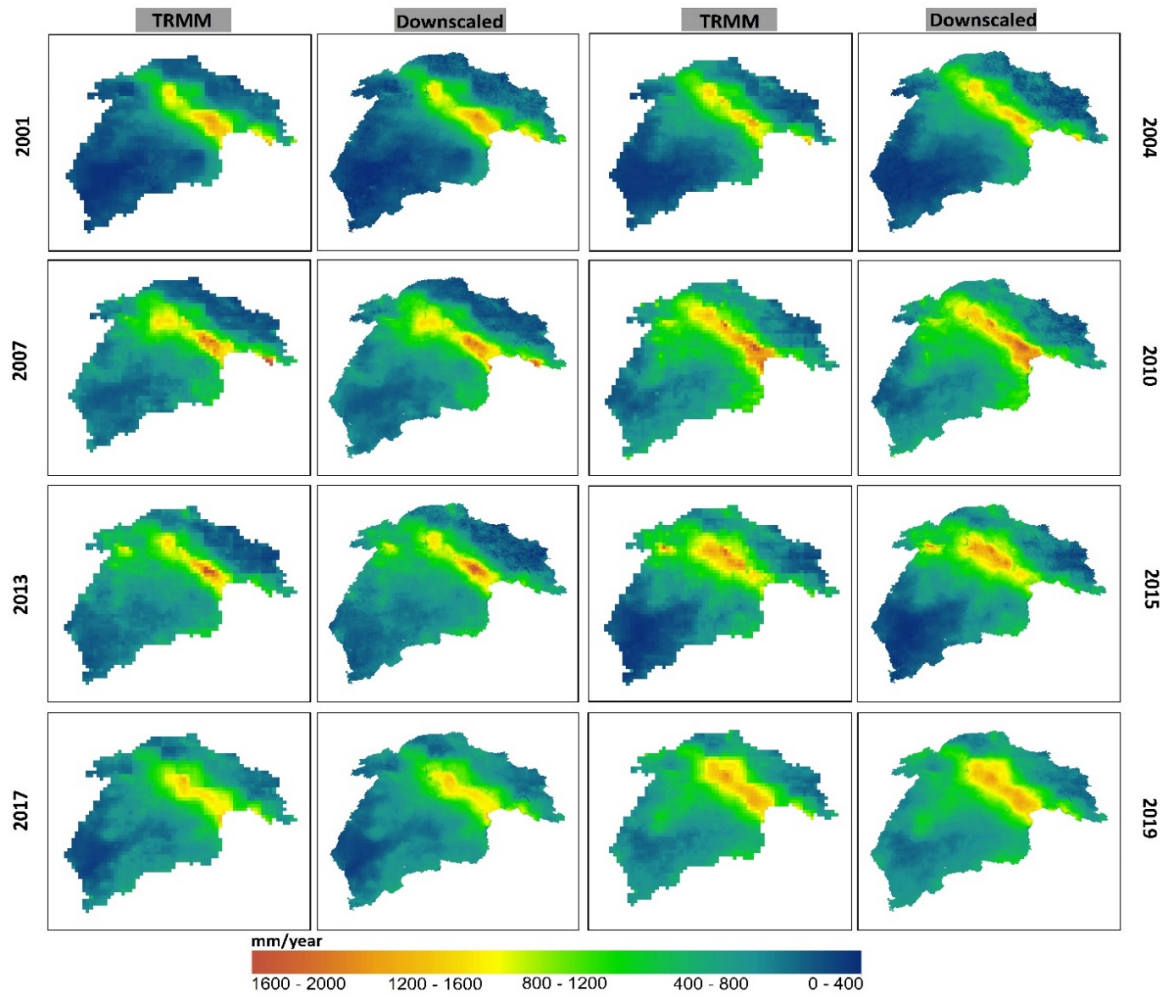


Figure S4. Comparison between the spatial pattern of annual precipitation estimates obtained from the original TRMM (~25 km) and downscaled TRMM (1km) for different years from 2000-2019.

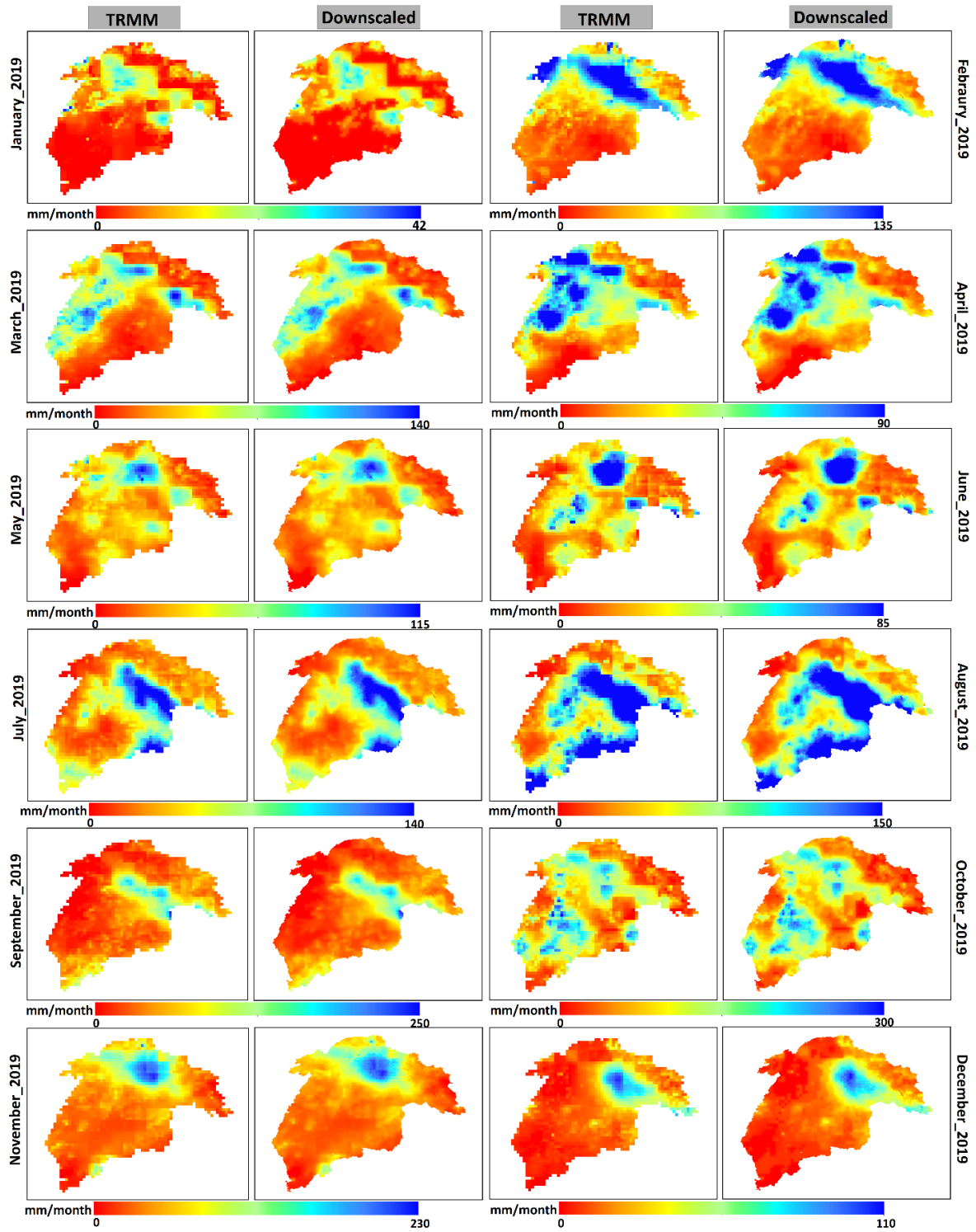


Figure S5. Comparison between the spatial pattern of monthly precipitation estimates obtained after disaggregation of the annual TRRM (~25 km) and downscaled TRMM (1km) for different months of 2019.