**Supplementary material**

**Figure S1**: Example explanatory variables used to construct the daily precipitation interpolation for the baseline period from 1971 to 2000 with a) the distance in km from the continental divide, b) the digital elevation model and c) the aspect.

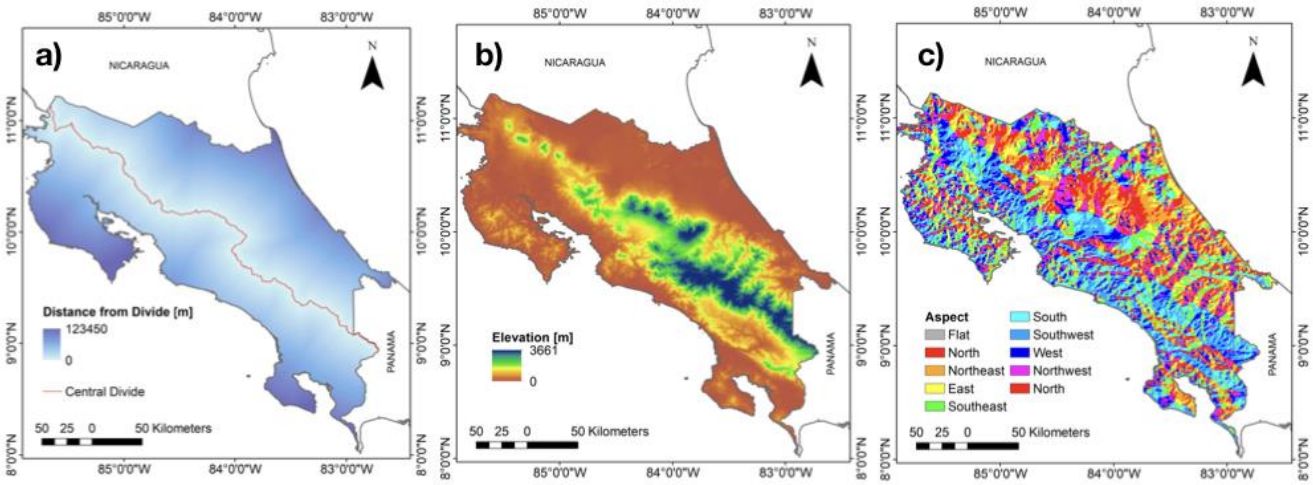


**Figure S2**: The semi-variogram shows no spatial autocorrelation for log-transformed Mean Annual Precipitation (MAP in mm) station locations (UTM projected) with high semivariance at short distances as the result of many microclimates with different MAPs from 1300mm to over 5000mm per year.

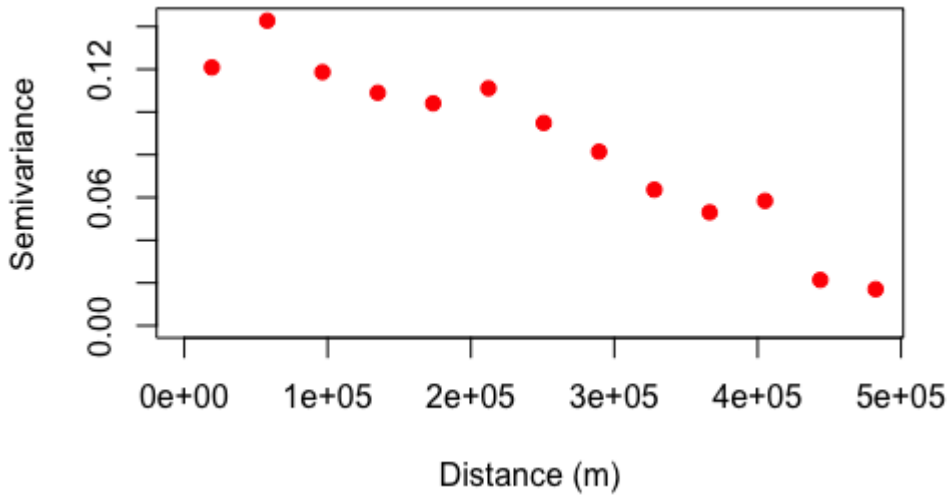

**Figure S3**: Three randomly selected locations of Costa Rica (A, B, C) show the spread of all 18 GCM ensemble members against the ensemble mean temperature prior to bias correction.

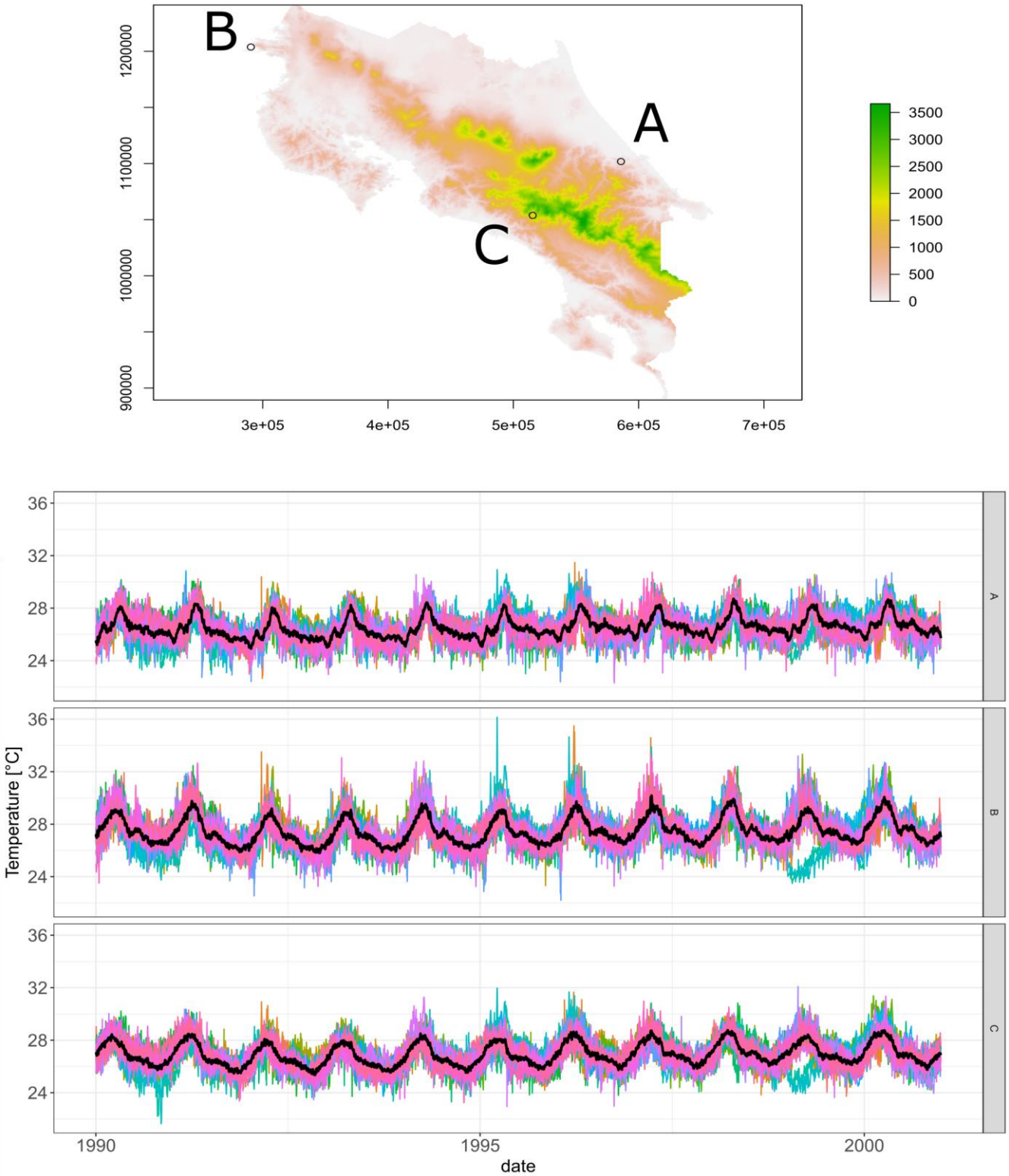

**Table S1**: The ensemble *MEAN* used for analysis put into the context of the spread of 18 individual ECV_GCM ensemble members (*mean* and standard deviation *sd*) prior to downscaling and bias-correction for daily precipitation and daily temperature of the baseline (1971-2000) and future period (2019-2040).

| **Precipitation** | **Baseline:** | | **2019-2040:** | |
|---|---|---|---|---|
| ***EnsembleNo*** | ***mean*** | ***sd*** | ***mean*** | ***sd*** |
| 1 | 8.08 | 11.93 | 8.32 | 13.27 |
| 2 | 7.75 | 10.49 | 8.44 | 11.20 |
| 3 | 7.91 | 12.98 | 7.61 | 12.02 |
| 4 | 8.16 | 11.96 | 7.92 | 11.58 |
| 5 | 8.03 | 13.31 | 7.98 | 12.95 |
| 6 | 8.05 | 12.61 | 7.41 | 12.07 |
| 7 | 7.75 | 10.78 | 8.62 | 12.40 |
| 8 | 7.89 | 12.54 | 8.95 | 13.66 |
| 9 | 7.70 | 12.48 | 8.60 | 13.21 |
| 10 | 7.54 | 12.41 | 7.08 | 11.42 |
| 11 | 7.45 | 10.48 | 8.27 | 10.80 |
| 12 | 7.94 | 11.36 | 8.84 | 11.82 |
| 13 | 7.81 | 12.78 | 6.19 | 11.28 |
| 14 | 6.93 | 12.26 | 6.14 | 10.64 |
| 15 | 7.81 | 12.47 | 8.64 | 13.67 |
| 16 | 7.81 | 11.85 | 8.92 | 14.41 |
| 17 | 8.14 | 12.84 | 8.23 | 14.19 |
| 18 | 7.62 | 12.06 | 7.17 | 12.15 |
| ***MEAN*** | ***7.80*** | ***5.10*** | ***7.96*** | ***5.13*** |
| **Temperature** | **Baseline:** | | **2019-2040:** | |
| ***EnsembleNo*** | ***mean*** | ***sd*** | ***mean*** | ***sd*** |
| 1 | 26.13 | 0.97 | 27.42 | 0.98 |
| 2 | 26.50 | 0.99 | 26.31 | 0.87 |
| 3 | 26.10 | 1.03 | 27.48 | 1.07 |
| 4 | 26.16 | 0.94 | 27.60 | 0.91 |
| 5 | 26.17 | 1.05 | 27.19 | 1.07 |
| 6 | 26.23 | 1.06 | 27.12 | 1.01 |
| 7 | 26.08 | 1.10 | 27.32 | 0.96 |
| 8 | 26.09 | 1.06 | 28.26 | 1.08 |
| 9 | 26.05 | 0.96 | 27.40 | 1.14 |
| 10 | 26.18 | 1.00 | 27.12 | 0.92 |
| 11 | 26.21 | 0.95 | 27.58 | 0.97 |
| 12 | 26.20 | 0.99 | 27.49 | 0.98 |
| 13 | 26.07 | 1.10 | 27.71 | 0.89 |
| 14 | 26.21 | 1.05 | 27.25 | 0.93 |
| 15 | 26.20 | 0.98 | 27.28 | 1.15 |
| 16 | 26.12 | 0.99 | 27.31 | 1.08 |
| 17 | 26.20 | 1.12 | 27.86 | 1.13 |
| 18 | 26.14 | 1.12 | 28.02 | 1.03 |
| ***MEAN*** | ***26.17*** | ***0.71*** | ***27.43*** | ***0.69*** |