Appendix 1 Simulation performances of RCM with different driving-GCMs for rainfall

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Stations | RCM (Driving-GCMs) | Performance for RF | | |
| MRE | CORR | NSE |
| Angacha | CNRM-CM5 | -4.12 | 0.94 | 0.86 |
|  | CM5A-MR | -3.00 | 0.94 | 0.96 |
| MIROC5 | -5.33 | 0.97 | 0.94 |
| NorESM1-M | 0.73 | 0.97 | 0.94 |
| ESM2M | 0.73 | 0.97 | 0.92 |
| **Ensemble** | **-2.20** | **0.96** | **0.92** |
| Areka | CNRM-CM5 | -5.31 | 0.99 | 0.97 |
|  | CM5A-MR | -5.25 | 0.97 | 0.94 |
| MIROC5 | 0.19 | 0.98 | 0.94 |
| NorESM1-M | -1.88 | 0.99 | 0.99 |
| ESM2M | 0.96 | 0.99 | 0.99 |
|  | **Ensemble** | **-2.26** | **0.98** | **0.97** |
| Bele | CNRM-CM5 | -4.52 | 0.94 | 0.87 |
|  | CM5A-MR | -3.77 | 0.96 | 0.92 |
| MIROC5 | -6.09 | 0.89 | 0.73 |
| NorESM1-M | -5.87 | 0.95 | 0.86 |
| ESM2M | -1.36 | 0.90 | 0.73 |
|  | **Ensemble** | **-4.32** | **0.93** | **0.82** |
| Bodit | CNRM-CM5 | 1.20 | 0.90 | 0.99 |
|  | CM5A-MR | -3.28 | 0.98 | 0.95 |
| MIROC5 | -10.2 | 0.95 | 0.86 |
| NorESM1-M | -1.31 | 0.93 | 0.81 |
| ESM2M | -4.42 | 0.95 | 0.79 |
|  | **Ensemble** | **-3.60** | **0.94** | **0.88** |
| Durame | CNRM-CM5 | 4.50 | 0.92 | 0.74 |
|  | CM5A-MR | -3.42 | 0.98 | 0.95 |
| MIROC5 | 1.67 | 0.98 | 0.95 |
| NorESM1-M | -0.42 | 0.97 | 0.90 |
| ESM2M | 3.33 | 0.99 | 0.97 |
|  | **Ensemble** | **-0.41** | **0.93** | **0.80** |
| Gesuba | CNRM-CM5 | -7.09 | 0.93 | 0.82 |
|  | CM5A-MR | -0.28 | 0.96 | 0.91 |
| MIROC5 | -2.67 | 0.94 | 0.88 |
| NorESM1-M | -10.4 | 0.85 | 0.63 |
| ESM2M | 18.41 | 0.95 | 0.78 |
|  | **Ensemble** | **-0.41** | **0.93** | **0.80** |
| Sodo | CNRM-CM5 | 5.39 | 0.87 | 0.67 |
|  | CM5A-MR | 3.04 | 0.98 | 0.94 |
| MIROC5 | -15.9 | 0.95 | 0.84 |
| NorESM1-M | 16.33 | 0.94 | 0.69 |
| ESM2M | -8.85 | 0.92 | 0.78 |
|  | **Ensemble** | **0.01** | **0.93** | **0.78** |

Appendix 2 Simulation perform maces of RCM with different driving-GCMs for Tmax and Tmin

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Stations | RCM (Driving-GCM) | Performance for Tmax | | | Performance for Tmin | | |
| MRE | CORR | NSE | MRE | CORR | NSE |
| Angacha | CNRM-CM5 | 0.07 | 0.81 | 0.95 | 3.73 | 0.99 | 0.82 |
|  | CM5A-MR | 1.05 | 0.93 | 0.95 | 3.69 | 0.99 | 0.93 |
| MIROC5 | 0.42 | 0.73 | 0.94 | -0.87 | 0.98 | 0.91 |
| NorESM1-M | 0.38 | 0.93 | 0.95 | 2.10 | 0.94 | 0.75 |
| ESM2M | 0.28 | 0.94 | 0.98 | 1.15 | 0.99 | 0.98 |
| **Ensemble** | **0.44** | **0.87** | **0.95** | **1.96** | **0.98** | **0.88** |
| Bodit | CNRM-CM5 | -0.97 | 0.99 | 0.98 | -8.87 | 0.96 | 0.99 |
|  | CM5A-MR | 1.06 | 0.98 | 0.94 | 3.48 | 0.91 | 0.97 |
| MIROC5 | -0.97 | 0.99 | 0.98 | -2.94 | 0.94 | 0.95 |
| NorESM1-M | -0.97 | 0.99 | 0.98 | -5.23 | 0.95 | 0.95 |
| ESM2M | -3.81 | 0.97 | 0.78 | -8.88 | 0.96 | 0.97 |
| **Ensemble** | **-1.13** | **0.98** | **0.93** | **-4.49** | **0.94** | **0.97** |
| Durame | CNRM-CM5 | 2.27 | 0.95 | 0.96 | 1.72 | 0.96 | 0.96 |
|  | CM5A-MR | 2.13 | 0.97 | 0.93 | 1.79 | 0.96 | 0.95 |
| MIROC5 | -0.01 | 0.96 | 1.00 | -0.72 | 0.98 | 0.98 |
| NorESM1-M | -1.39 | 0.97 | 0.99 | 0.67 | 0.97 | 0.98 |
| ESM2M | -4.41 | 0.98 | 0.95 | 0.80 | 0.96 | 0.96 |
| **Ensemble** | **-0.28** | **0.97** | **0.97** | **0.85** | **0.97** | **0.97** |
| Gesuba | CNRM-CM5 | -0.95 | 0.74 | 0.93 | -1.13 | 0.88 | 0.56 |
|  | CM5A-MR | 2.10 | 0.95 | 0.96 | 3.43 | 0.96 | 0.90 |
| MIROC5 | -0.62 | 0.93 | 0.91 | -2.60 | 0.94 | 0.87 |
| NorESM1-M | 0.34 | 0.83 | 0.87 | -3.23 | 0.94 | 0.93 |
| ESM2M | -0.73 | 0.98 | 0.90 | -1.39 | 0.91 | 0.86 |
| **Ensemble** | **0.03** | **0.89** | **0.91** | **-0.98** | **0.93** | **0.82** |
| Sodo | CNRM-CM5 | 4.67 | 0.99 | 0.71 | 3.91 | 0.90 | 0.87 |
|  | CM5A-MR | 6.82 | 0.95 | 0.92 | 0.79 | 0.92 | 0.72 |
| MIROC5 | 0.04 | 0.98 | 0.91 | -3.14 | 0.68 | 0.95 |
| NorESM1-M | 0.70 | 0.81 | 0.90 | -6.53 | 0.75 | 0.94 |
| ESM2M | -1.45 | 0.93 | 0.83 | -6.30 | 0.92 | 0.86 |
| **Ensemble** | **2.16** | **0.93** | **0.85** | **-2.25** | **0.83** | **0.87** |