



Supplement of

Multivariate adjustment of drizzle bias using machine learning in European climate projections

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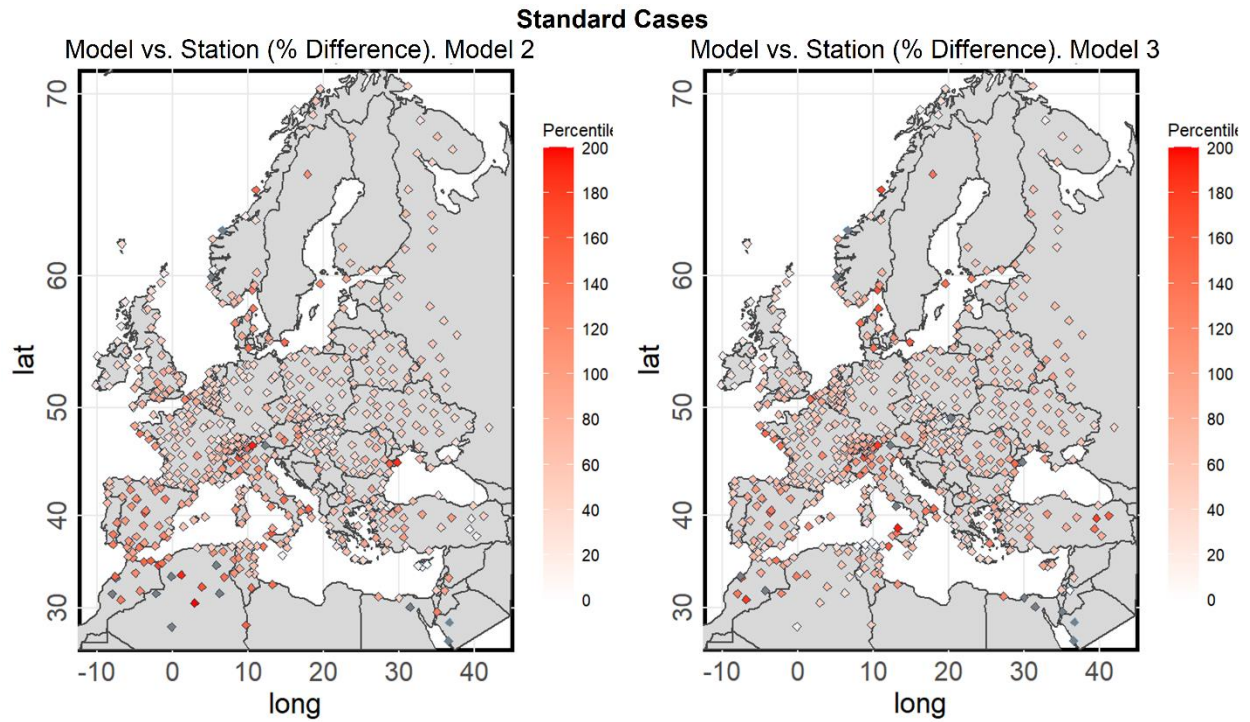


Fig. S1: Bias of the frequency of rainy days (in percentage) for the Standard Cases and for the models 2 (right panel) and 3 (left panel). Locations with biases greater than 200% are highlighted in grey.

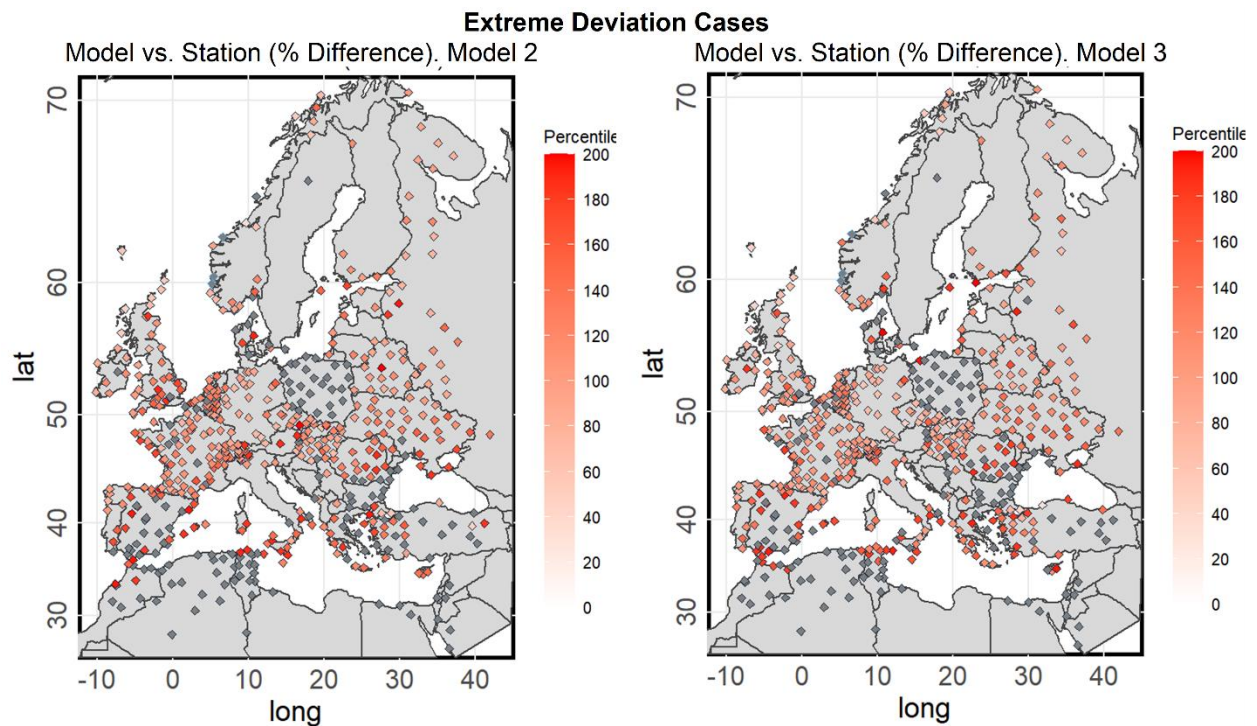


Fig. S2: Bias of the frequency of rainy days (in percentage) for the Extreme Deviation Cases and for the models 2 (right panel) and 3 (left panel). Locations with biases greater than 200% are highlighted in grey.

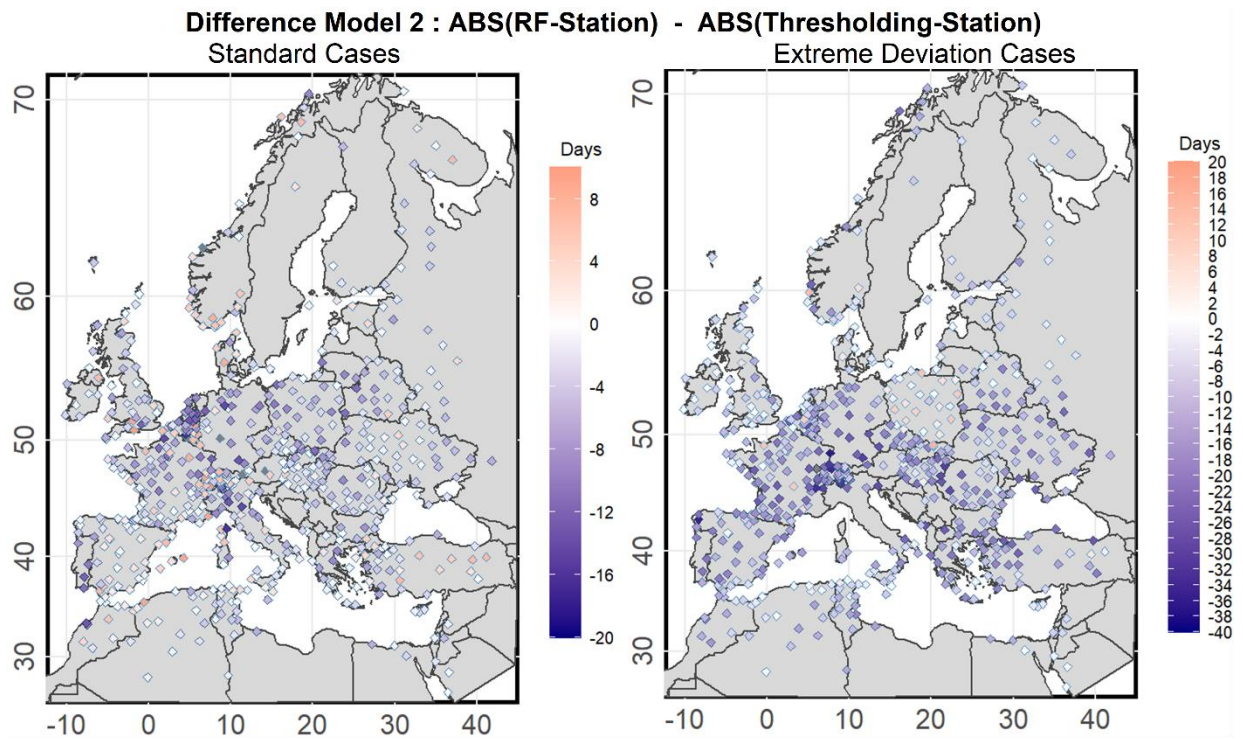


Fig. S3: Comparison of Absolute Deviations: absolute value of RF Method minus Observed values vs. absolute value of Thresholding Method minus Observed values for Annual Corrected Rainy Days, for the second model.

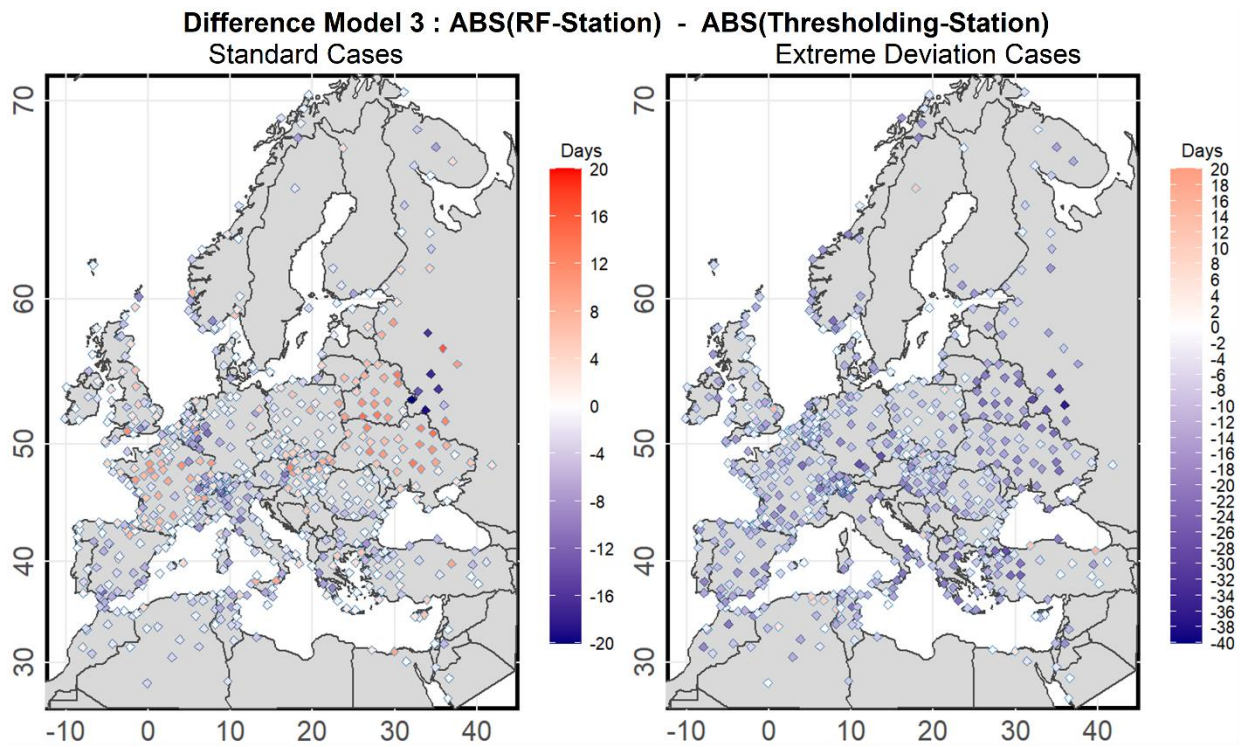


Fig. S4: Comparison of Absolute Deviations: absolute value of RF Method minus Observed values vs. absolute value of Thresholding Method minus Observed values for Annual Corrected Rainy Days, for the third model.

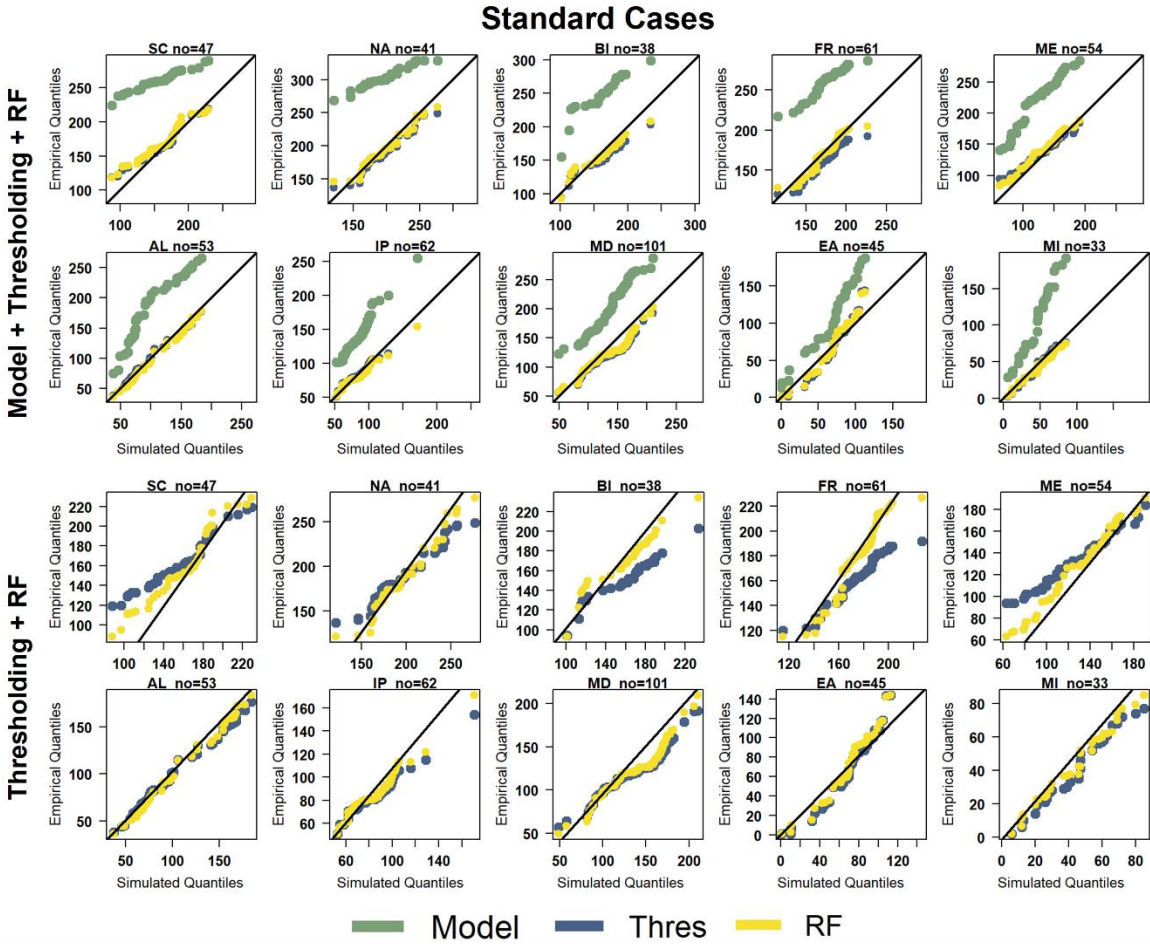


Fig. S5: Q-Q Plots Comparing the number of rainy days (per year) for the default evaluation period (2001-2005): Simulated values from the second model (green) and their respective corrected values derived from both the thresholding method (blue) and the RF method (yellow) are depicted. The first set of Q-Q plots displays outcomes for the 10 sub-areas, encompassing the model values. The second set illustrates the identical outcomes, specifically focusing on the BC methods.

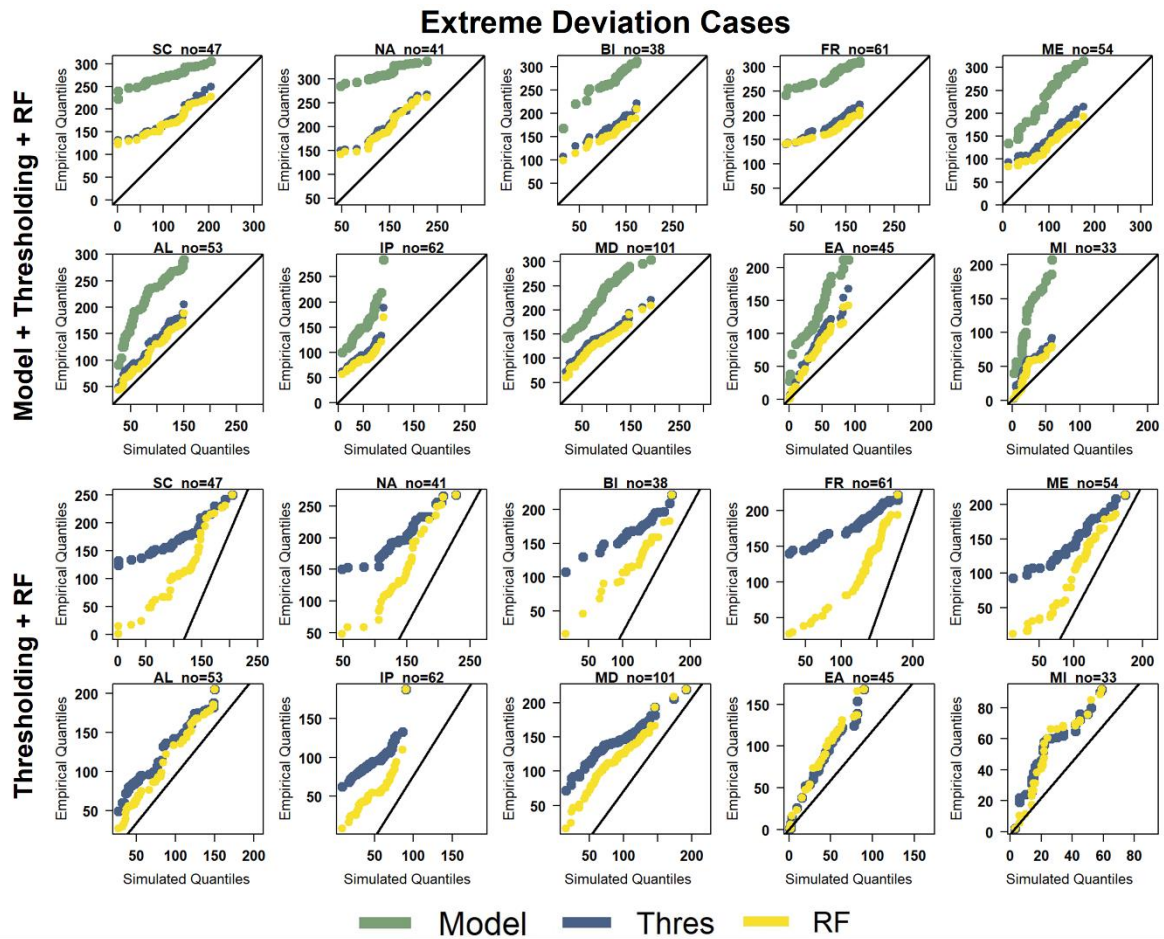


Fig. S6: QQ Plots Comparing the Number of Rainy Days in Extreme Deviation Cases: Simulated values from the second model (green) and their respective corrected values derived from both the thresholding method (blue) and the RF method (yellow) are depicted. The first set of QQ plots displays outcomes for the 10 sub-areas, encompassing the model values. The second set illustrates the identical outcomes, specifically focusing on the BC methods.

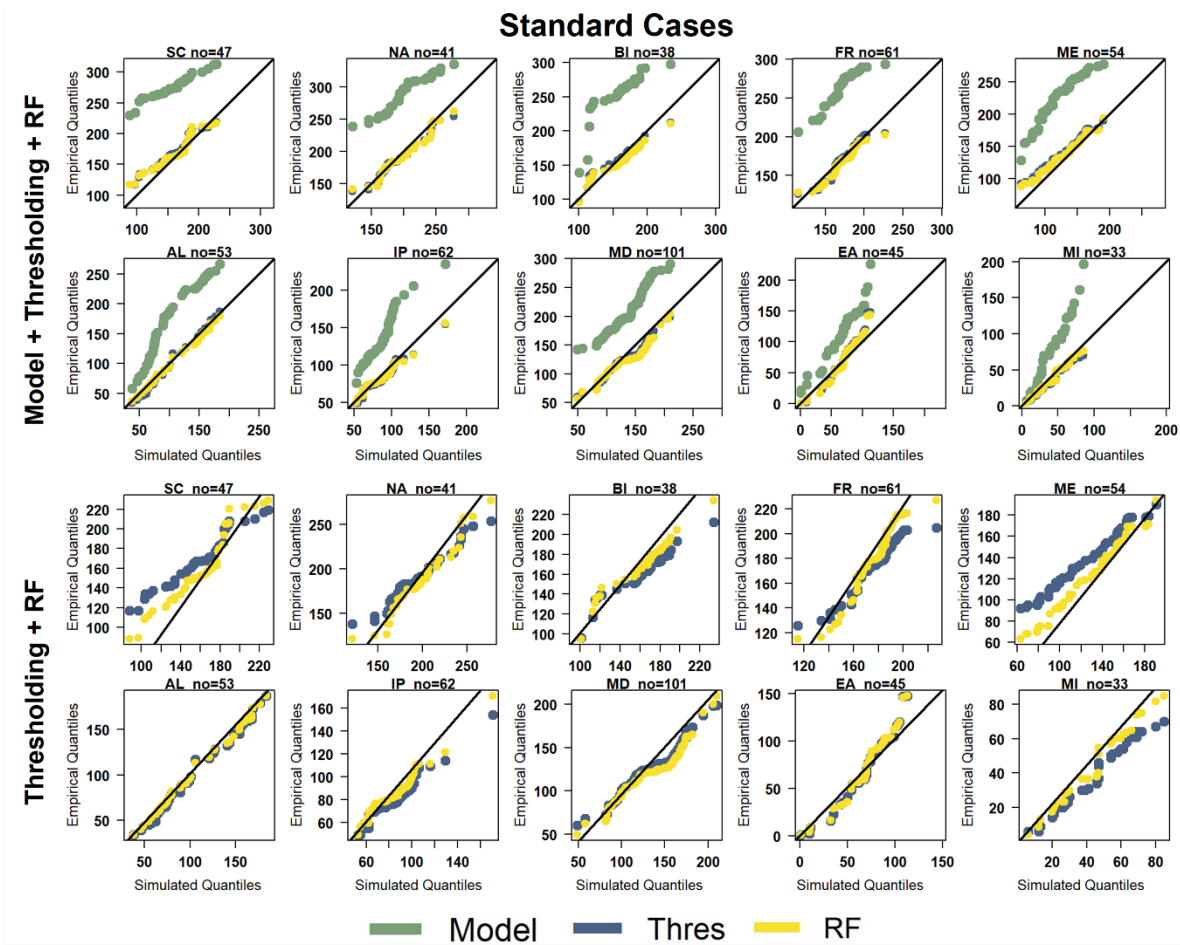


Fig. S7: Q-Q Plots Comparing the number of rainy days (per year) for the default evaluation period (2001-2005): Simulated values from the second model (green) and their respective corrected values derived from both the thresholding method (blue) and the RF method (yellow) are depicted. The first set of Q-Q plots displays outcomes for the 10 sub-areas, encompassing the model values. The second set illustrates the identical outcomes, specifically focusing on the BC methods.

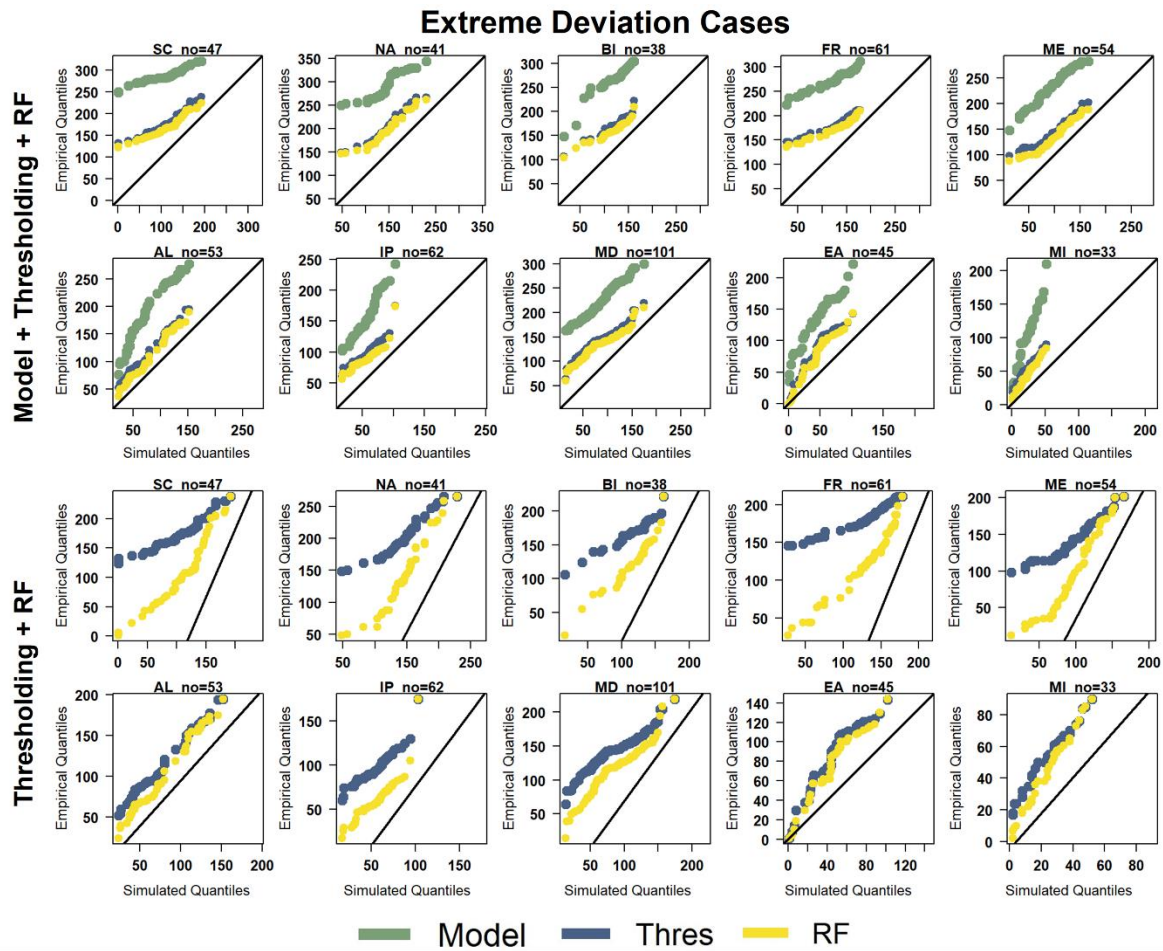


Fig. S8: QQ Plots Comparing the Number of Rainy Days in Extreme Deviation Cases: Simulated values from the third model (green) and their respective corrected values derived from both the thresholding method (blue) and the RF method (yellow) are depicted. The first set of QQ plots displays outcomes for the 10 sub-areas, encompassing the model values. The second set illustrates the identical outcomes, specifically focusing on the BC methods.

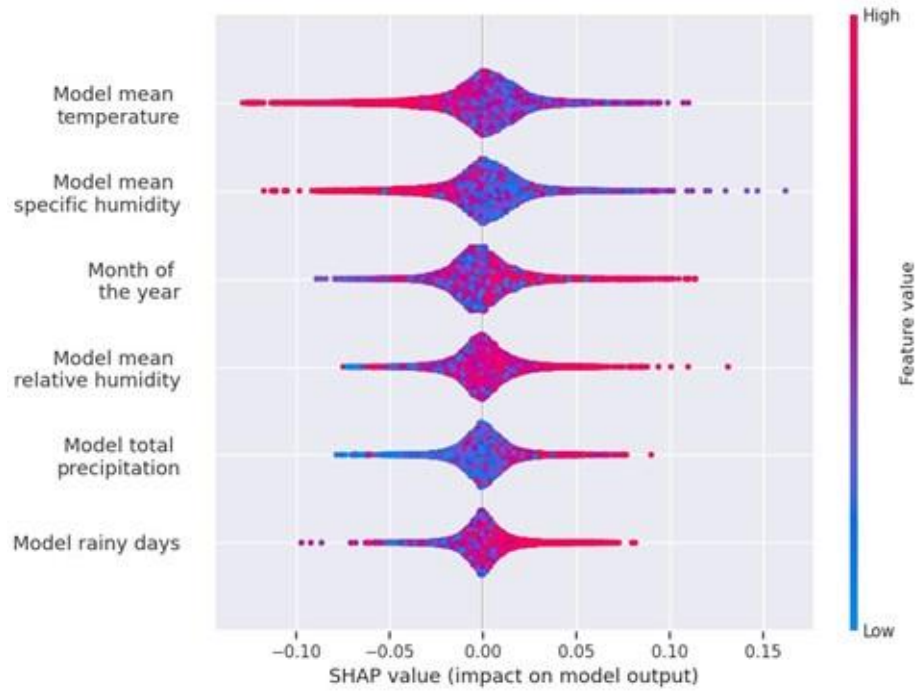


Fig. S9: The SHAP diagram of the climate parameters contributing in the bias correction of drizzle bias with the RF method.