

Figure S1: Performance of the regionalisation techniques using the KGE' objective function for: *a*) calibration (2001–2014); *b*) Verification 1 (1990–1999); and *c*) Verification 2 (2015–2018).

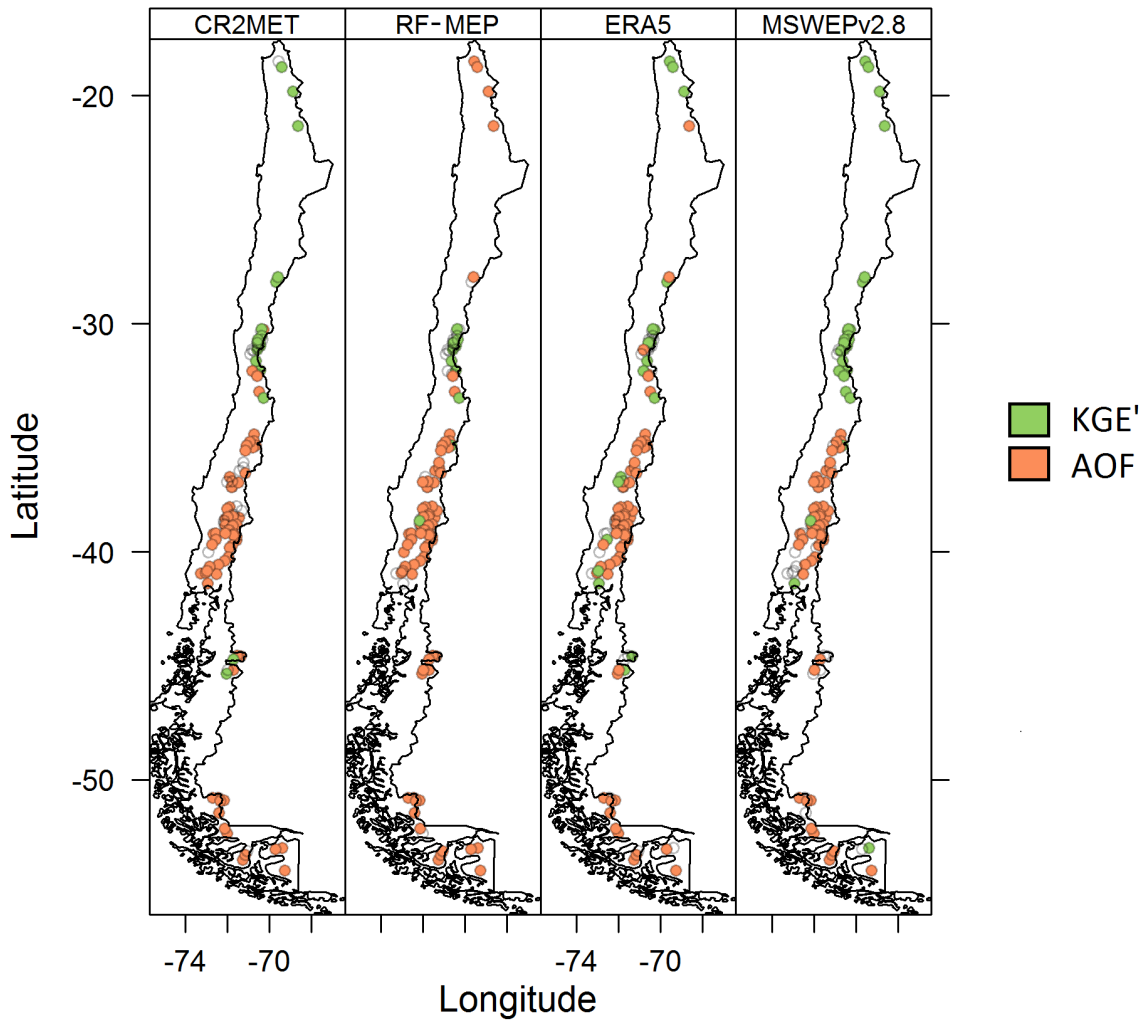


Figure S2: Comparison of whether R_{ref} is lower for KGE' and AOF according to catchment. Catchments with similar results (difference < 0.05) are plotted as empty circles.

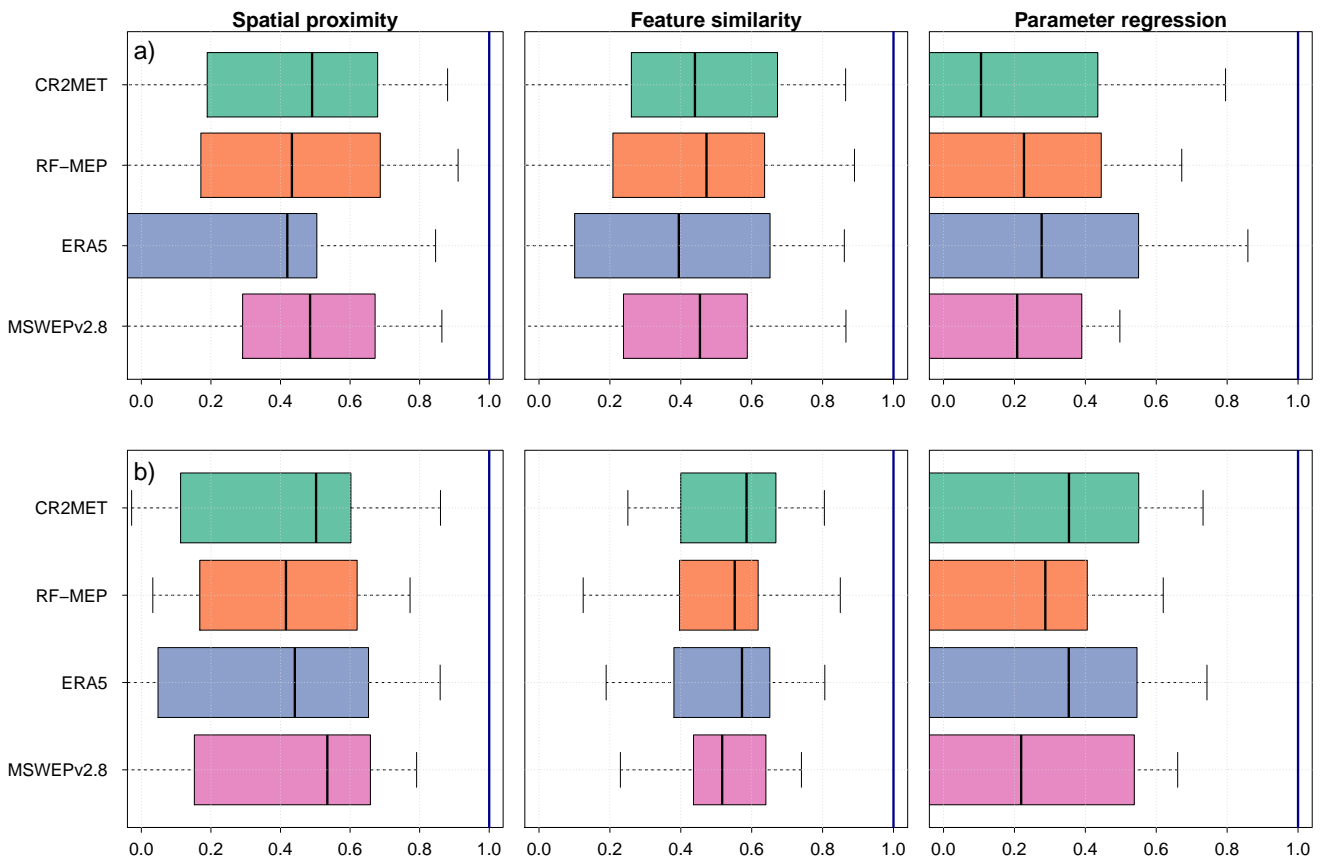


Figure S3: Regionalisation performance of the P products over the 25 smallest catchments (area < 353.1 km²) using *a*) the KGE' and *b*) the AOF.

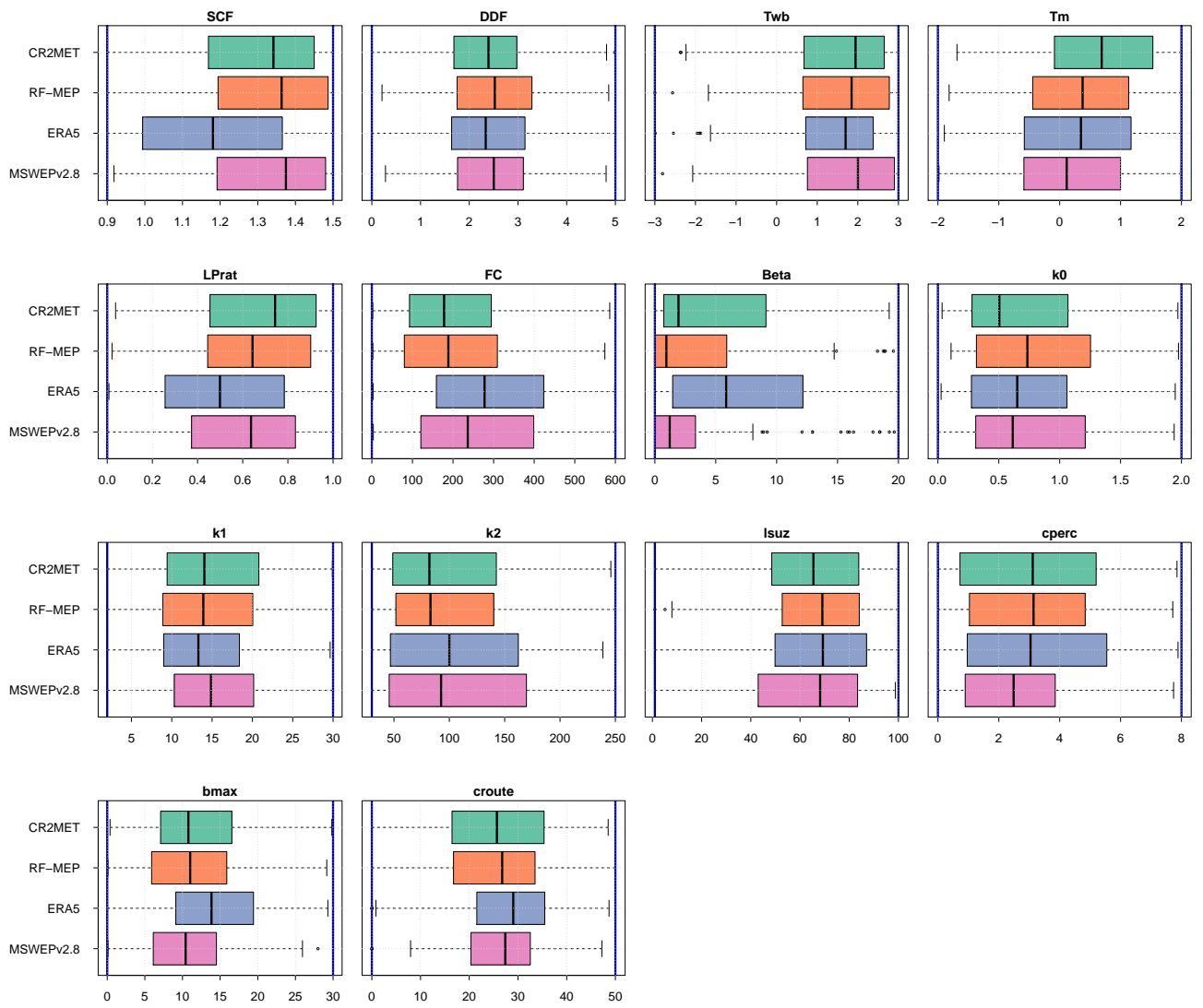


Figure S4: Model parameters obtained through calibration of the catchments used in this study using the KGE' as the objective function. The vertical blue lines indicate the limit of the parameter ranges.

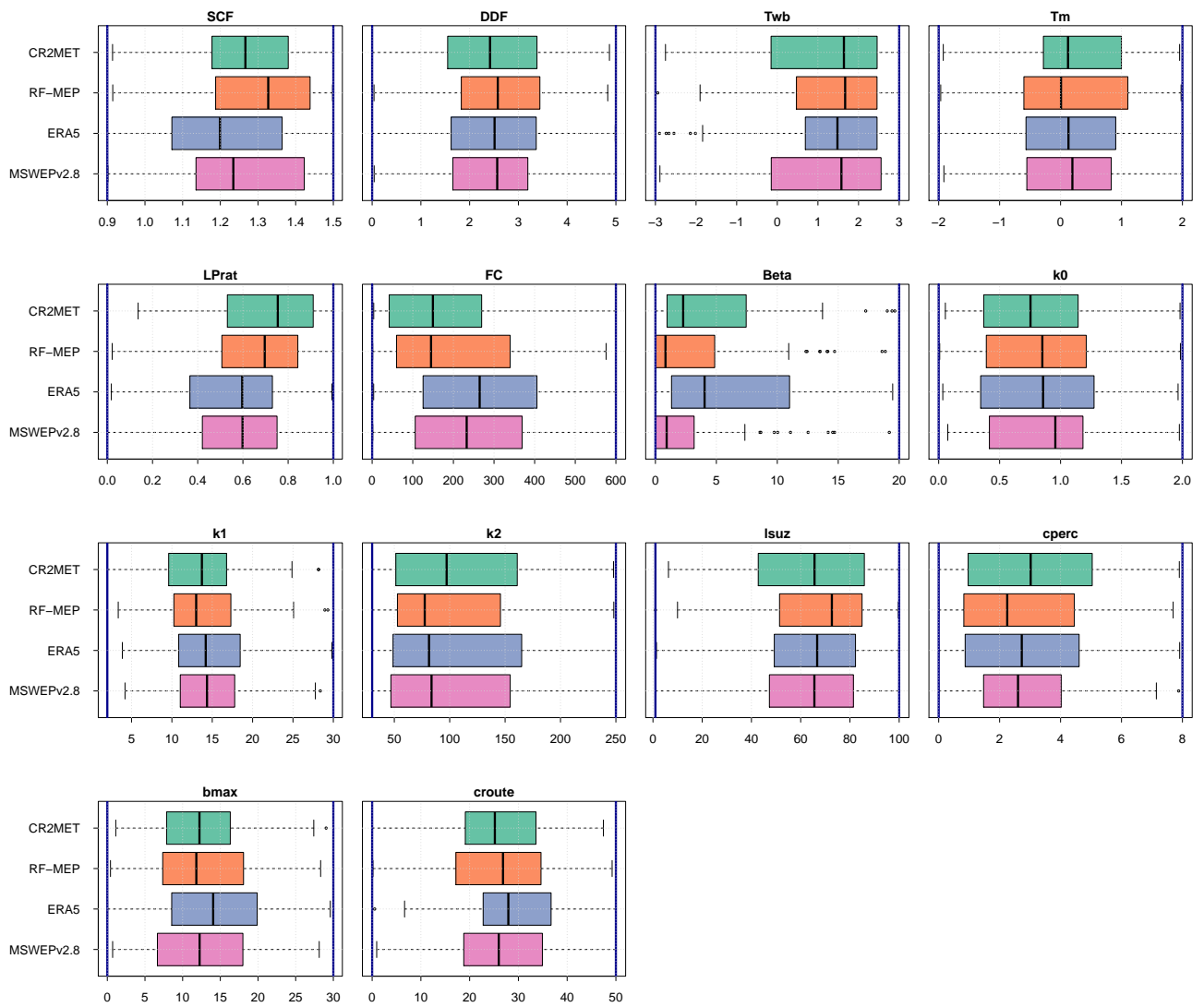


Figure S5: Model parameters obtained through calibration of the catchments used in this study using the AOF as the objective function. The vertical blue lines indicate the limit of the parameter ranges.