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On the selection of precipitation products for the regionalisation of hydrological model parameters

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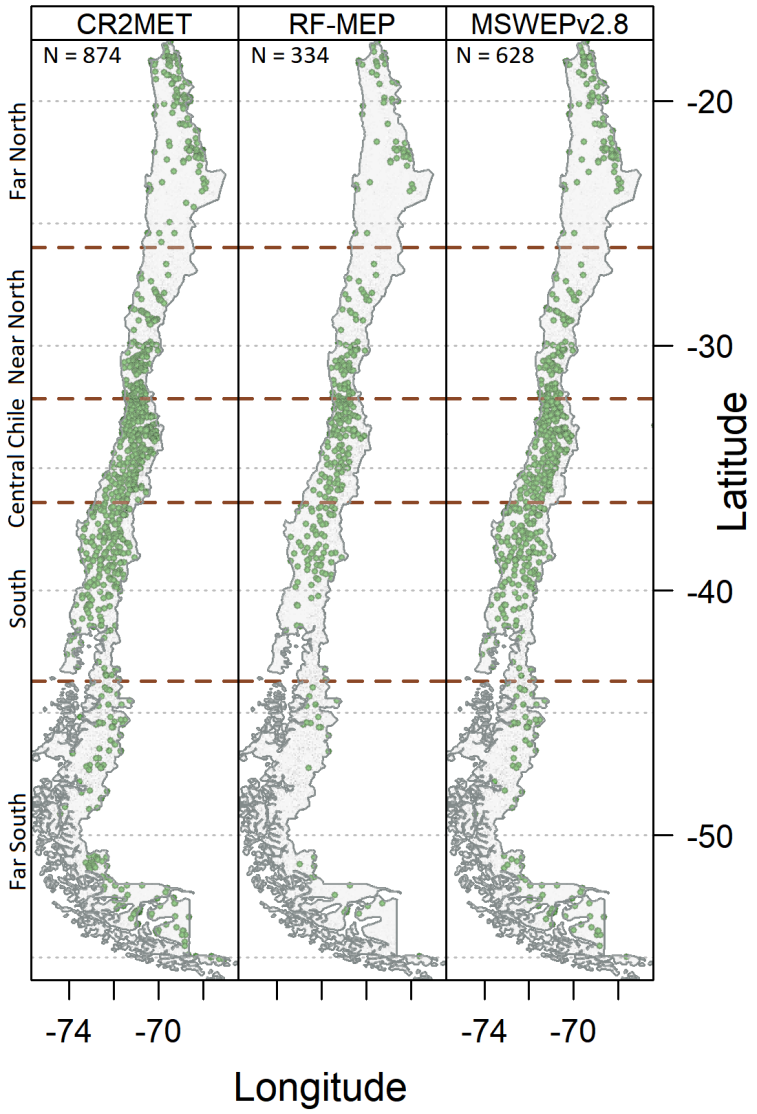

Figure S1: Rain gauges that each merged product used to construct their *P* estimates over Chile.

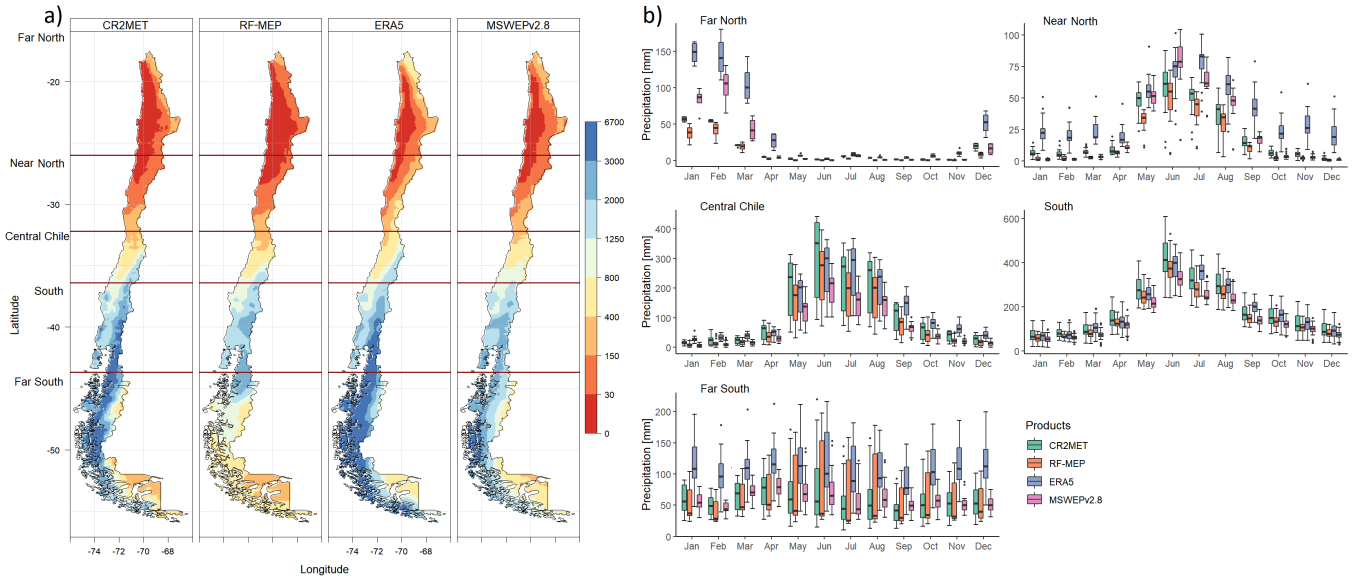

Figure S2: Comparison of P products over 2000–2014 (near-normal): a) mean annual P for each product resampled to a 0.05° spatial resolution using the nearest neighbour method. The dark red horizontal lines represent the limits of each major macroclimatic zone; and b) mean monthly P averaged over each catchment located within each macroclimatic zone (see Figure 1).

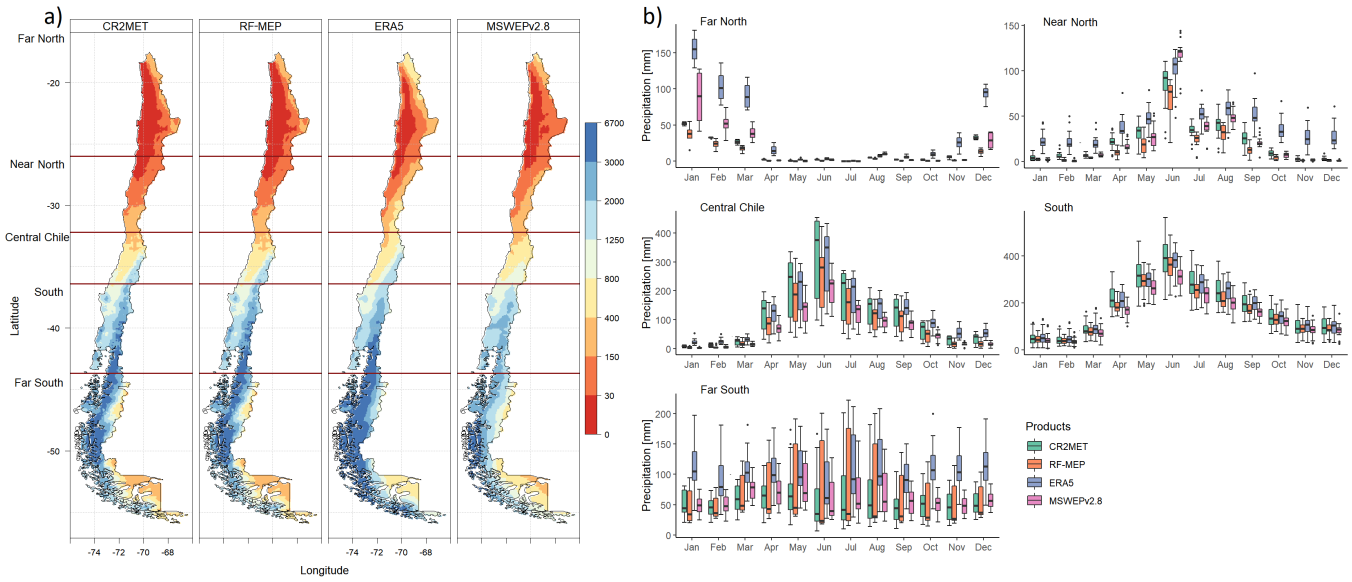

Figure S3: Comparison of P products over 1990–1999 (near-normal): a) mean annual P for each product resampled to a 0.05° spatial resolution using the nearest neighbour method. The dark red horizontal lines represent the limits of each major macroclimatic zone; and b) mean monthly P averaged over each catchment located within each macroclimatic zone (see Figure 1).

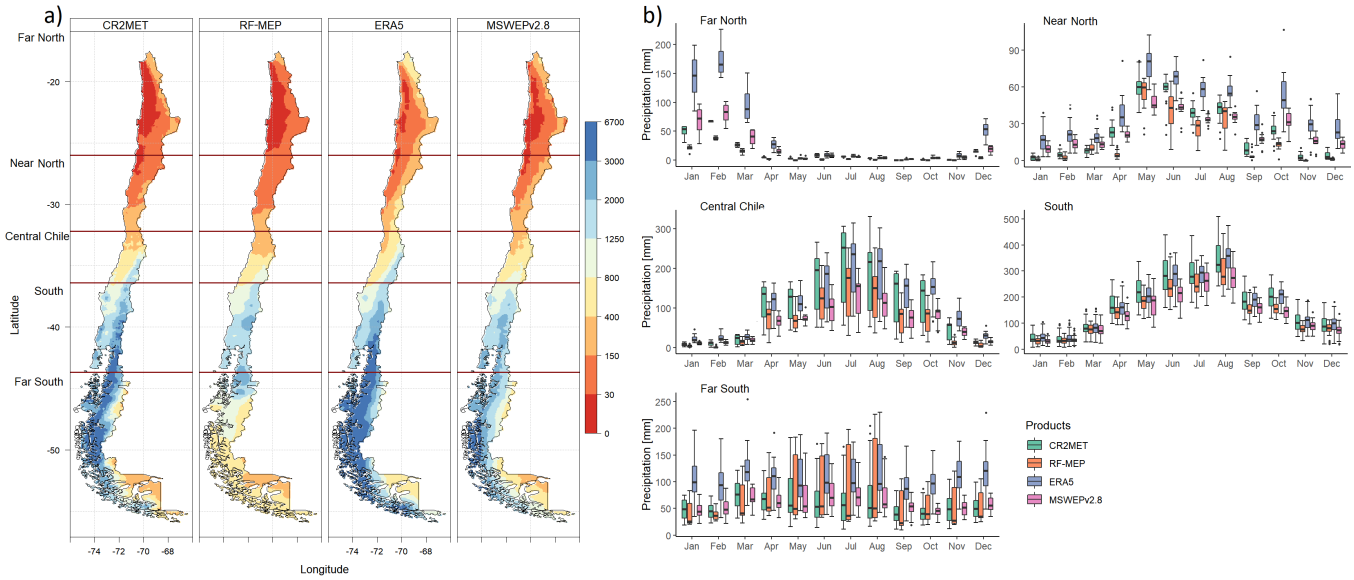

Figure S4: Comparison of P products over 2015–2018 (dry): a) mean annual P for each product resampled to a 0.05° spatial resolution using the nearest neighbour method. The dark red horizontal lines represent the limits of each major macroclimatic zone; and b) mean monthly P averaged over each catchment located within each macroclimatic zone (see Figure 1).

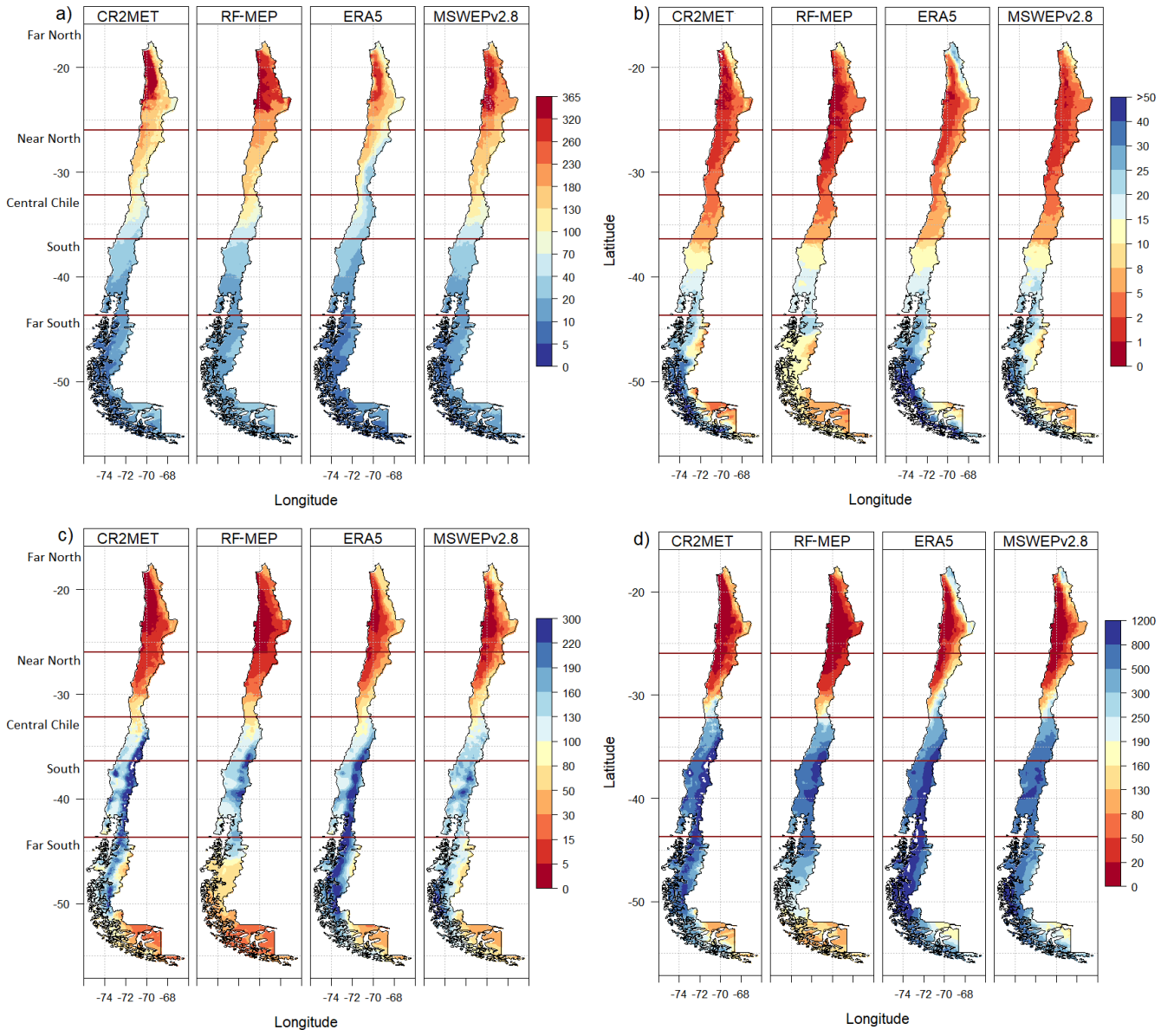

Figure S5: Median annual values of four Climdex indices over 2000–2014 (near-normal): *a*) number of consecutive dry days (CDD); *b*) number of consecutive wet days (CWD); *c*) maximum P over five consecutive days (RX5day); and *d*) annual P that is above the 95th percentile of P accumulated for events that are above the 95th percentile of the daily P for wet days (R95pTOT). The dark red horizontal lines represent the limits of each macroclimatic zone.

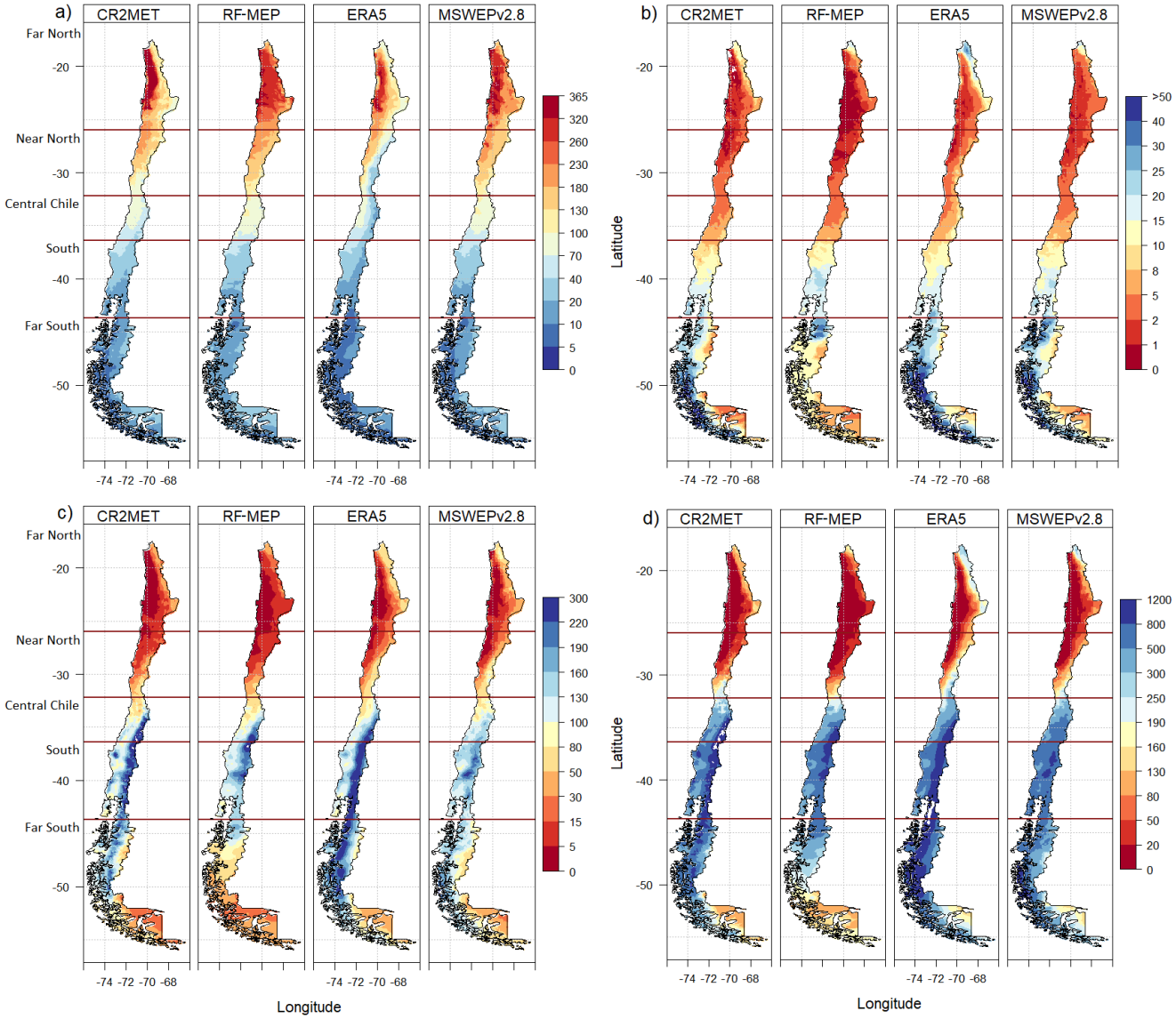

Figure S6: Median annual values of four Climdex indices over 1990–1999 (near-normal): a) number of consecutive dry days (CDD); b) number of consecutive wet days (CWD); c) maximum P over five consecutive days (RX5day); and d) annual P that is above the 95th percentile of P accumulated for events that are above the 95th percentile of the daily P for wet days (R95pTOT). The dark red horizontal lines represent the limits of each macroclimatic zone.

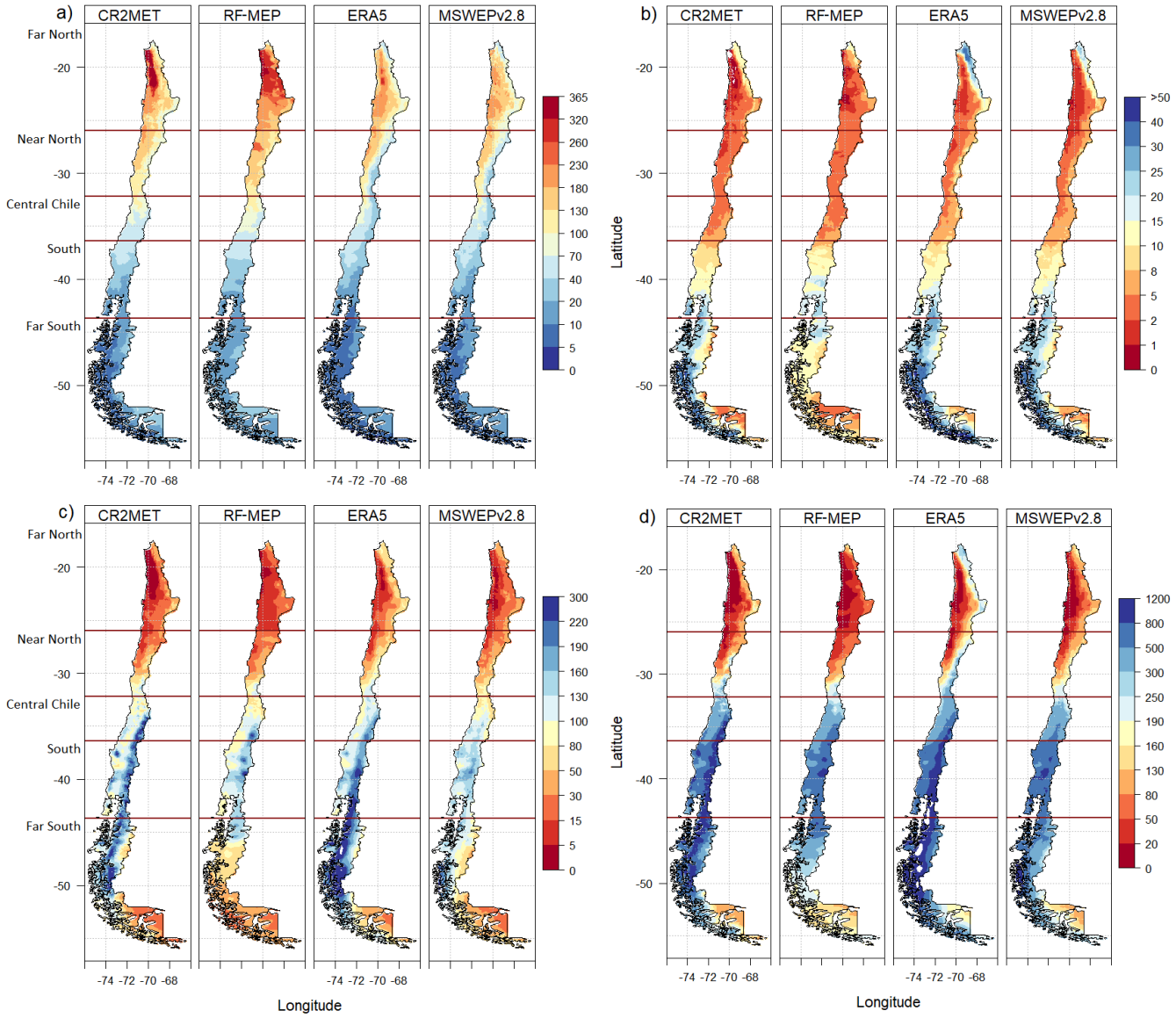

Figure S7: Median annual values of four Climdex indices over 2015–2018 (dry): *a*) number of consecutive dry days (CDD); *b*) number of consecutive wet days (CWD); *c*) maximum *P* over five consecutive days (RX5day); and *d*) annual *P* that is above the 95th percentile of *P* accumulated for events that are above the 95th percentile of the daily *P* for wet days (R95pTOT). The dark red horizontal lines represent the limits of each macroclimatic zone.

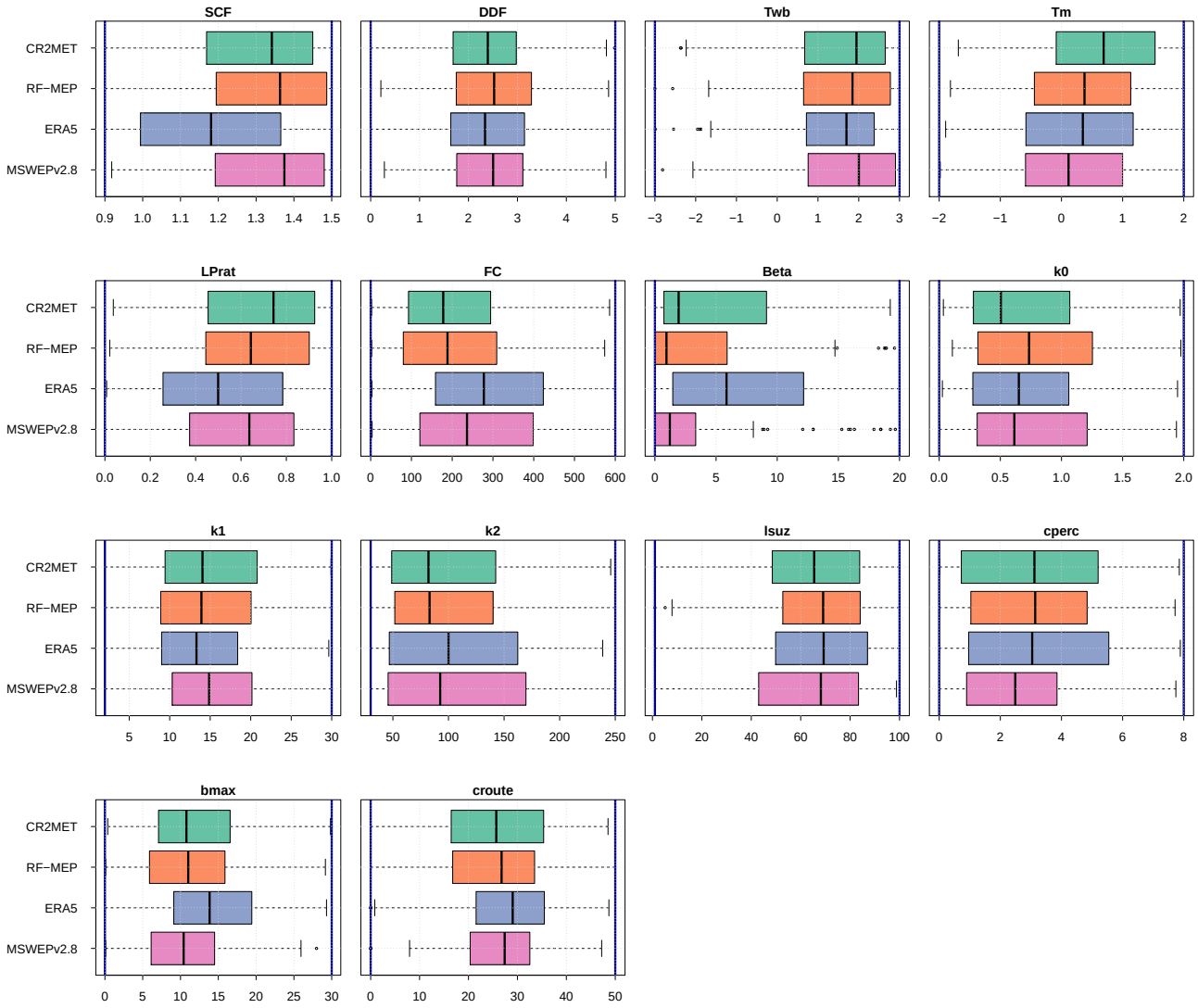

Figure S8: Model parameters obtained through calibration of the 100 selected catchments. The vertical blue lines indicate the upper and lower limits of the parameter ranges.

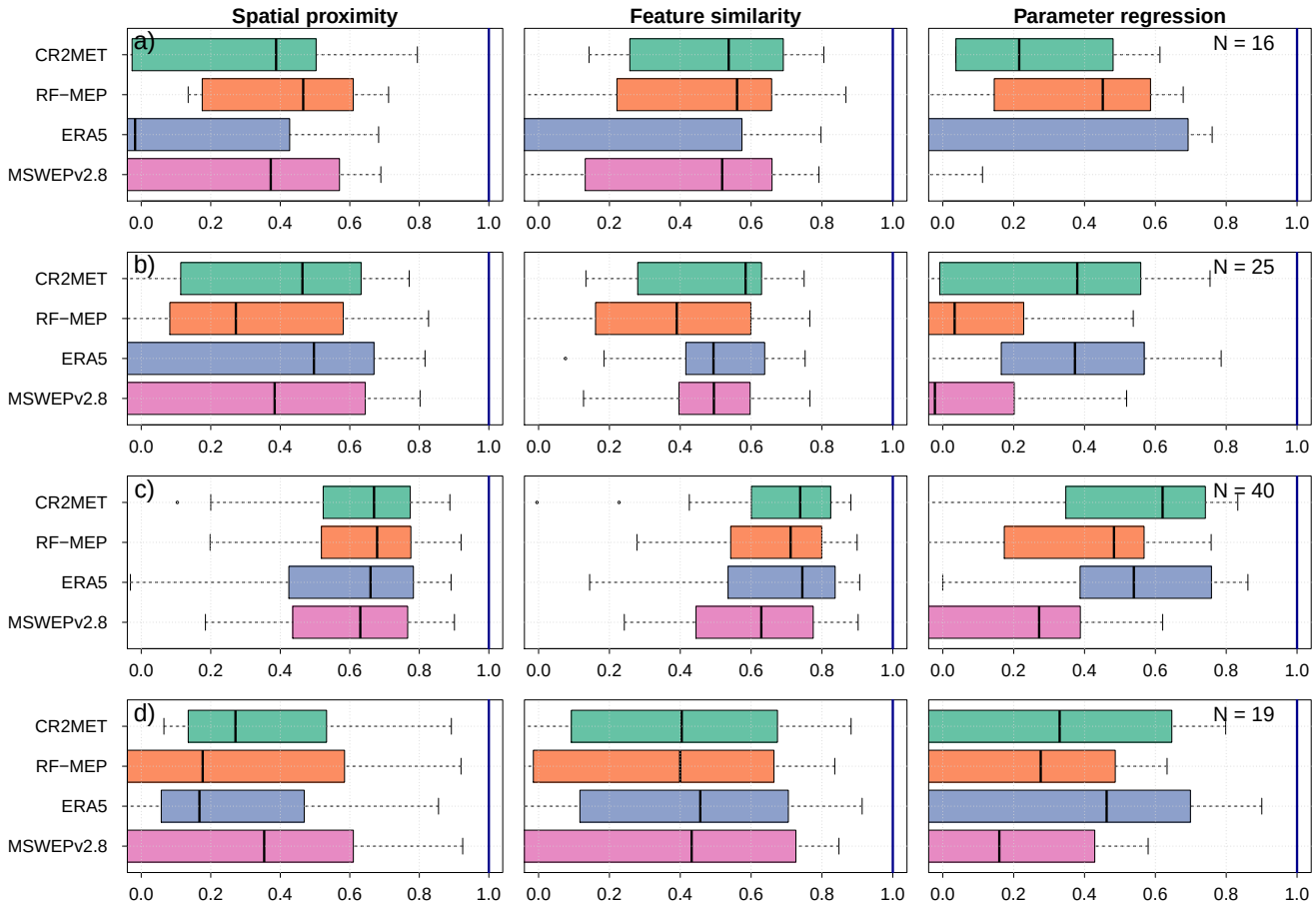

Figure S9: Performance of regionalisation methods for Verification 1 (1990–1999) according to the hydrological regime: *a*) snow-dominated; *b*) nivo-pluvial; *c*) pluvio-nival; and *d*) rain-dominated. *N* denotes the number of catchments per hydrological regime.

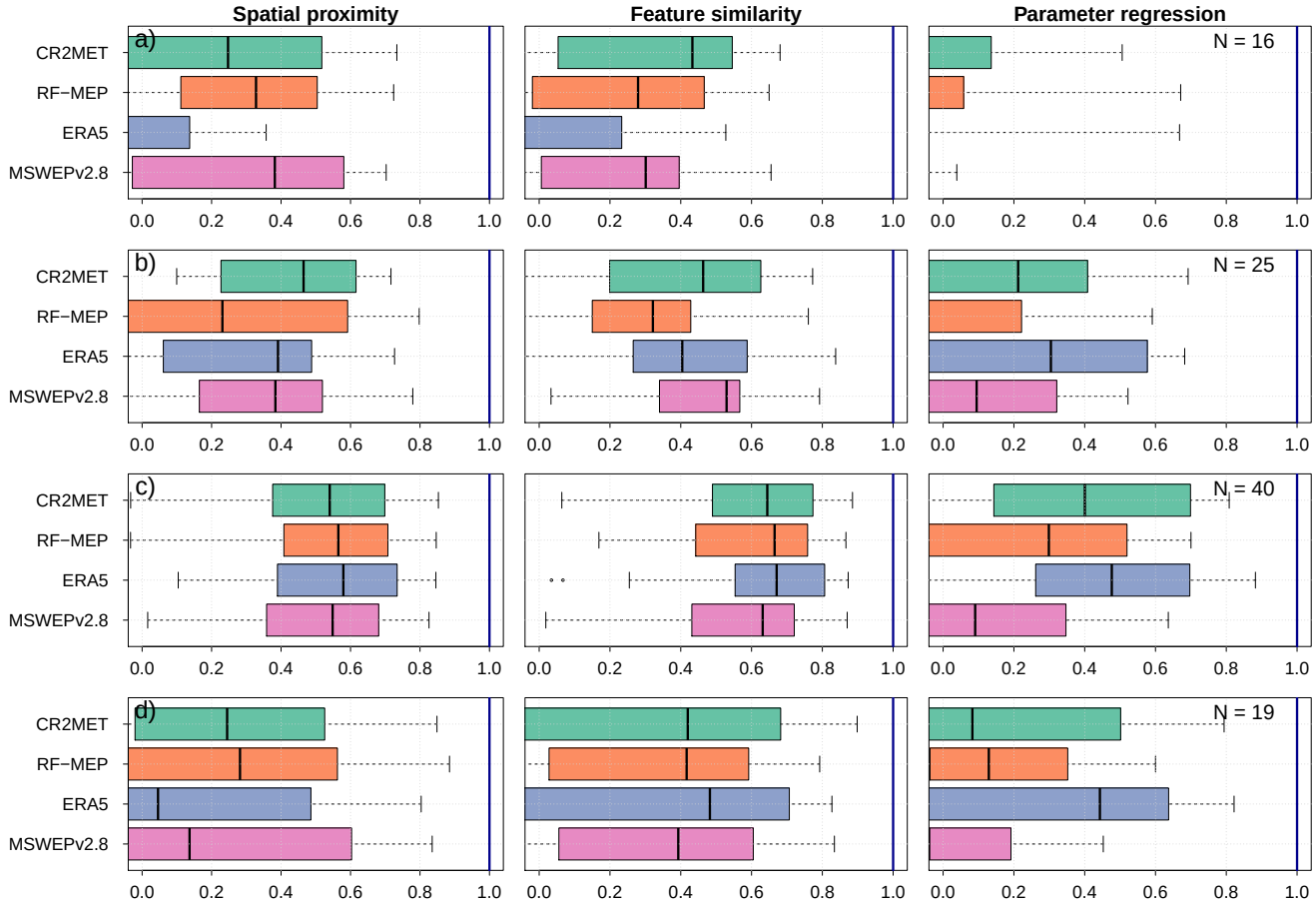

Figure S10: Performance of regionalisation methods for Verification 2 (2015–2018) according to the hydrological regime: *a*) snow-dominated; *b*) nivo-pluvial; *c*) pluvio-nival; and *d*) rain-dominated. *N* denotes the number of catchments per hydrological regime.

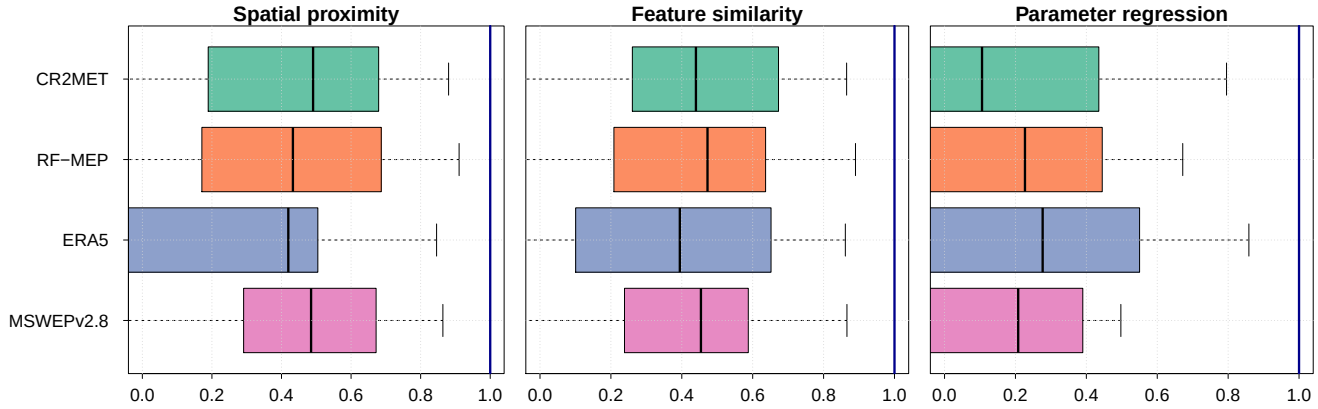

Figure S11: Regionalisation performance of the *P* products over the 25 smallest catchments (area < 353.1 km^2).

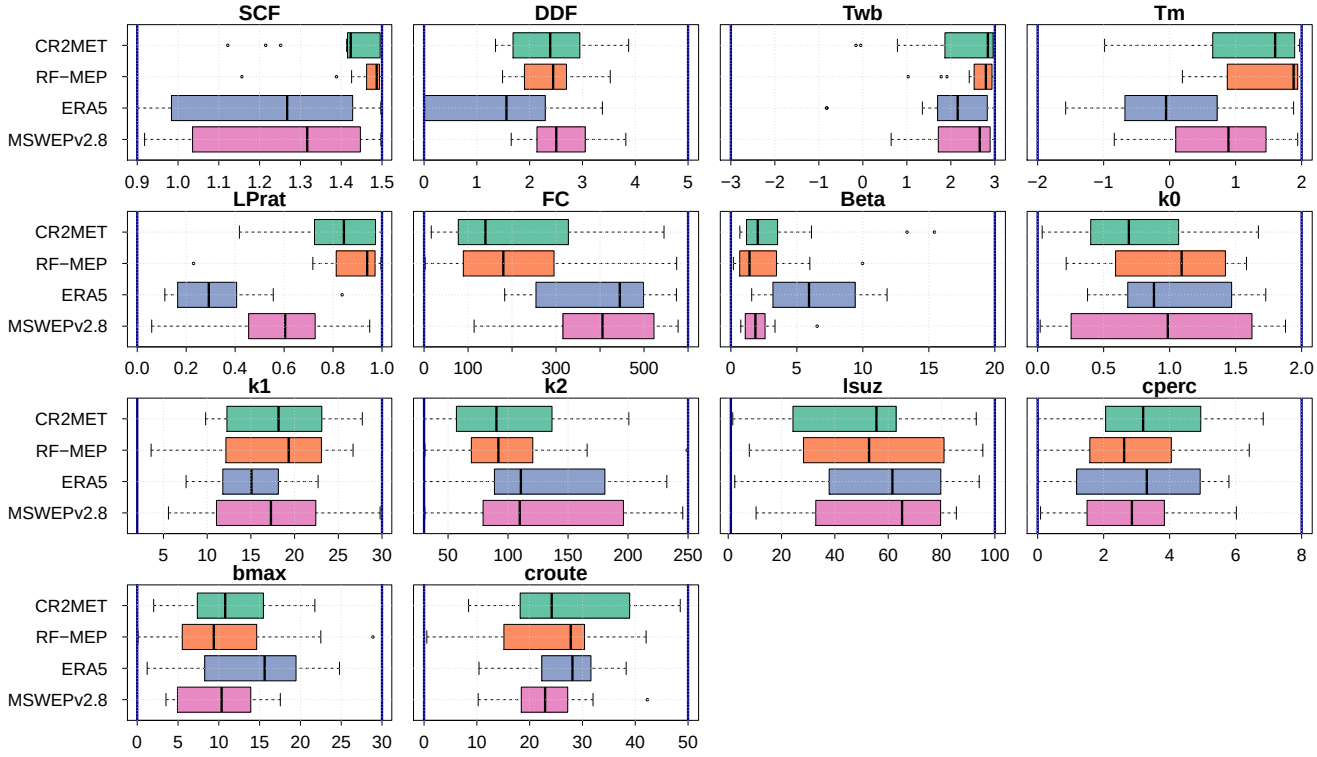

Figure S12: Model parameters obtained through calibration in snow-dominated catchments. The vertical blue lines indicate the upper and lower limits of the parameter ranges.

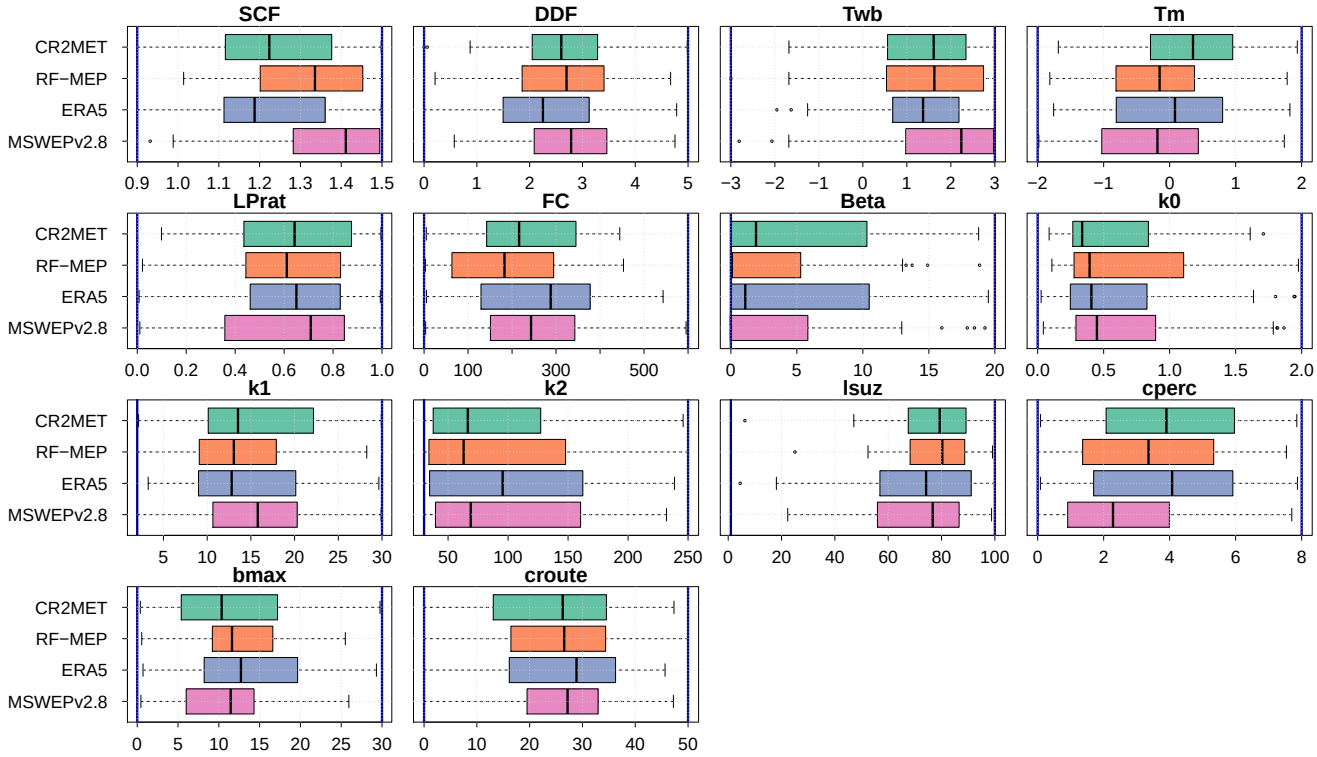

Figure S13: Model parameters obtained through calibration in pluvio-nival catchments. The vertical blue lines indicate the upper and lower limits of the parameter ranges.

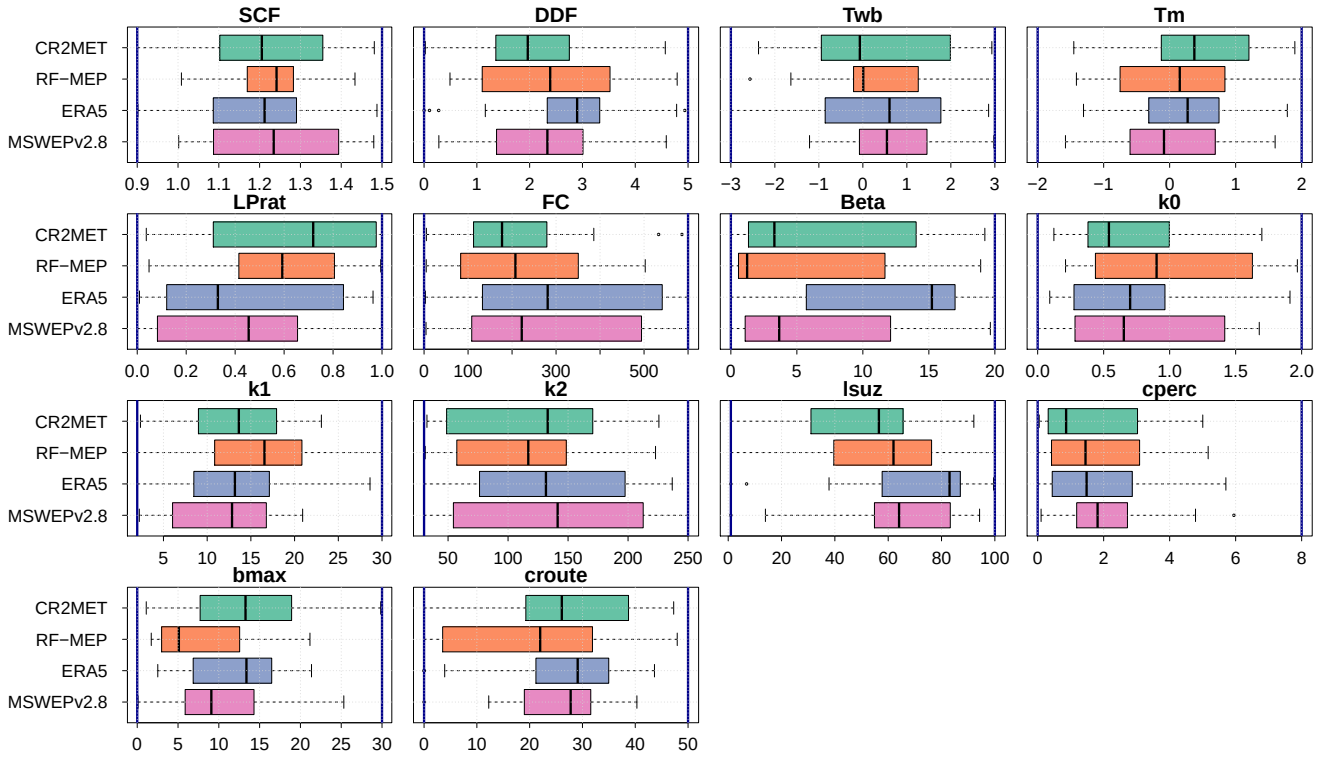

Figure S14: Model parameters obtained through calibration in rain-dominated catchments. The vertical blue lines indicate the upper and lower limits of the parameter ranges.

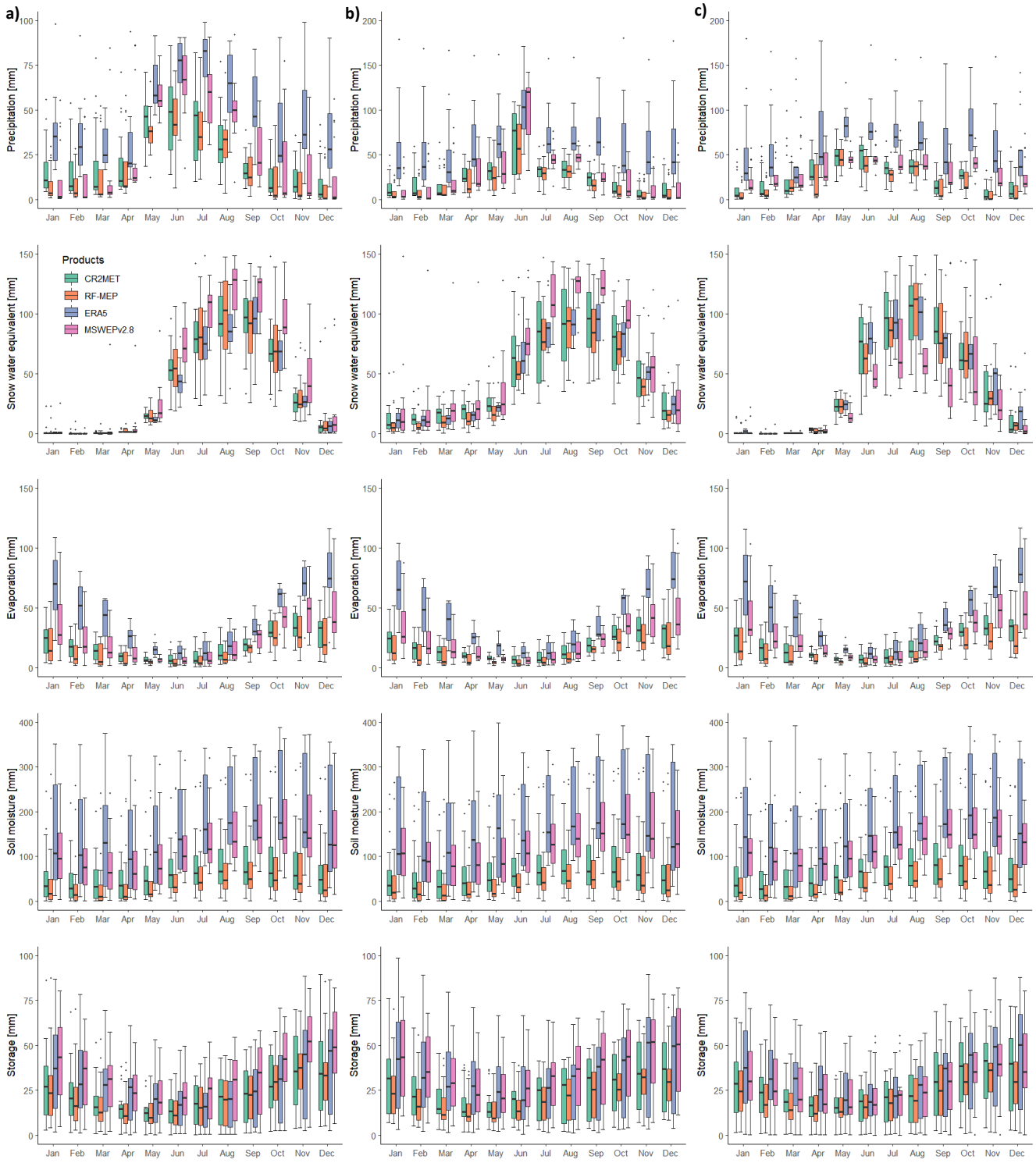

Figure S15: Mean monthly water balance components over snow-dominated catchments, obtained by forcing the TUW model with different P products for the: a) calibration (2000–2014); b) Verification 1 (1990–1999); and c) Verification 2 (2015–2018) periods. The mean monthly P was added for comparison purposes.

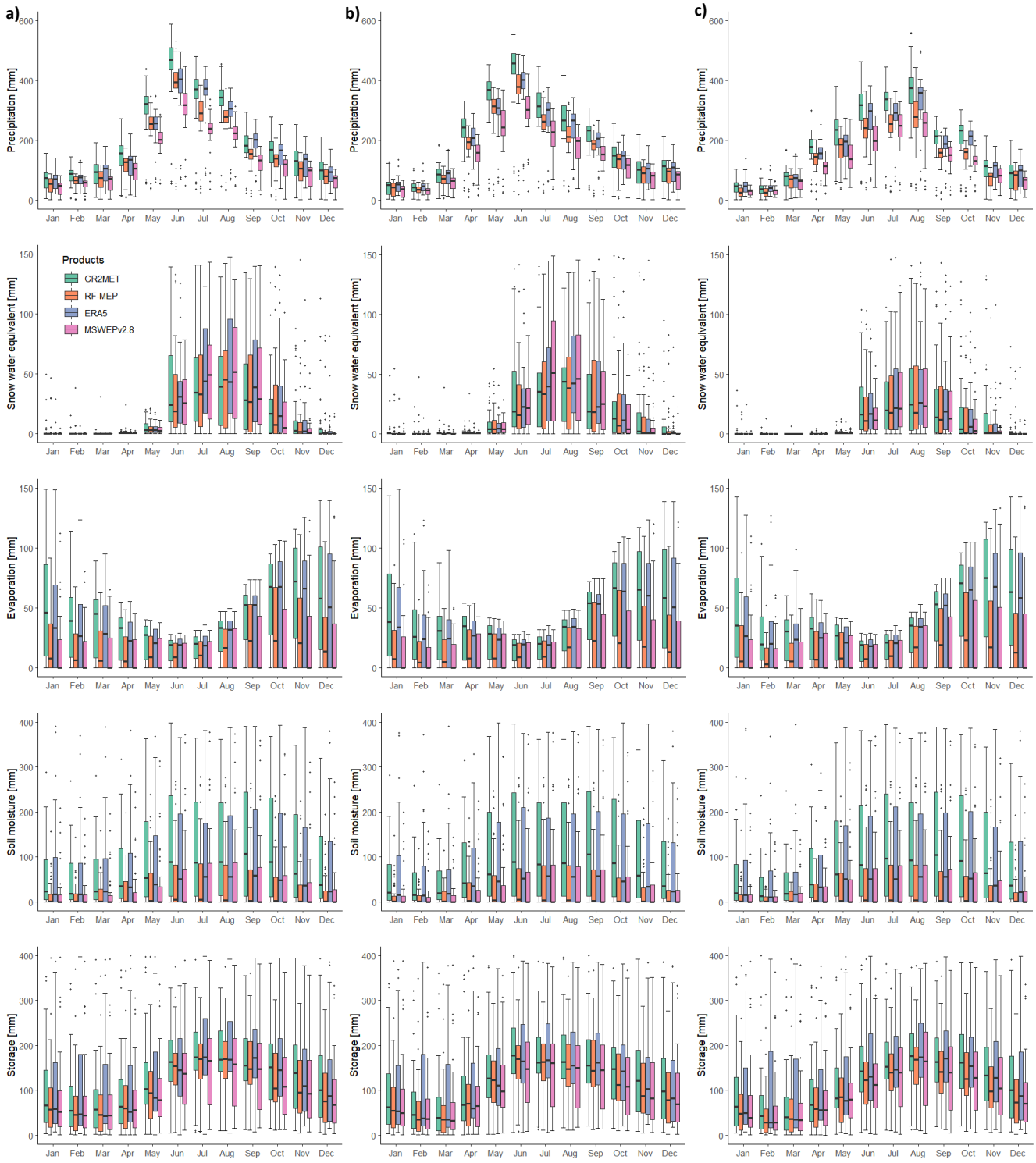

Figure S16: Mean monthly water balance components over pluvio-nival catchments, obtained by forcing the TUW model with different P products for the: a) calibration (2000–2014); b) Verification 1 (1990–1999); and c) Verification 2 (2015–2018) periods. The mean monthly P was added for comparison purposes.

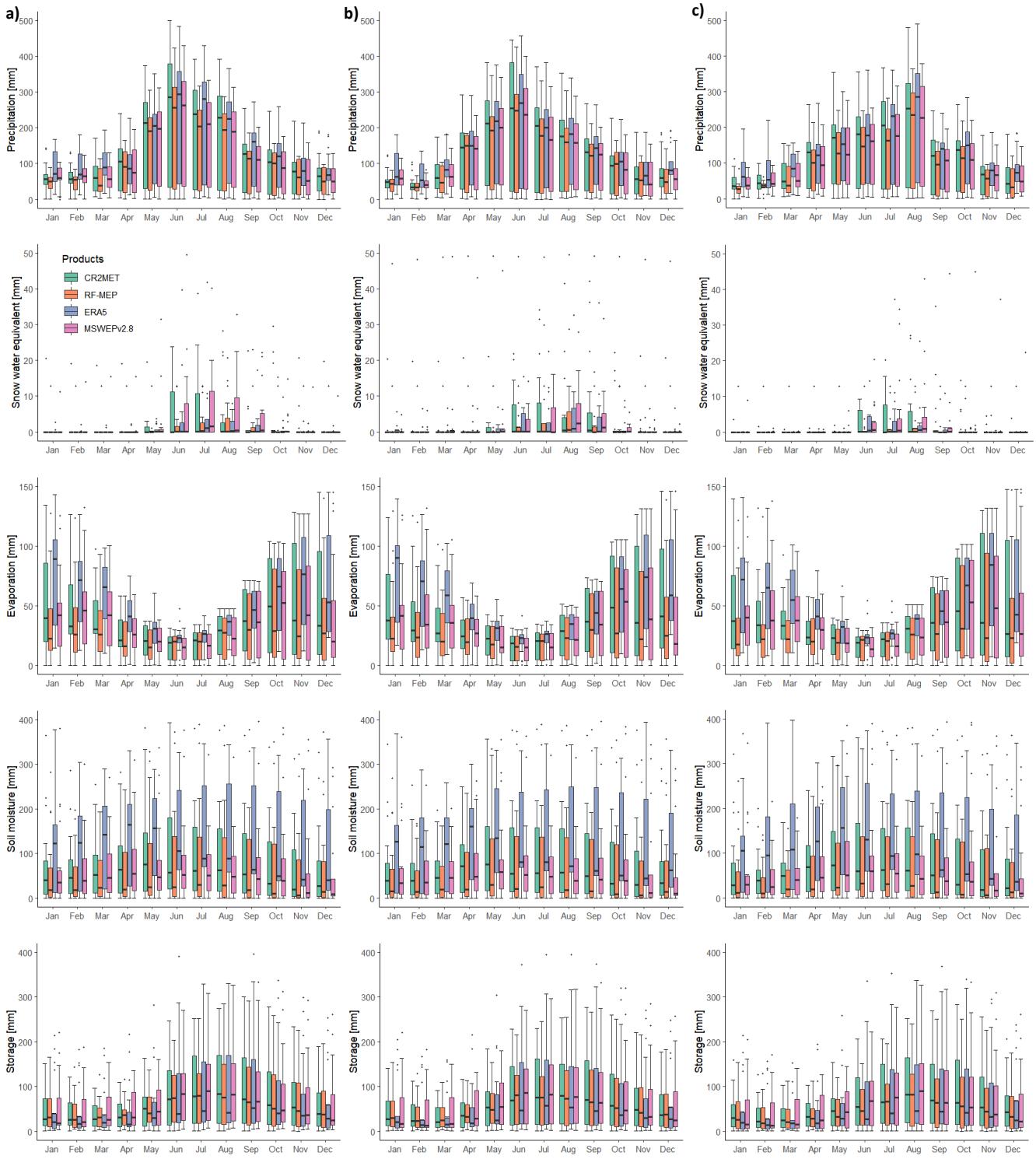

Figure S17: Mean monthly water balance components over rain-dominated catchments, obtained by forcing the TUW model with different P products for the: a) calibration (2000–2014); b) Verification 1 (1990–1999); and c) Verification 2 (2015–2018) periods. The mean monthly P was added for comparison purposes.