



Supplement of

Evaluation of ensemble precipitation forecasts generated through post-processing in a Canadian catchment

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Figure S1a: Subcatchment-averaged bias (%) in the raw QPFs and calibrated QPFs for individual daily forecasts as a function of lead-time for all subcatchments. The shaded region represents 5% and 95% confidence intervals generated using a bootstrap approach. Note the different scales on the vertical axes.



Figure S1b: Comparison of weighted-area raw GDPS with subcatchment-averaged observation for the year 2013 to 2015 in subcatchment 8 for lead time of 4 days.



Figure S1c: Subcatchment-averaged CRPS (mm/day) in the raw QPFs and calibrated QPFs for daily precipitation as a function of lead-time for all subcatchments. The shaded region represents 5% and 95% confidence intervals generated using a bootstrap approach. Note the different scales on the vertical axes.



Figure S2a: Relative operating characteristic (ROC) curve at lead times of 1, 3, and 5 days for calibrated GEFS for events of precipitation less than 0.2 mm for all subcatchments. In the calculation of ROC, the daily data from 2013 to 2015 are used.



Figure S2b: Relative operating characteristic (ROC) curve at lead times of 1, 3, and 5 days for calibrated GEFS for events of precipitation greater than 5 mm for all subcatchments. In the calculation of ROC, the daily data from 2013 to 2015 are used.



Figure S2c: Relative operating characteristic (ROC) curve at lead times of 1, 3, and 5 days for calibrated GDPS for events of precipitation less than 0.2 mm for all subcatchments. In the calculation of ROC, the daily data from 2013 to 2015 are used.



Figure S2d: Relative operating characteristic (ROC) curve at lead times of 1, 3, and 5 days for calibrated GDPS for events of precipitation greater than 5 mm for all subcatchments. In the calculation of ROC, the daily data from 2013 to 2015 are used.



Figure S3a: Spatial Kendall correlation coefficients for the calibrated GEFS before and after applying the Schaake shuffle and for observation between different subcatchments.



Figure S3b: Spatial Kendall correlation coefficients for the calibrated GDPS before and after applying the Schaake shuffle and for observation between different subcatchments.



Figure S4a: Lag-1 temporal Kendall correlation coefficients for the calibrated GEFS before and after applying the Schaake shuffle and for observation.



Figure S4b: Lag-1 temporal Kendall correlation coefficients for the calibrated GDPS before and after applying the Schaake shuffle and for observation.