Electronic Supplementary Material (ESI) for Environmental Science: Atmospheres.

Ambient characterisation of PurpleAir PM monitors in terms of indicative measurements – Supplementary Information

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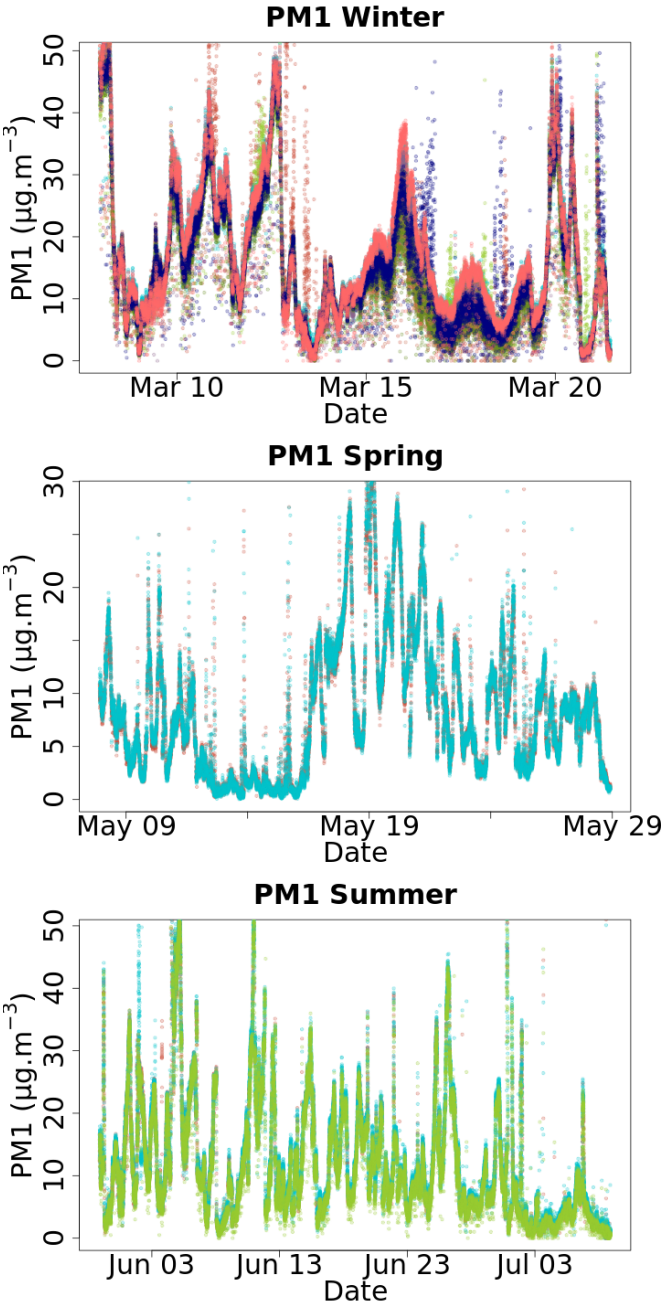

Figure S1: PM_1 time series for the 3 campaigns. The different PurpleAir systems used are differentiated by color.

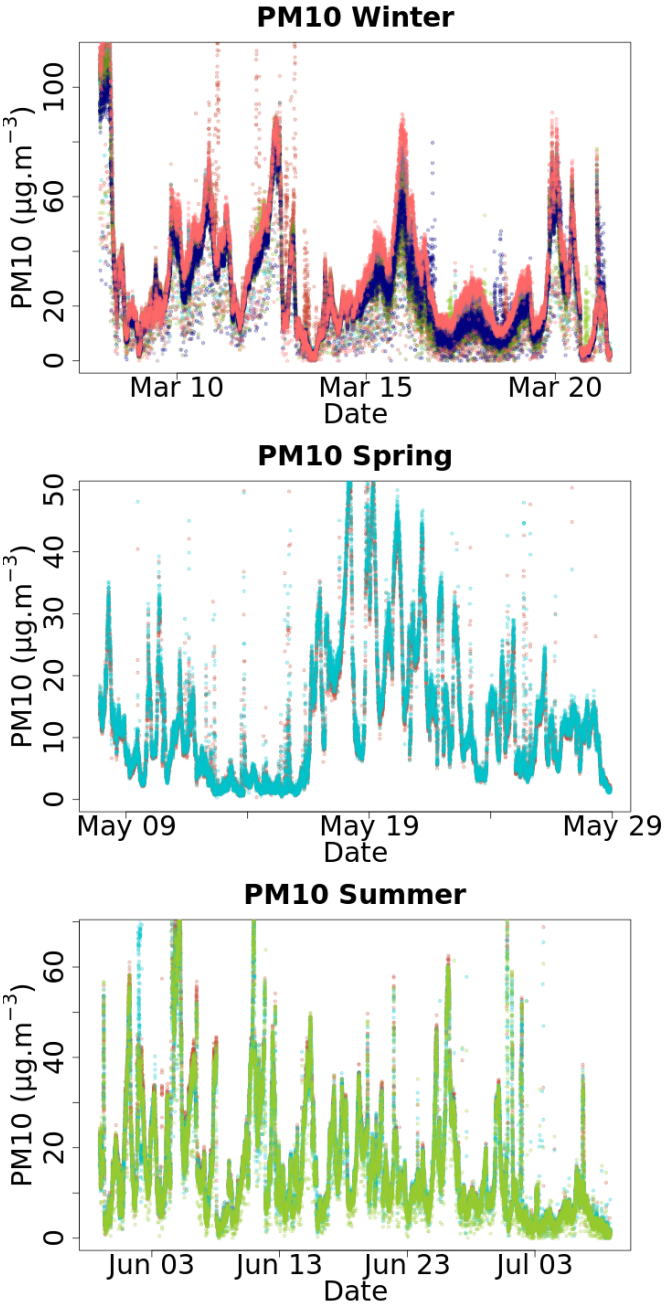

Figure S2: PM_{10} time series for the 3 campaigns. The different PurpleAir systems used are differentiated by color.

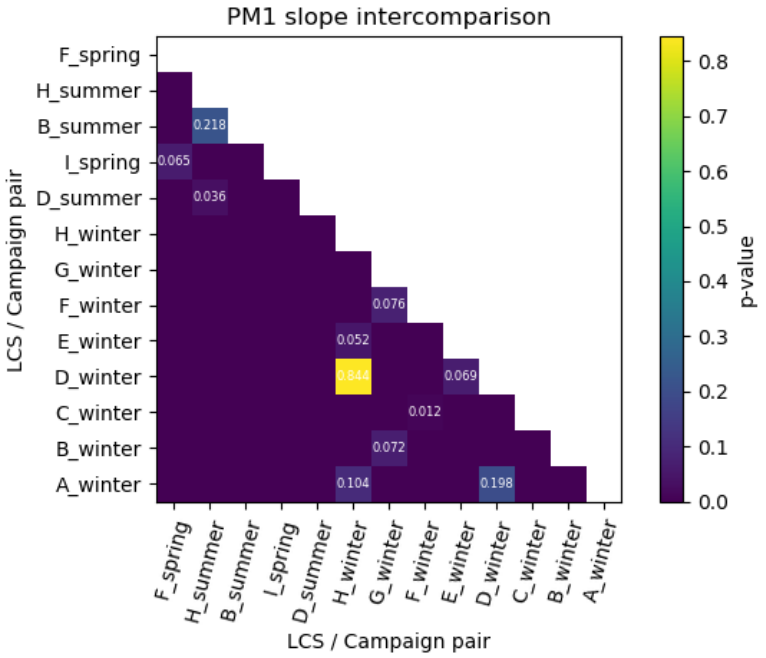

Figure S3: Results of the statistical tests performed on the calibrations (PM_1). Each calibration is compared to the remaining ones with a t-test on the slopes pair. The color scale in the plots indicate the p-values from the tests. Only the p-values which indicate an origin from a same distribution (p-value>0.05, with a subsequent Bonferroni correction) are written on the plot.

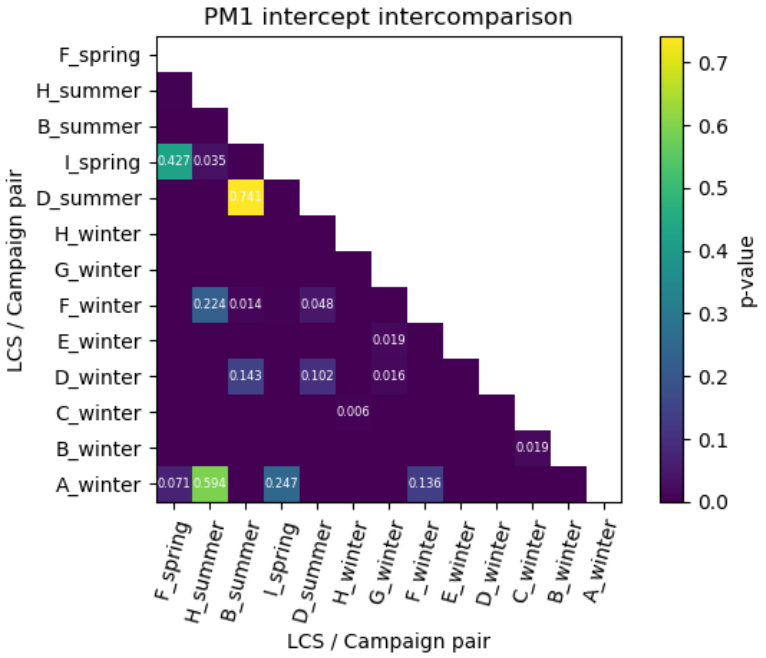

Figure S4: Results of the statistical tests performed on the calibrations (PM_1). Each calibration is compared to the remaining ones with a t-test on the intercepts pair. The color scale in the plots indicate the p-values from the tests. Only the p-values which indicate an origin from a same distribution (p-value>0.05, with a subsequent Bonferroni correction) are written on the plot.

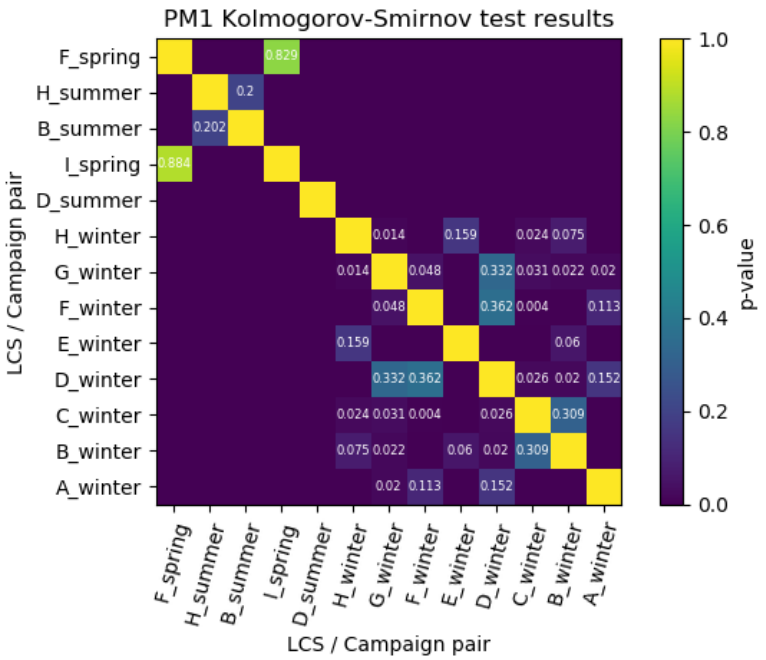

Figure S5: Results of the statistical tests performed on the calibrations (PM_1). Each calibration is compared to the remaining ones with a Kolmogorov-Smirnov test on the calibrated values. The plot for the Kolmogorov-Smirnov test must be read as follows: Both X and Y axis represent a single sensor/campaign pair. The PurpleAir output for the sensor/campaign pair on the X axis is calibrated with both the linear models from the sensor/campaign pairs on the X and Y axis. The concentrations yielded by both models are tested with the Kolmogorov-Smirnov test. The color scale in the plots indicate the p-values from the tests. If the calibration functions are equivalent, the Kolmogorov-Smirnov test is expected to show that the yielded calibrated concentrations come from the same distribution. Only the p-values which indicate an origin from a same distribution (p-value>0.05, with a subsequent Bonferroni correction) are written on the plot.

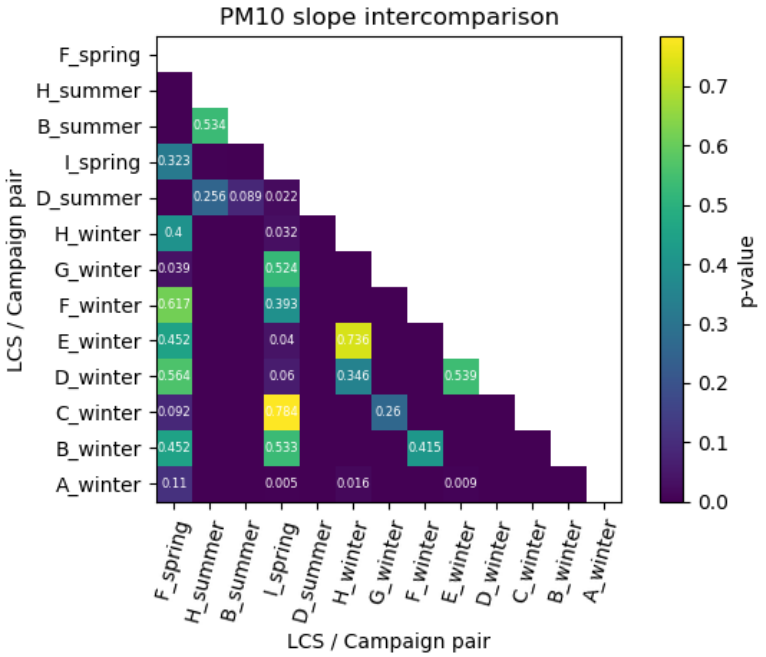

Figure S6: Results of the statistical tests performed on the calibrations (PM_{10}). Each calibration is compared to the remaining ones with a t-test on the slopes pair. The color scale in the plots indicate the p-values from the tests. Only the p-values which indicate an origin from a same distribution (p-value>0.05, with a subsequent Bonferroni correction) are written on the plot.

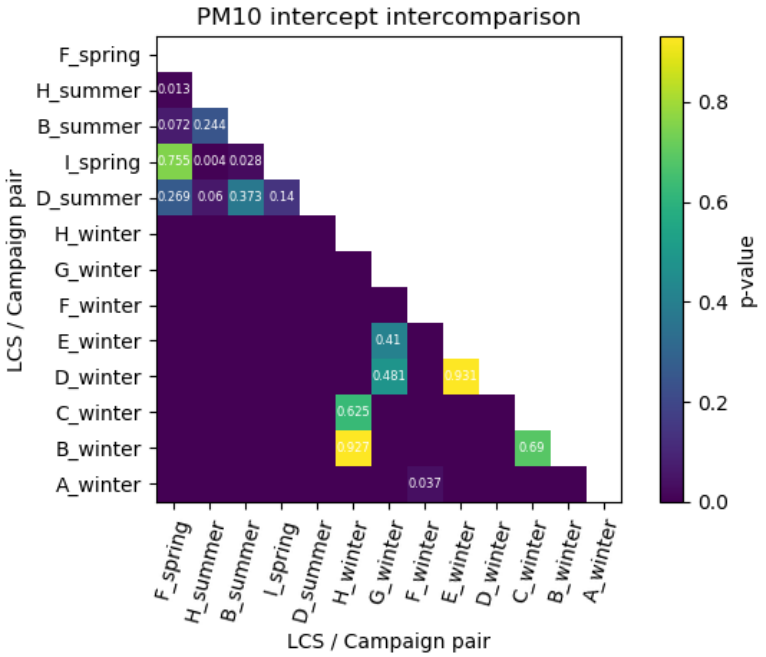

Figure S7: Results of the statistical tests performed on the calibrations (PM_{10}). Each calibration is compared to the remaining ones with a t-test on the intercepts pair. The color scale in the plots indicate the p-values from the tests. Only the p-values which indicate an origin from a same distribution (p-value>0.05, with a subsequent Bonferroni correction) are written on the plot.

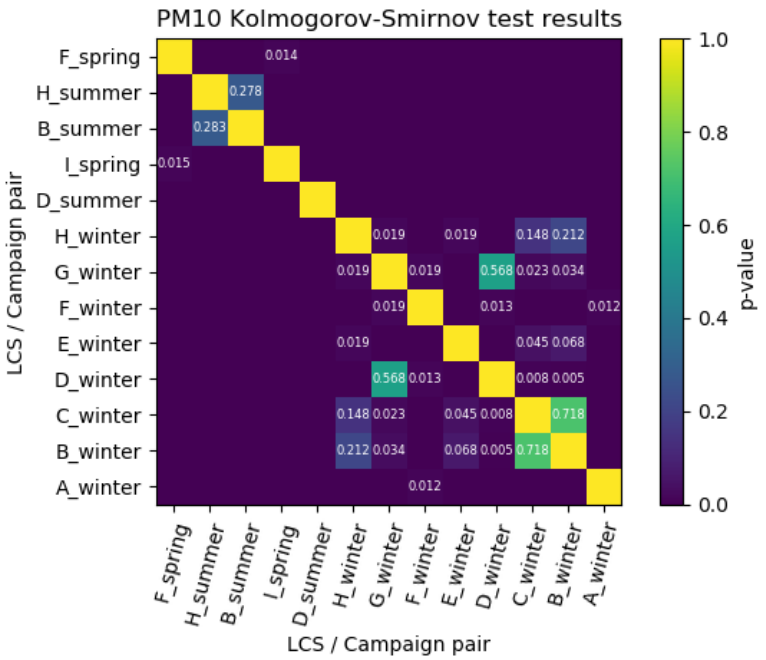

Figure S8: Results of the statistical tests performed on the calibrations (PM_{10}). Each calibration is compared to the remaining ones with a Kolmogorov-Smirnov test on the calibrated values. The plot for the Kolmogorov-Smirnov test must be read as follows: Both X and Y axis represent a single sensor/campaign pair. The PurpleAir output for the sensor/campaign pair on the X axis is calibrated with both the linear models from the sensor/campaign pairs on the X and Y axis. The concentrations yielded by both models are tested with the Kolmogorov-Smirnov test. The color scale in the plots indicate the p-values from the tests. If the calibration functions are equivalent, the Kolmogorov-Smirnov test is expected to show that the yielded calibrated concentrations come from the same distribution. Only the p-values which indicate an origin from a same distribution (p-value>0.05, with a subsequent Bonferroni correction) are written on the plot.

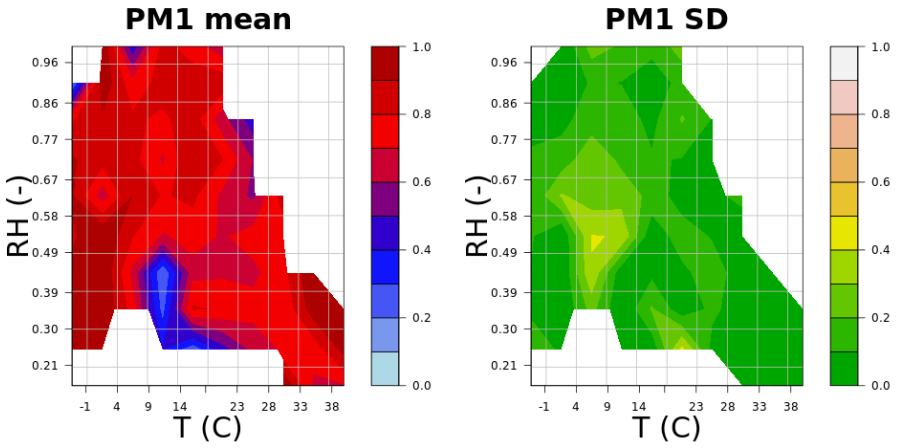

Figure S9: Fraction of indicative low-cost monitor PM_1 measurements (5 minutes time resolution) as a function of temperature and relative humidity (upper panel: average, lower panel: standard deviation, of all the PurpleAir systems). A measurement from a low-cost monitor is considered indicative if it is within ±50% of the reference measurement. The machine-readable version is freely available.

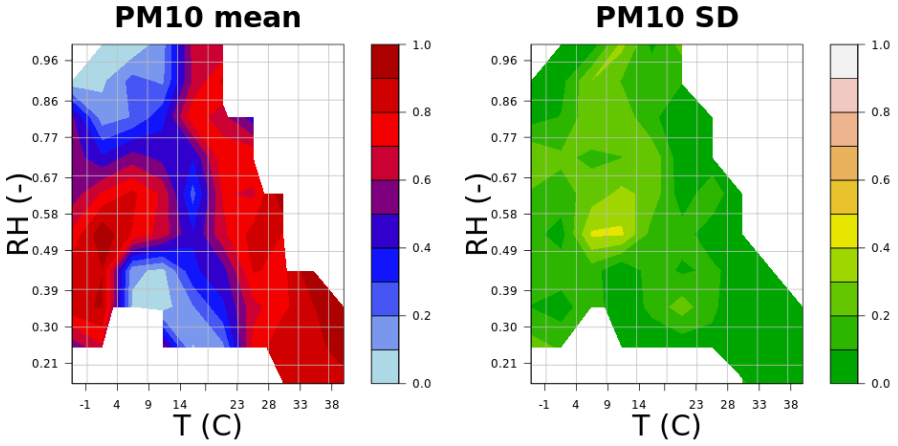

Figure S10: Fraction of indicative low-cost monitor PM_{10} measurements (5 minutes time resolution) as a function of temperature and relative humidity (upper panel: average, lower panel: standard deviation, of all the PurpleAir systems). A measurement from a low-cost monitor is considered indicative if it is within ±50% of the reference measurement. The machine-readable version is freely available.