Supplement of

Understanding aerosol composition in an inter-Andean valley impacted by sugarcane intensive agriculture and urban emissions.

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Table S1. Preliminary PM10 emission estimate in CRV region reported in Ton year.

| Sector                        | Source Emission                  | Year | Emission (Ton PM10 year\(^{-1}\)) | Reference                                                                 |
|-------------------------------|----------------------------------|------|-----------------------------------|---------------------------------------------------------------------------|
| Manufacturing processes       | Food and beverage industry       | 2017 | 6837.81                           | (CVC and Fulecol, 2018; CVC and K2, 2018b, 2018c, 2018d, 2018a; CVC, 2012) |
| Mobile                        | Traffic                          | 2017 | 3126.36                           | (CVC and Fulecol, 2018; CVC and K2, 2018b, 2018c, 2018d, 2018a)          |
| Manufacturing processes       | Paper and printing industry      | 2017 | 2740.88                           | (CVC and Fulecol, 2018; CVC and K2, 2018a; CVC, 2012)                    |
| Sugarcane burning             | Sugarcane burning                | 2018 | 1740.31                           | (Cardozo et al., 2019)                                                   |
| Manufacturing processes       | Power generation, incinerators, and other services | 2017 | 608.39                            | (CVC and Fulecol, 2018; CVC and K2, 2018c, 2018d, 2018a; CVC, 2012)     |
| Manufacturing processes       | Production of cement, asphalt, and tiles | 2017 | 585.07                            | (CVC, 2012)                                                              |
| Manufacturing processes       | Metallurgical industry           | 2017 | 253.35                            | (CVC and Fulecol, 2018; CVC and K2, 2018c)                                |
| Manufacturing processes       | Luminaire and battery industry   | 2012 | 27.35                             | (CVC, 2012)                                                              |
| Manufacturing processes       | Chemistry Industry               | 2012 | 26.90                             | (CVC, 2012)                                                              |
| Manufacturing processes       | Leather and textile industry     | 2012 | 14.42                             | (CVC, 2012)                                                              |
Figure S1. Number of preharvest sugarcane burnings registered during this study, area burned and time of those burnings.
Figure S2. Weather conditions during the sampling period in Palmira.
Figure S3. Correlation matrix of chemical compounds. White areas corresponding to correlation with p value > 0.05
Figure S4. Time series of bulk PM$_{2.5}$ samples collected in CRV during 2018.

Figure S5. Time series of PAHs in PM$_{2.5}$ samples collected in CRV during 2018.
Table S2. Mean and one standard deviation concentrations of PAHs measured in the samples of PM\(_{2.5}\) collected in CRV region, concentrations reported in ng m\(^{-3}\).

| PAHs                          | Abbreviation | Rings | Mean | sd  |
|-------------------------------|--------------|-------|------|-----|
| Fluorene                      | FLE          | 3 rings | 2.82 | 1.52 |
| 9 10-Anthracenedione          | ANT (9,10)   | 3 rings | 0.67 | 0.33 |
| Benzo(b)fluoranthene          | BbF          | 5 rings | 0.44 | 0.22 |
| 9H-Fluorenone                 | FLO (9H)     | 3 rings | 0.41 | 0.34 |
| Benzo(ghi)perylene            | BghiP        | 6 rings | 0.40 | 0.17 |
| Cyclopenta(cd)pyrene          | CPY          | 5 rings | 0.38 | 0.21 |
| Indeno(1 2 3-cd)pyrene        | IcdP         | 6 rings | 0.38 | 0.18 |
| Benz(e)pyrene                 | BeP          | 5 rings | 0.28 | 0.13 |
| Benz(a)pyrene                 | BaP          | 5 rings | 0.27 | 0.14 |
| 1,2 Benzanthraquinone         | BAQ (1,2)    | 4 rings | 0.21 | 0.15 |
| Phenanthrene                  | PHEN         | 3 rings | 0.19 | 0.18 |
| Anthracene                    | ANT          | 3 rings | 0.08 | 0.18 |
| Benzo(k)fluoranthene          | BkF          | 5 rings | 0.14 | 0.08 |
| Retene                        | RET          | 3 rings | 0.14 | 0.11 |
| Fluoranthenel                 | FLT          | 4 rings | 0.13 | 0.08 |
| Pyrene                        | PYR          | 4 rings | 0.12 | 0.05 |
| Benz(a)anthracene             | BaA          | 4 rings | 0.09 | 0.05 |
| Dibenz(ah)Anthracene          | DahA         | 5 rings | 0.06 | 0.03 |
| 2, 2-Binaphthyl               | BNT (2,2)    | 4 rings | 0.03 | 0.05 |
| Chrysene(+Triphenylene)       | CHRY         | 4 rings | 0.02 | 0.03 |
| Benzo(b)naphtho(1 2)thiophene | BNT (2,1)    | 4 rings | 0.01 | 0.01 |
| BaP TEQ                       |              |       | 0.38 | 0.23 |
| BaP MEQ                       |              |       | 0.54 | 0.29 |
| \(\sum\) PAH 3 Rings (LMW)   |              |       | 3.3  | 2.09 |
| \(\sum\) PAH 4 Rings (MMW)   |              |       | 0.12 | 0.18 |
| \(\sum\) PAH 5 Rings (HMW)   |              |       | 1.48 | 0.77 |
| \(\sum\) PAH 6 Rings (HMW)   |              |       | 0.72 | 0.35 |
| BeP/(BeP+BaP)                 |              |       | 0.51 | 0.04 |
| IcdP/(IcdP+BghiP)             |              |       | 0.48 | 0.04 |
| BaP/BghiP                     |              |       | 0.69 | 0.13 |
| IcdP/BghiP                    |              |       | 0.93 | 0.14 |
| LMW/(MMW+HMW)                 |              |       | 1.43 | 1.00 |
Table S3. Median concentrations and 1 standard deviation of n-alkanes analyzed in PM$_{2.5}$ samples collected in CRV (ng/m$^3$).

| n-Alkane | Mean  | sd  |
|----------|-------|-----|
| C20      | 0.34  | 0.17|
| C21      | 0.30  | 0.29|
| C22      | 0.51  | 1.08|
| C23      | 1.14  | 0.83|
| C24      | 3.03  | 1.68|
| C25      | 2.96  | 1.08|
| C26      | 3.40  | 1.30|
| C27      | 3.06  | 1.15|
| C28      | 2.68  | 1.41|
| C29      | 6.35  | 3.41|
| C30      | 4.22  | 3.31|
| C31      | 5.87  | 3.37|
| C32      | 2.53  | 1.58|
| C33      | 3.15  | 2.64|
| C34      | 1.10  | 0.61|
| $\sum n$-alkanes | 40.36 | 18.82 |
| CPI      | 1.22  | 0.18|
| WAX (%)  | 12.65 | 5.21|

Figure S6. Scree plot of PCA including parallel analysis.