

PP14 WEEKLY AND HOURLY VARIATION OF ATMOSPHERIC BLACK CARBON IN CALGARY, CANADA

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Black carbon (BC) could influence the climate in the form of both atmospheric aerosol and water insoluble particulate matters. As a byproduct of incomplete combustion of carbonaceous fuels, BC emissions are significantly associated with human activities. In this work, we investigated the weekly and hourly patterns of atmospheric BC at an urban site in Calgary, Canada from January to December 2016. It was found that the atmospheric BC concentration in weekdays (293 ng/m^3) were higher than that in weekends (214 ng/m^3). And among weekdays, Tuesday and Wednesday are the two days with elevated atmospheric BC concentration. The weekly pattern of urban atmospheric BC concentration is consistent with the weekly variations of fine particulate matters (PM_{2.5}, particulate matter with the aerodynamic diameter of $2.5 \mu\text{m}$ or less), CO and NO_x. During the weekday, BC concentration increased dramatically from $\sim 6:00$ LST, and peaked two times per day: between $8:00$ and $10:00$ LST, and between $15:00$ and $21:00$ LST. The results implied the predominant role of the local source of BC, such as vehicle emissions. In winter, BC could be deposited via snowfall events. BC in snow was quantified thermos-optically after filter-based separation from snowmelt. The light absorbing property of BC in snow was also found different from that in the atmosphere. The discrepancy of light absorbing property for BC in snow and ambient air might be attributed to the breakdown of coating layers of BC, which was the result of pretreatment procedures of snow samples.