Supplement to: Chemical composition of indoor and outdoor particles in a building near an international airport: Influence of local and long-range transported air pollution

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Figure S1: Location of the measurement site (Aviapolis X, coordinates 60.305519, 24.958812). The major roads are presented in yellow: highway E18 and highway 45. The scale of the map is shown with a scale bar. (© Google Earth 2025).

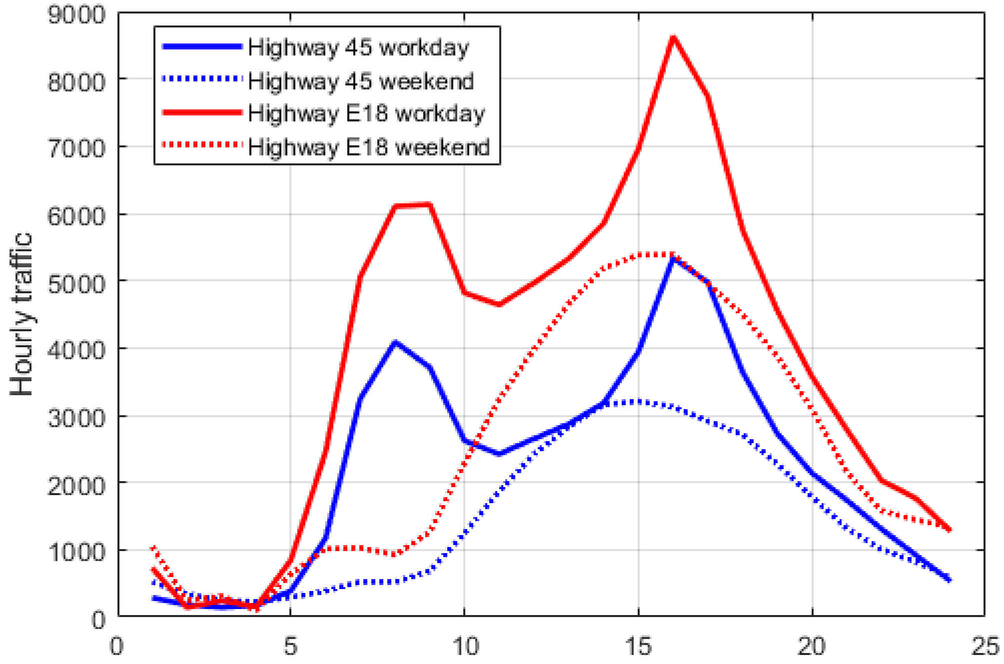

Figure S2: Average diurnal traffic profiles on nearby highways, Tuusulanväylä and Kehä III. The diurnal profiles are calculated separately for workdays and weekends.

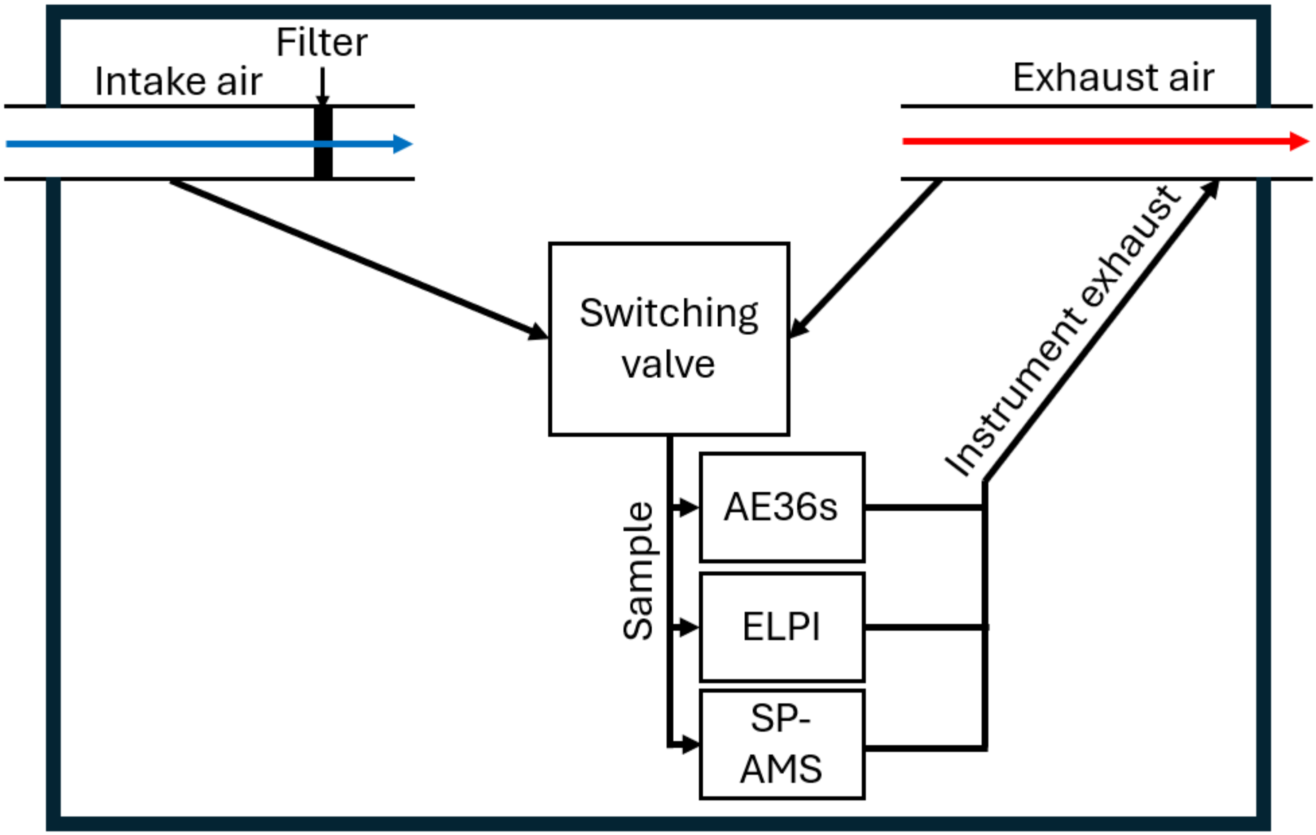

Figure S3: Measurement setting during the campaign. The sampling location was altered between intake and exhaust using a switching valve. The intake air was sampled directly from the air intake to the building before entering the filtration system. Indoor air was sampled from the exhaust duct of the building. The eBC concentrations were measured using AE36s, and the particle chemical composition was measured using SP-AMS. The particle number size distribution was measured with ELPI. The exhaust from the instruments was led back to the building exhaust after indoor air sampling.

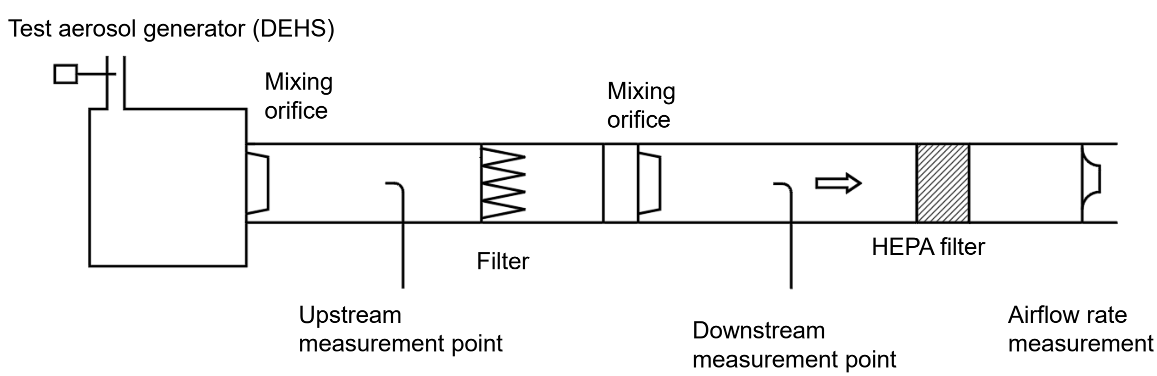

Figure S4: Test rig used to measure filtration efficiency of the air filter installed in the AVIAPOLIS X HVAC system.

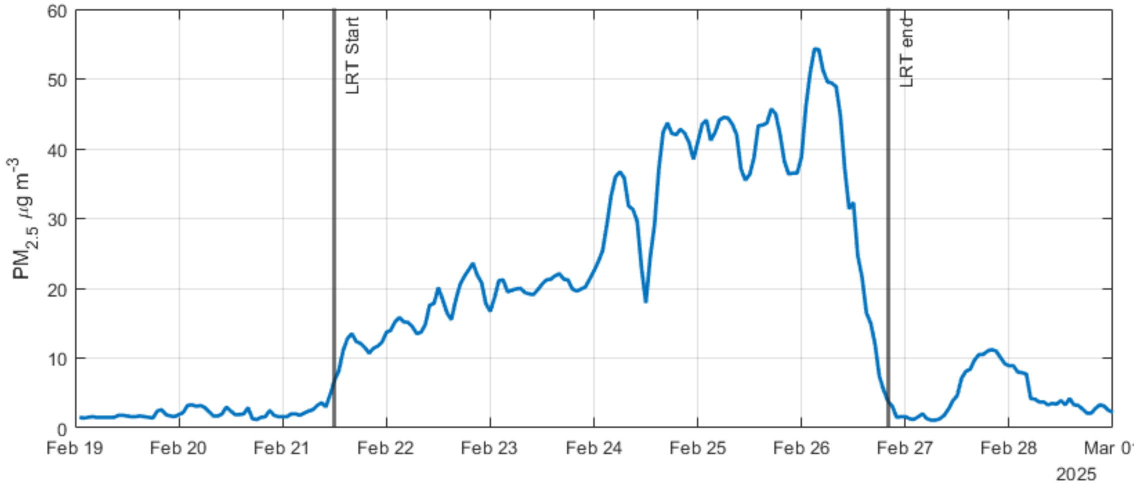

Figure S5: $PM_{2.5}$ concentrations measured at the Luukki regional background measurement station during the measurement period from 13 February to 27 February 2025. The start and end of the LRT event are marked with vertical black lines.

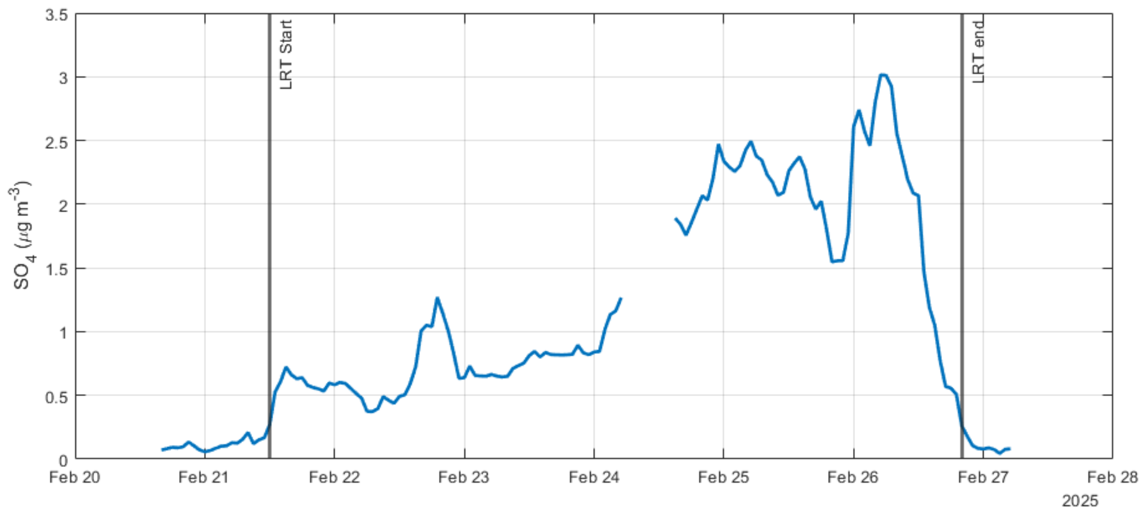

Figure S6: Temporal variation of measured sulfate (SO_4) concentrations at Aviapolis X using SP-AMS during the measurement period from 13 February to 27 February 2025. The start and end of the LRT event are marked with vertical black lines.

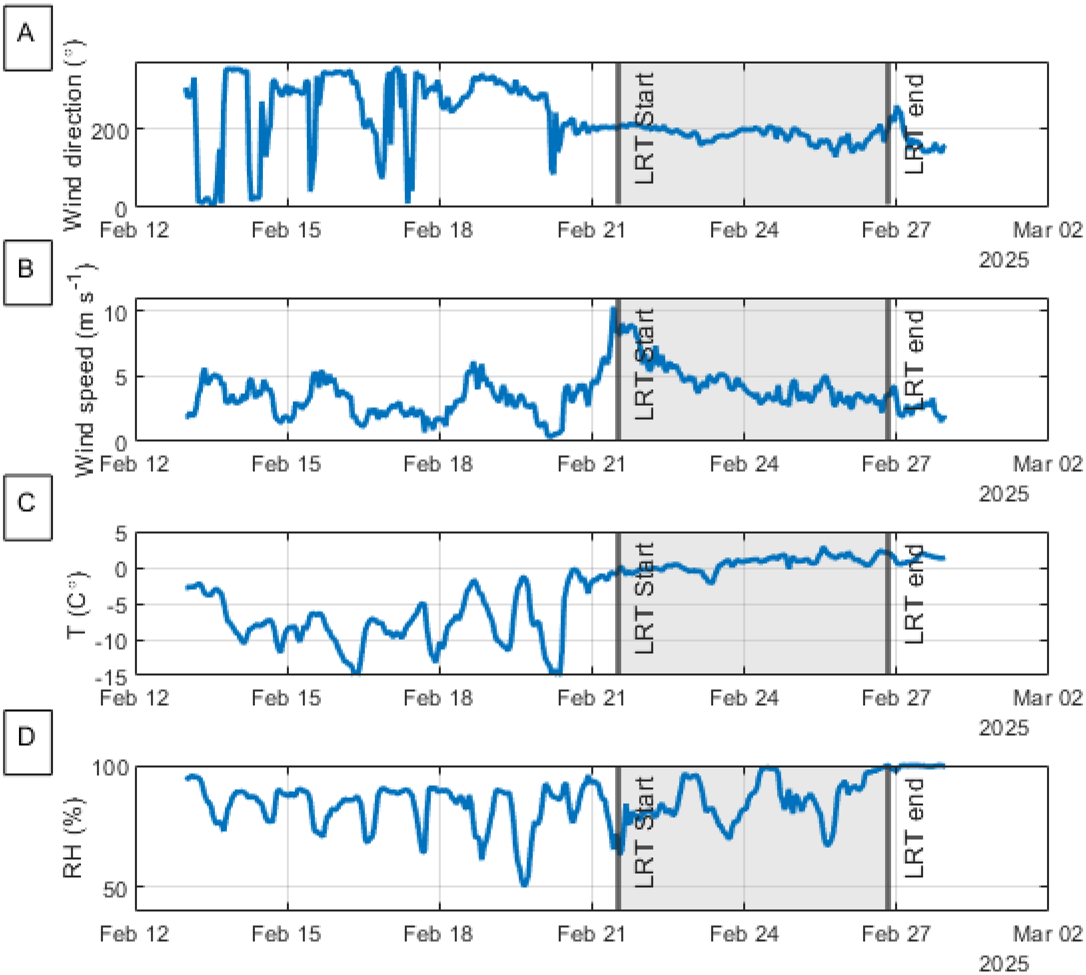

Figure S7: Time series of hourly averaged wind direction (panel A), wind speed (panel B), temperature (T; panel C), and relative humidity (RH; panel D) during the measurement period from 13 February to 27 February 2025. The start and end of the LRT event are marked with vertical black lines on a grey background. Meteorological data were obtained from the Helsinki-Vantaa Airport, a measurement station governed by the Finnish Meteorological Institute.

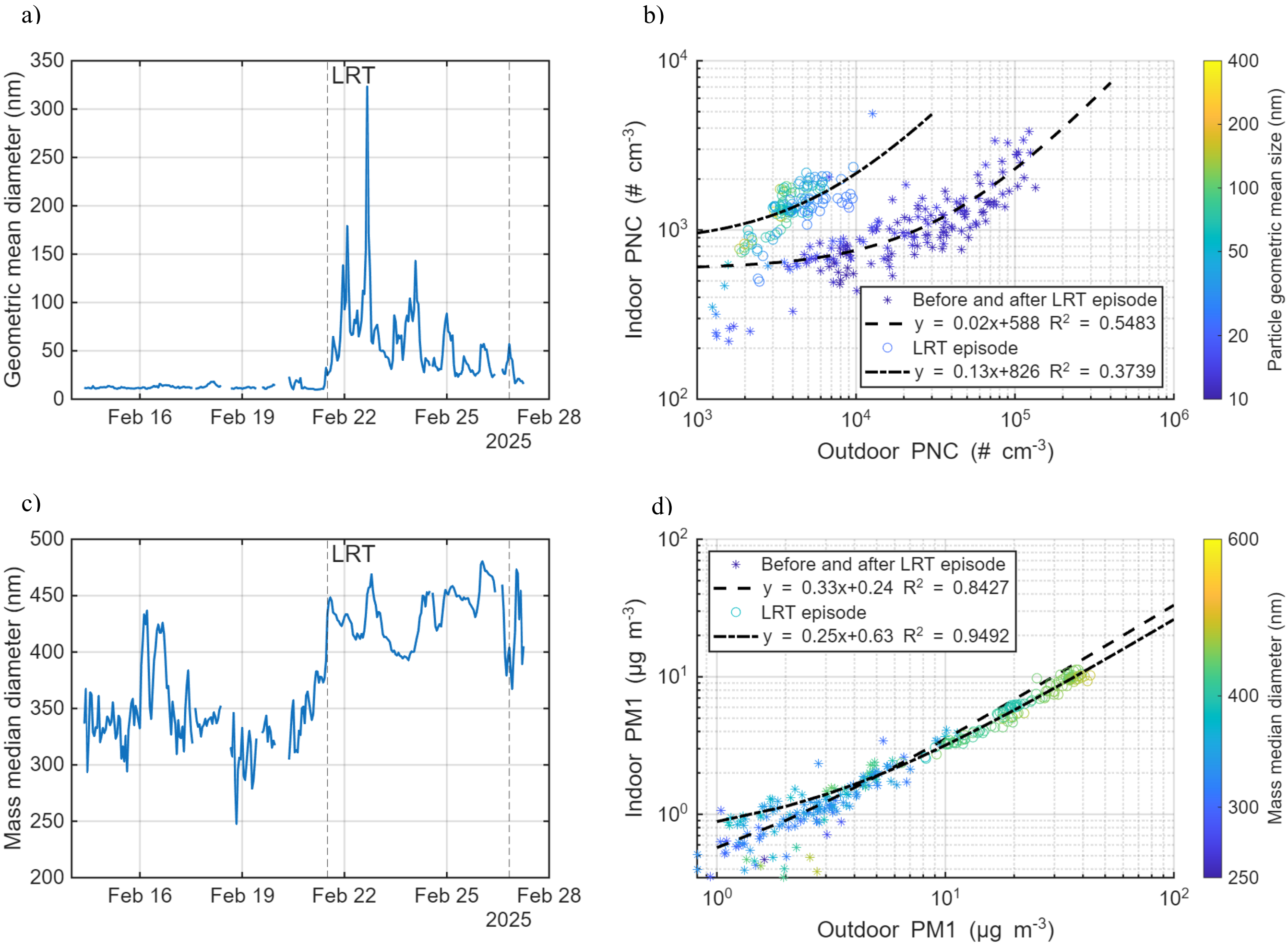

Figure S8: Time series of the geometric mean particle diameter measured outdoors (a) and the correlation of outdoor and indoor particle number concentrations during the LRT episode and outside it, with data markers colored according to the geometric mean diameter (b). Lower plots show the time series of the mass median diameter (c) alongside PM_1 concentration correlations, colored according to the mass median diameter (d).

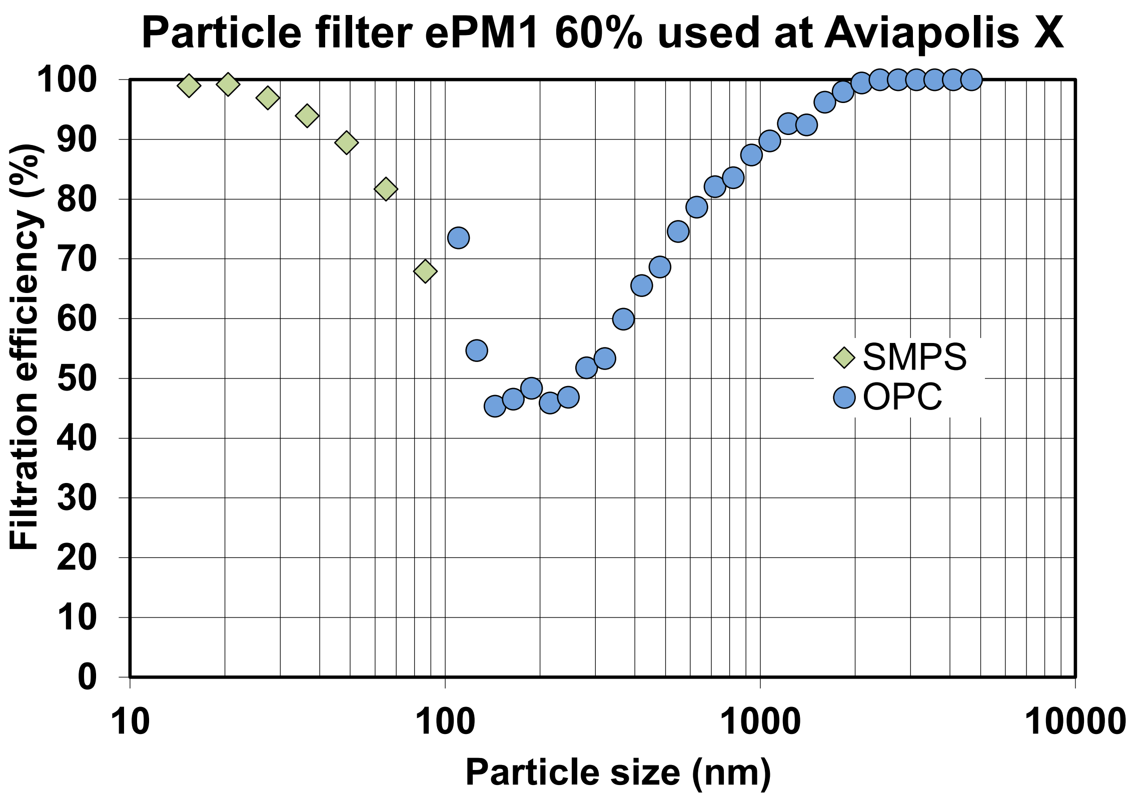

Figure S9: Filtration efficiency curve of the filter used in the measurements at Aviapolis X, measured using the SMPS (green squares) and OPC (blue circles).

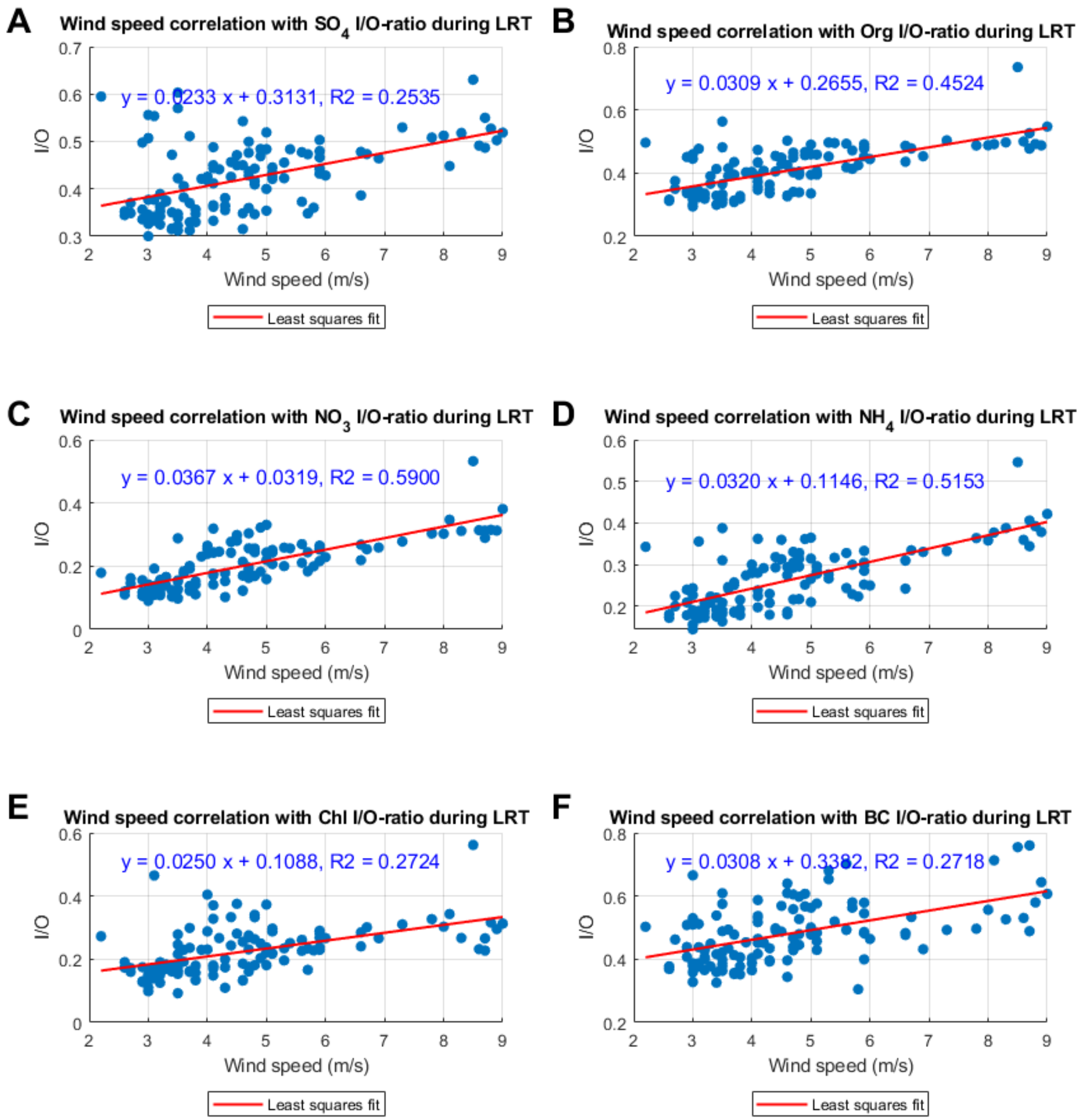

Figure S10: Correlation between hourly average wind speed and SO_4 (A), Org (B), NO_3 (C), NH_4, Chl, and BC during LRT.

Differential pressure measurements

Continuous direct Differential pressure measurements were conducted for 12 days (Feb. 14th -26th, 2025). The measurements were performed using the Testo 400 universal IAQ instrument. The Testo 400 has a measuring range of 0 to +200 hPa, with an accuracy of ± (0.1 hPa + 1.5% of measured value) ±1 digit for the range 25.001 to 200 hPa, and ± (0.3 Pa + 1% of measured value) ±1 digit for the range 0 to 25 hPa. The instrument has a resolution of 0.001 hPa (22).

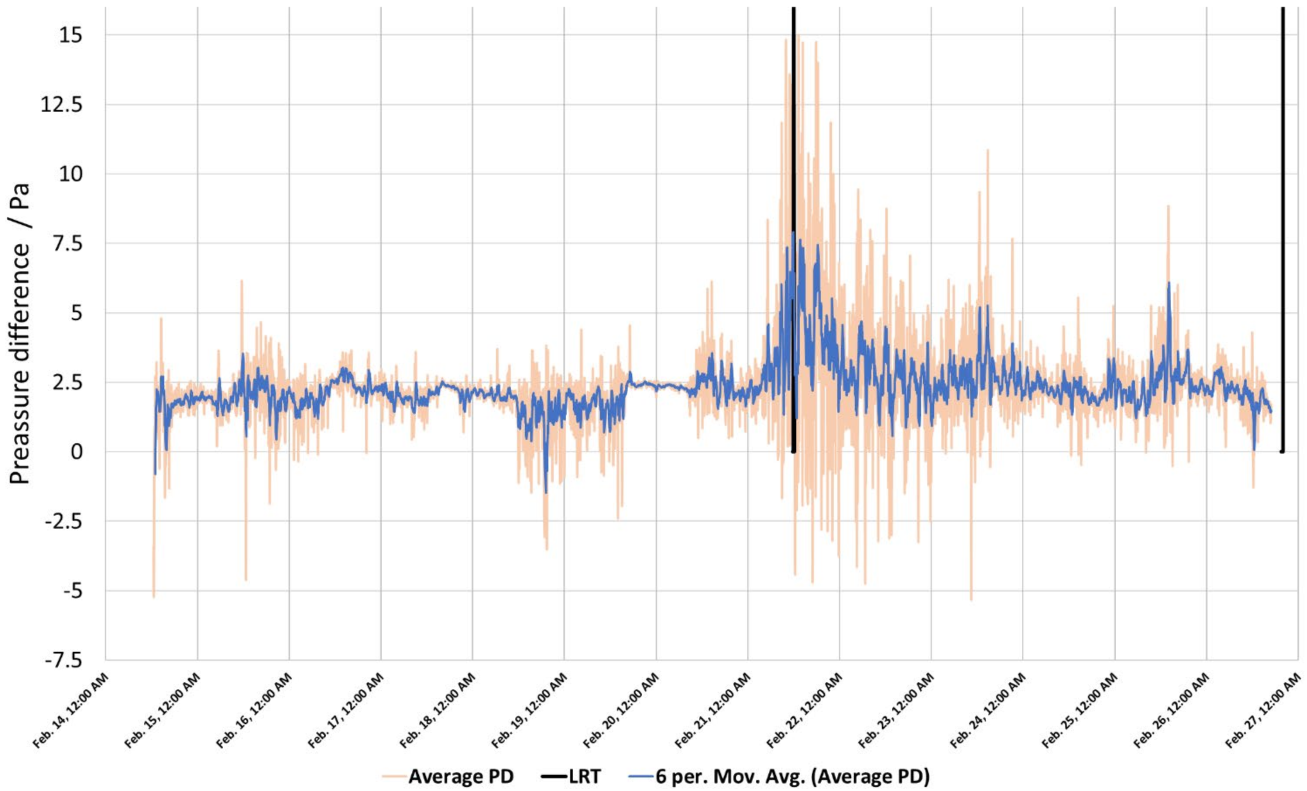

Figure S11: Five-minute (in orange) and 30-minute averaged (in blue) pressure difference time series data; the LRT event is marked with black vertical lines.