SUPPORTING INFORMATION

Title of manuscript: Limitation of the use of the absorption Angstrom exponent for source apportionment of equivalent black carbon - a case study from the North West Indo-Gangetic plain

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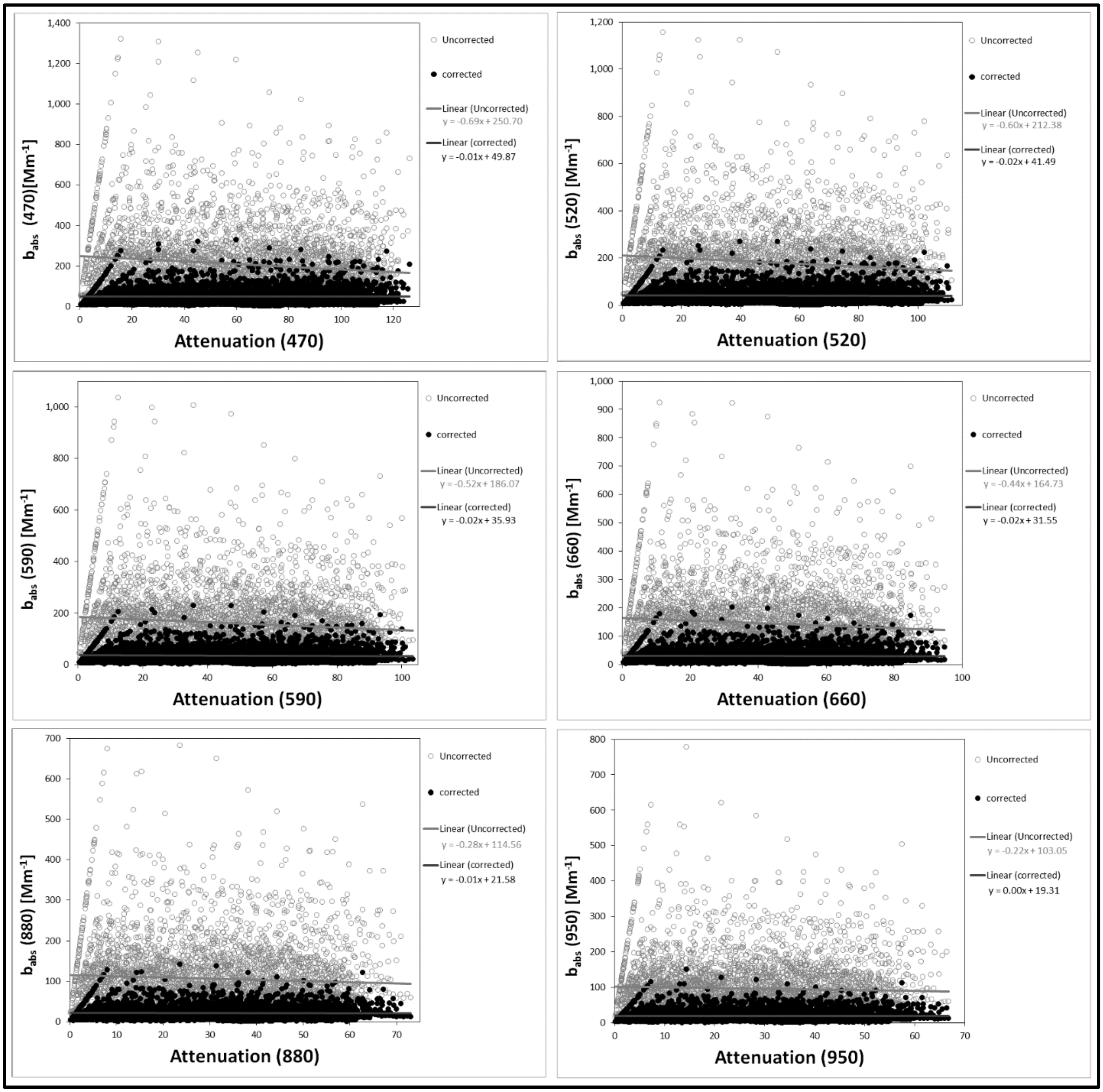

Figure S1: Scatter plots showing absorption coefficient (b_{abs}) values before applying correction (grey circles) and after applying correction (black dots) plotted against optical attenuation signal for 6 different wavelength channels- 470nm, 520nm, 590nm, 660nm, 880nm, 950nm . For each plot, linear fit equations and R^2 values for b_{abs} vs. attenuation are shown in grey for uncorrected and in black for corrected.

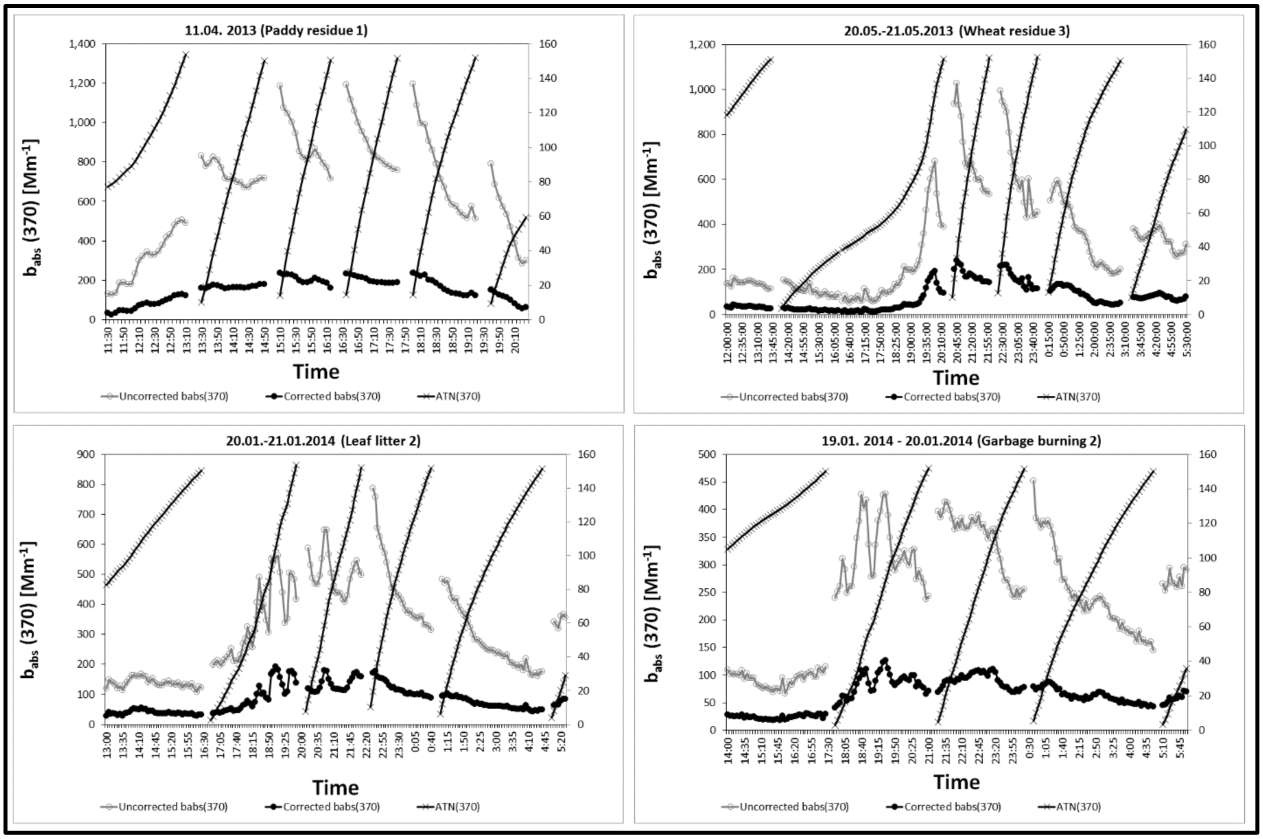

Figure S2: Variation of attenuation ATN (diagonal crosses), absorption coefficients b_{abs}(370 nm)-uncorrected (grey circles) and corrected (black dots) with consecutive spot changes over time for Paddy-residue burning event 1 (top left panel), Wheat- residue burning event 3 (top right panel), Leaf-litter burning event 2 (bottom left panel) and Garbage burning event 2 (bottom right panel).

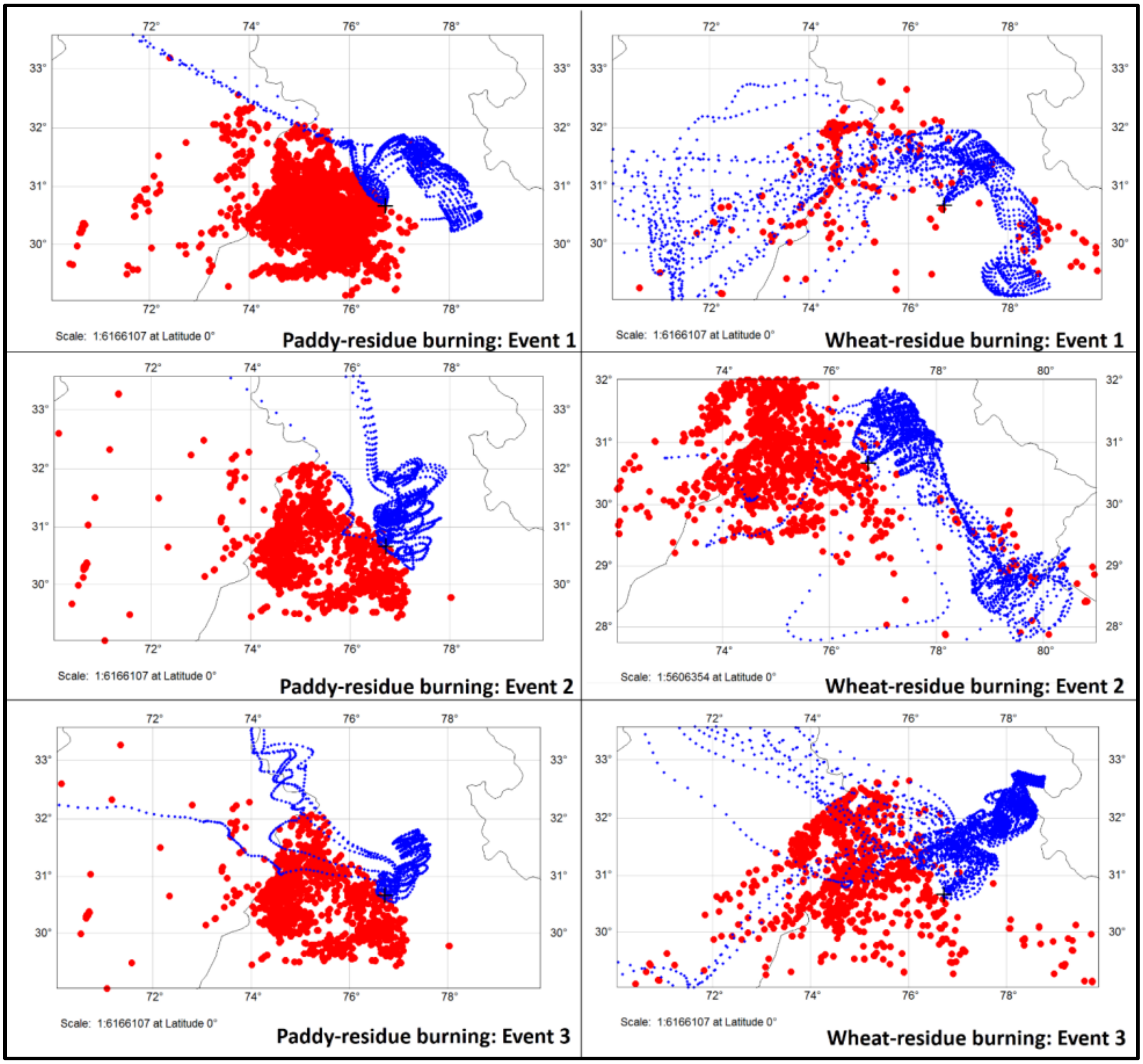

Figure S3: 120-hours (HYSPLIT- derived) back- trajectories of air masses (blue markers) that arrived at measurement site during peak of crop-residue burning events plotted along with NASA's MODIS fires (time of the event + previous 120 hours) in red markers. The measurement site in Mohali is marked by black vertical cross. Left stack shows trajectory and fire data for Paddy- residue burning events 1, 2 and 3. Right stack shows trajectory and fire data for Wheat- residue burning events 1, 2 and 3. It can be seen that in case of all the crop-residue burning events, air mass trajectories pass over fires, suggesting contribution of these fires to the composition of these air masses. We thank the NOAA Air Resources Laboratory (ARL) for the provision of the HYSPLIT transport and dispersion model used in this study. We acknowledge the use of FIRMS data from the Land, Atmosphere Near real-time Capability for EOS (LANCE) system operated by the NASA/GSFC/Earth Science Data and Information System (ESDIS) with funding provided by NASA/HQ.

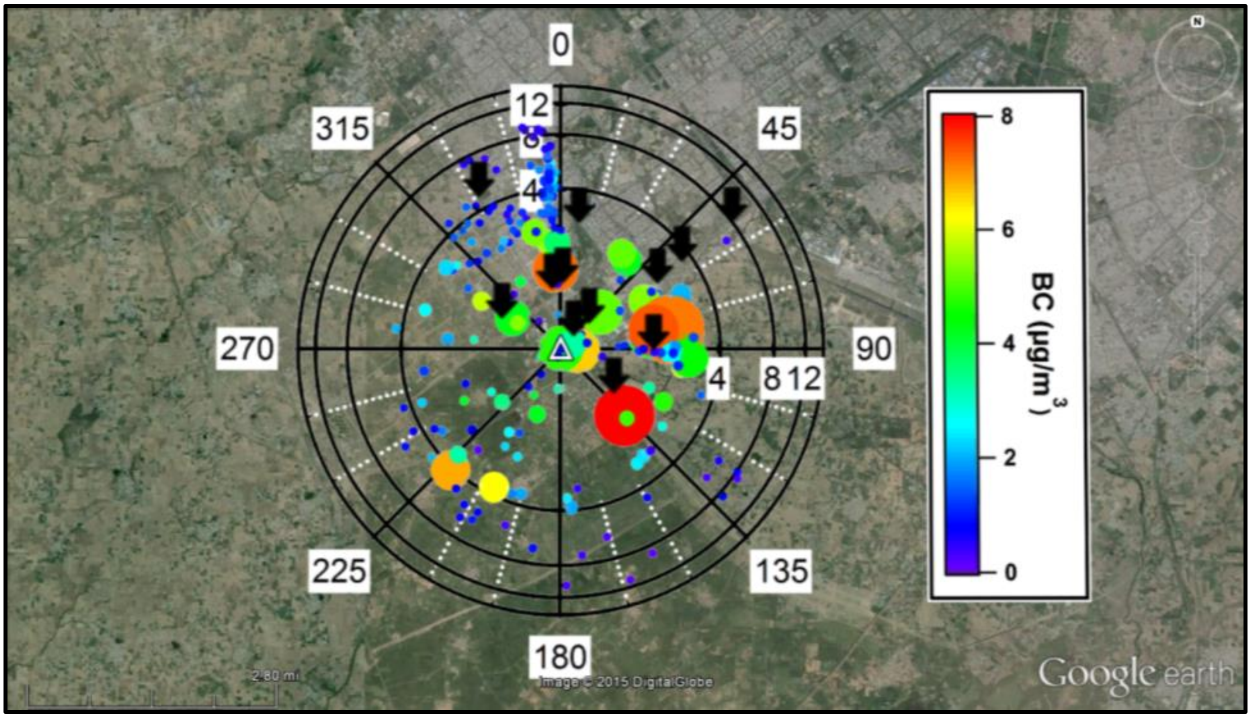

Figure S4: Wind rose plot for the three garbage burning events combined has wind speed marked on radius and wind direction marked on angle. Measurement site in the centre of the plot is marked with white triangle. Each marker is coloured with the corresponding BC_{eq} mass (in µg/m^3) and is sized according to the associated NO mixing ratio in ppbv. Major garbage/ trash burning sites are marked in bold black arrows. Map image: ©2015 DigitalGlobe, Google earth.

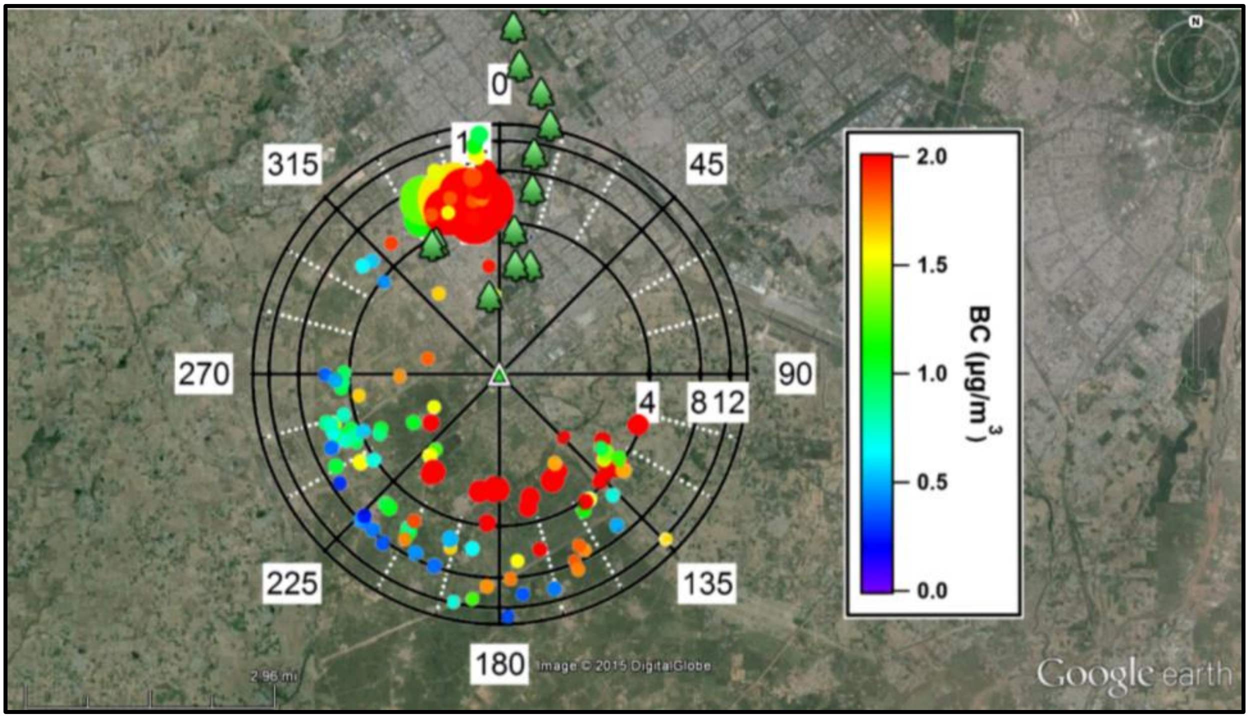

Figure S5: Wind rose plot for the three leaf- litter burning events combined has wind speed marked on radius and wind direction marked on angle. Measurement site in the centre of the plot is marked with white triangle. Each marker is coloured with the corresponding BC_{eq} mass (in μg/m^3) and is sized according to the associated NO mixing ratio in ppbv. Major parks and gardens are marked with tree symbol. Map image: ©2015 DigitalGlobe, Google earth.

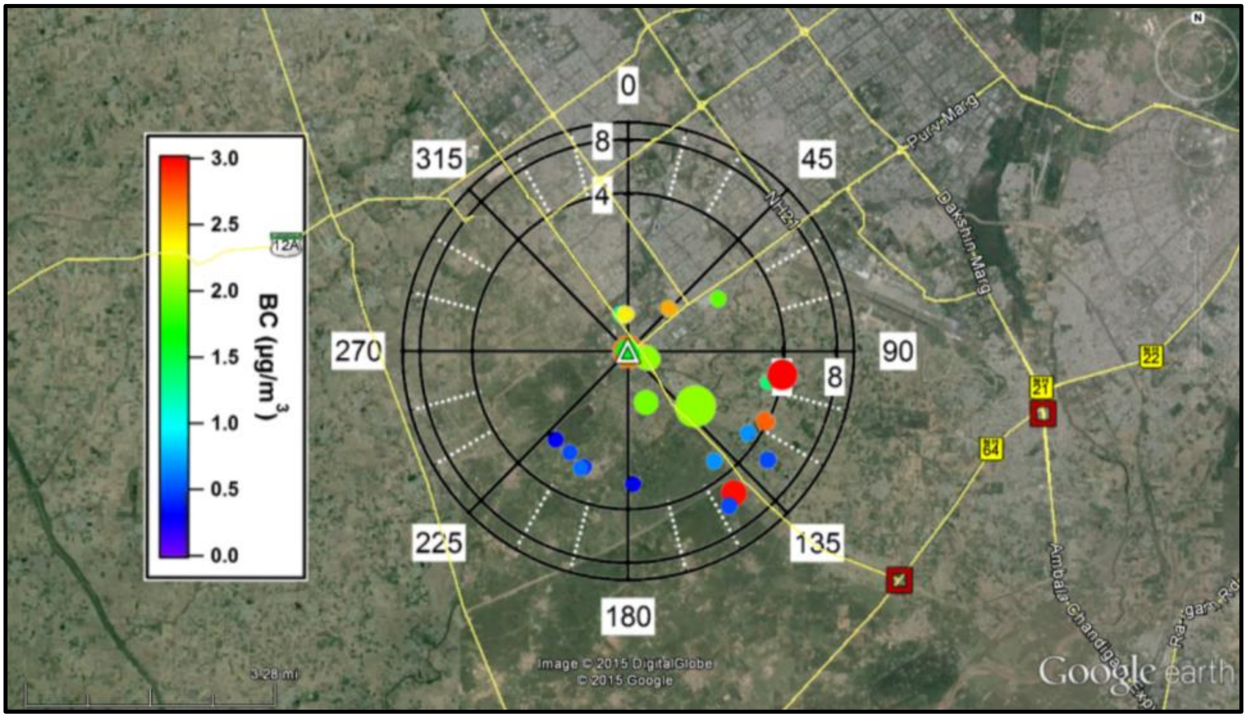

Figure S6: Wind rose plot for the three traffic (fossil fuel burning) events combined has wind speed marked on radius and wind direction marked on angle. Measurement site in the centre of the plot is marked with white triangle. Each marker is coloured with the corresponding BC_{eq} mass (in $\mu g/m^3$) and is sized according to the associated NO mixing ratio in ppbv. Major roads with high-density traffic, including two national highways are marked in yellow lines. Two intersection points of major roads are marked with red squares. Map image: ©2015 DigitalGlobe, © 2015Google.