Supplementary Material of

Black carbon and ozone variability at the Kathmandu Valley and at the southern Himalayas: a comparison between a "hot spot" and a downwind high-altitude site

Davide Putero et al.

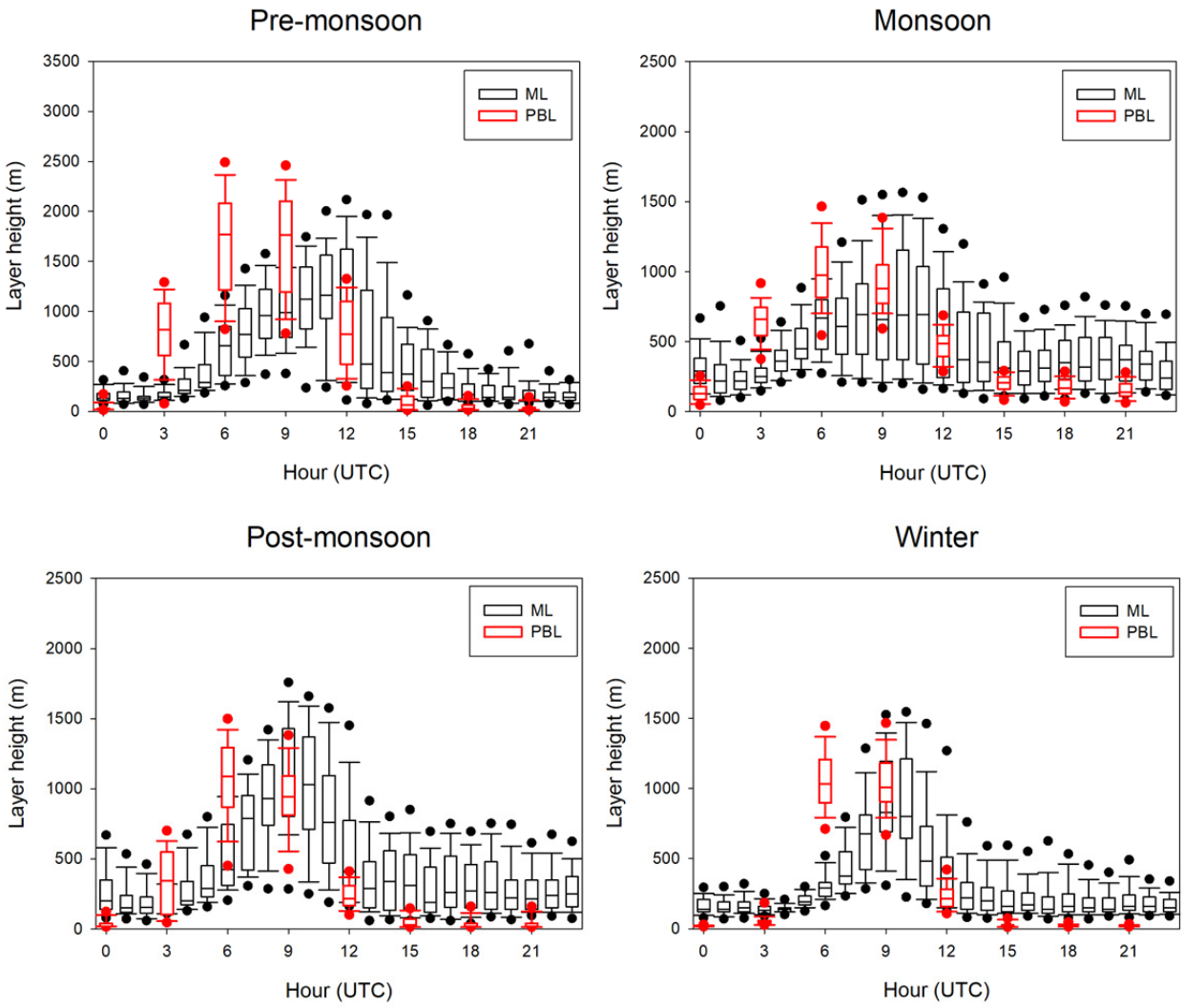

Fig. S1. Seasonal diurnal cycles of the mixing layer height (ML, black) measurements at Bode, Kathmandu Valley, Nepal (presented in Mues et al., 2017), and ERA-Interim PBL height values (red), as introduced in Sect. 2.3. Please note that the seasons definition for this comparison refers to the same periods presented in Mues et al. (2017).

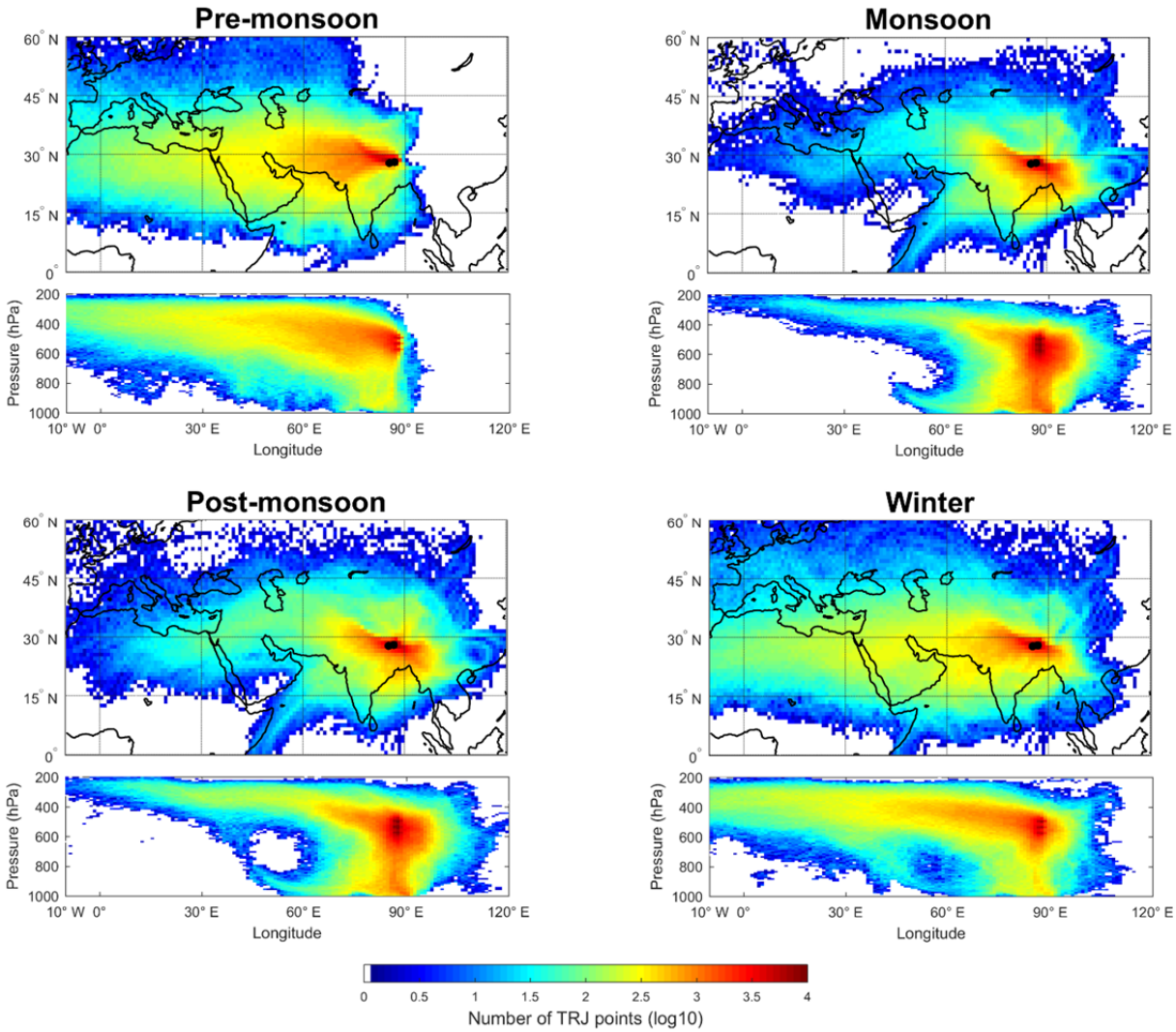

Fig. S2. Concentration field for back-trajectories starting at NCO-P, for the different seasons considered in this study (see Table 1). For each subplot, the upper panel represents the spatial aggregation of back-trajectory points over a 1°×1° grid, while the bottom panel indicates the vertical displacement (steps of 10 hPa) as a function of longitude.

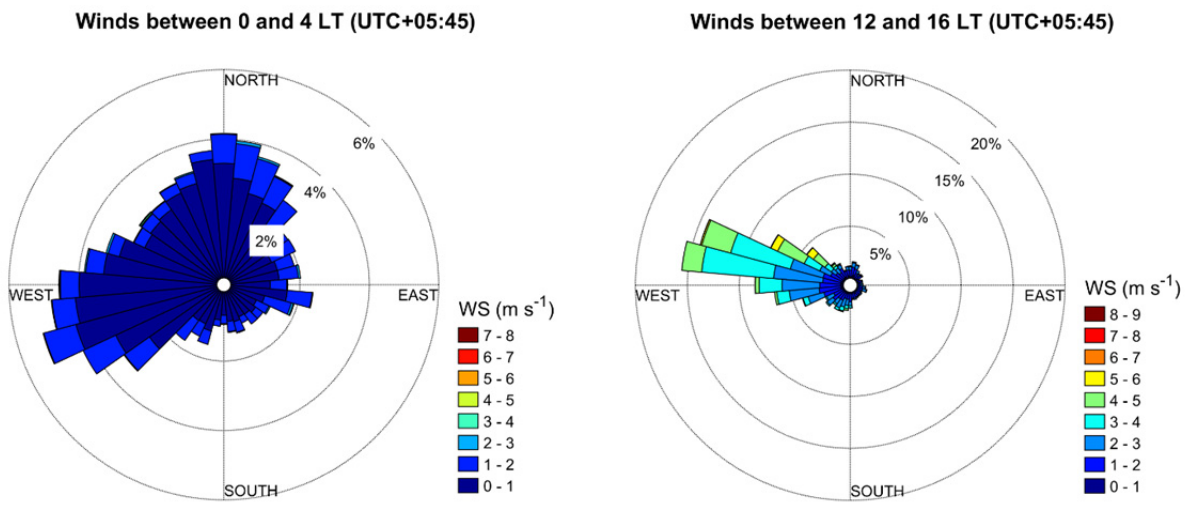

Fig. S3. Wind direction and intensities for Paknajol. Left panel shows winds between 0:00 and 4:00 local time (i.e., 18:00–22:00 UTC), while the right panel encloses winds between 12:00 and 16:00 local time (i.e., 6:00–10:00 UTC).

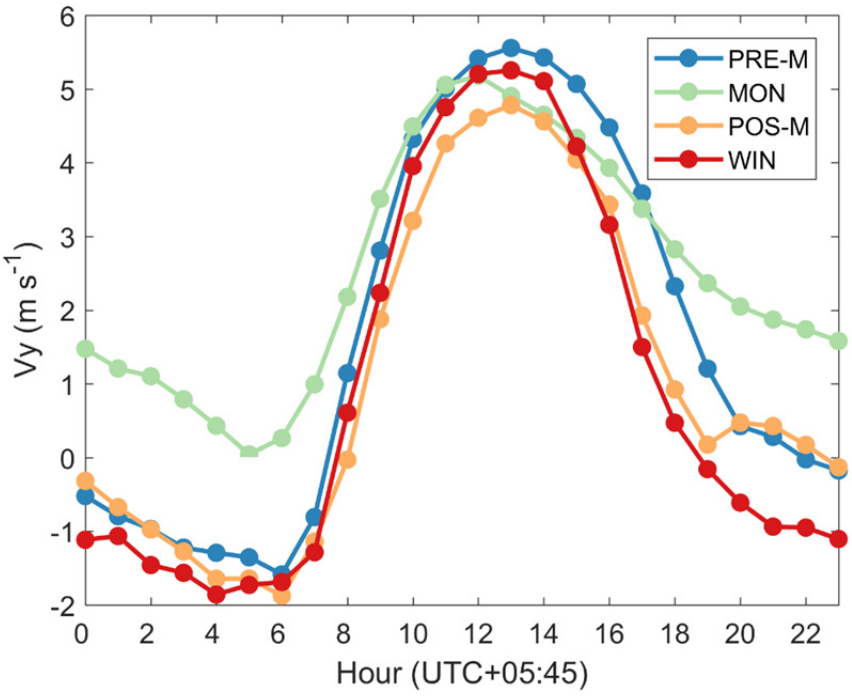

Fig. S4. Average seasonal diurnal variation of meridional wind component (Vy) at NCO-P. Colors indicate the different seasons (PRE-M: pre-monsoon, MON: monsoon, POS-M: post-monsoon, and WIN: winter).

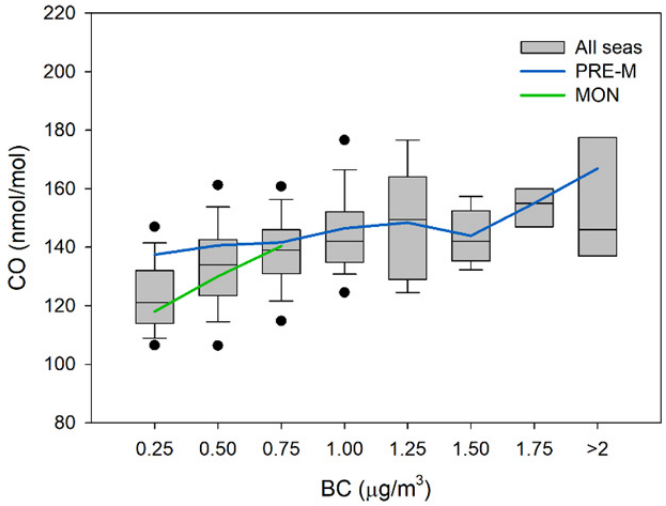

Fig. S5. Box-and-whisker plot of the CO values at Kathmandu, as a function of the different BC classes at NCO-P. Each BC value reported indicates the upper limit for each class. Boxes and whiskers denote the 10th, 25th, 75th and 90th percentiles; dots indicate the 5th and 95th percentiles. The two lines define the average CO values for each BC class in the pre-monsoon and monsoon seasons. Average CO concentrations obtained by less than 3 values were excluded from the analysis.

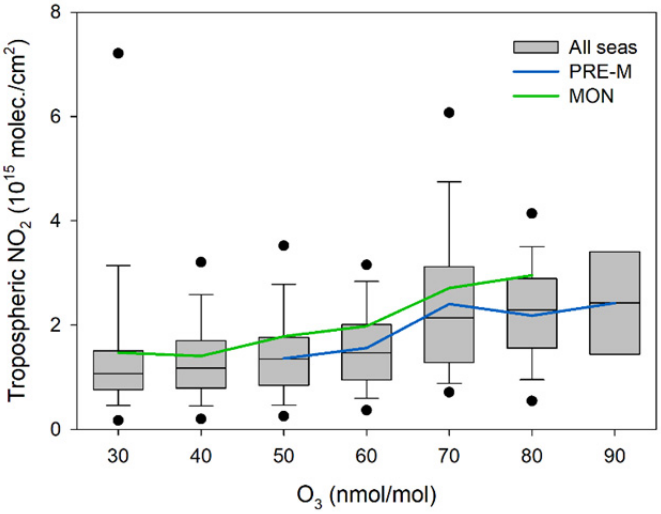

Fig. S6. Box-and-whisker plot of the tropospheric NO_2 column over Kathmandu, as a function of the different O_3 classes at NCO-P. Each O_3 value reported indicates the upper limit for each class. Boxes and whiskers denote the 10th, 25th, 75th and 90th percentiles; dots indicate the 5th and 95th percentiles. The two lines define the average NO_2 values for each O_3 class in the pre-monsoon and monsoon seasons.

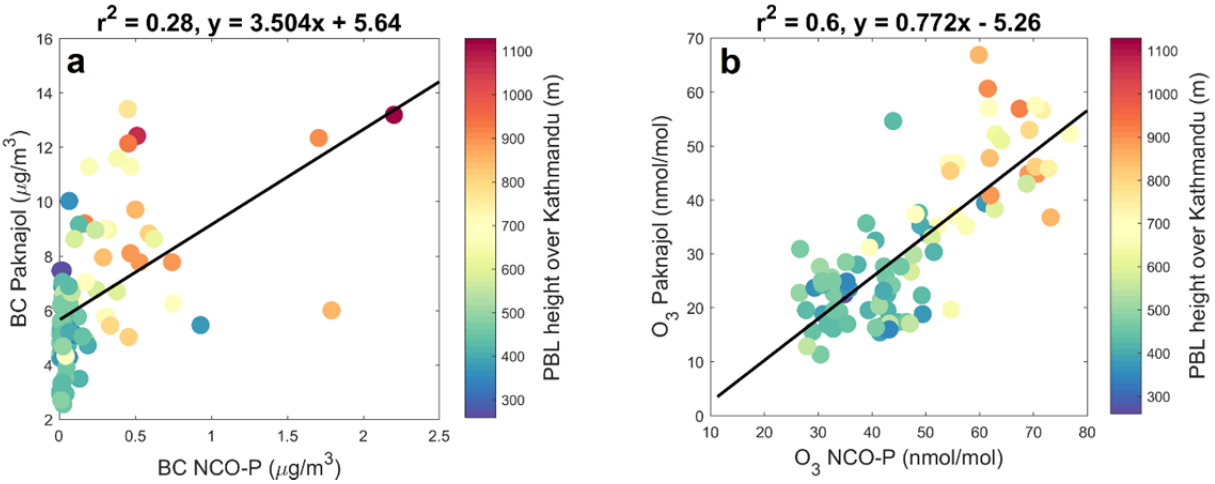

Fig. S7. Scatter plots of daily average BC (a) and O_3 (b) concentrations at Paknajol, as a function of the BC and O_3 concentrations at NCO-P. Colors indicate the PBL height over Kathmandu. Displayed are only the days referring to the same dataset displayed in Fig. 7. The linear fits are also reported in each plot.