Supplement of

Lower tropospheric ozone over India and its linkage to the South Asian monsoon

Xiao Lu, et al.

Correspondence to: Lin Zhang (zhanglg@pku.edu.cn)

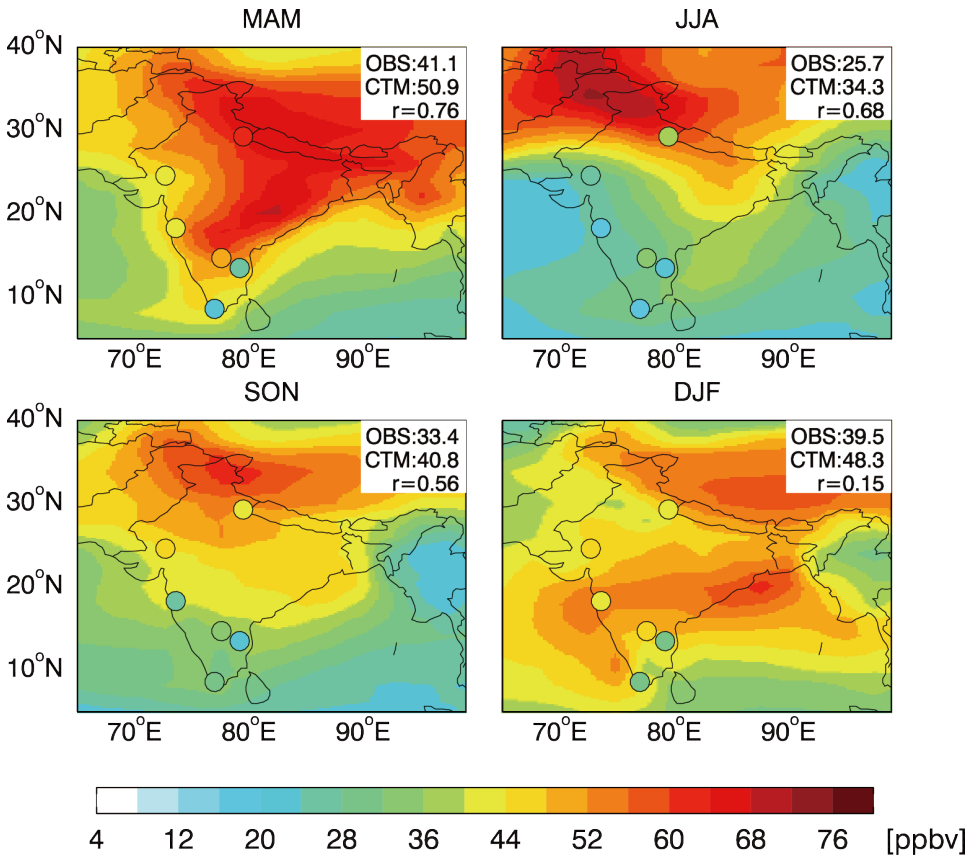

Figure S1. Spatial distribution of seasonal mean surface ozone concentration over India in 2010. Observations (circles) from 6 monitoring sites including Thumba (8.6°N, 77°E, ~2m, coastal site), Pune (18.3°N, 73.6°E, ~600m, semi-urban site), Anantpur (14.7°N, 77.6°E, ~331m, rural site), Gadanki (13.5°N, 79.2°E, ~375m, rural site), Mt-Abu (24.6°N, 72.7°E, ~1680m, high-altitude site), and Nainital (29.4°N, 79.5°E, ~1958m, high-altitude site) are plotted over GEOS-Chem model results. Surface ozone observations are obtained from Fig. 4 of Sharma et al. (2016) and the site information is from Kumar et al. (2012). Observed (OBS) and simulated (CTM) seasonal mean values and correlation coefficients are shown inset. Here MAM denotes March–April–May, JJA denotes June–July–August, SON denotes September–October–November, and DJF denotes December–January–February.

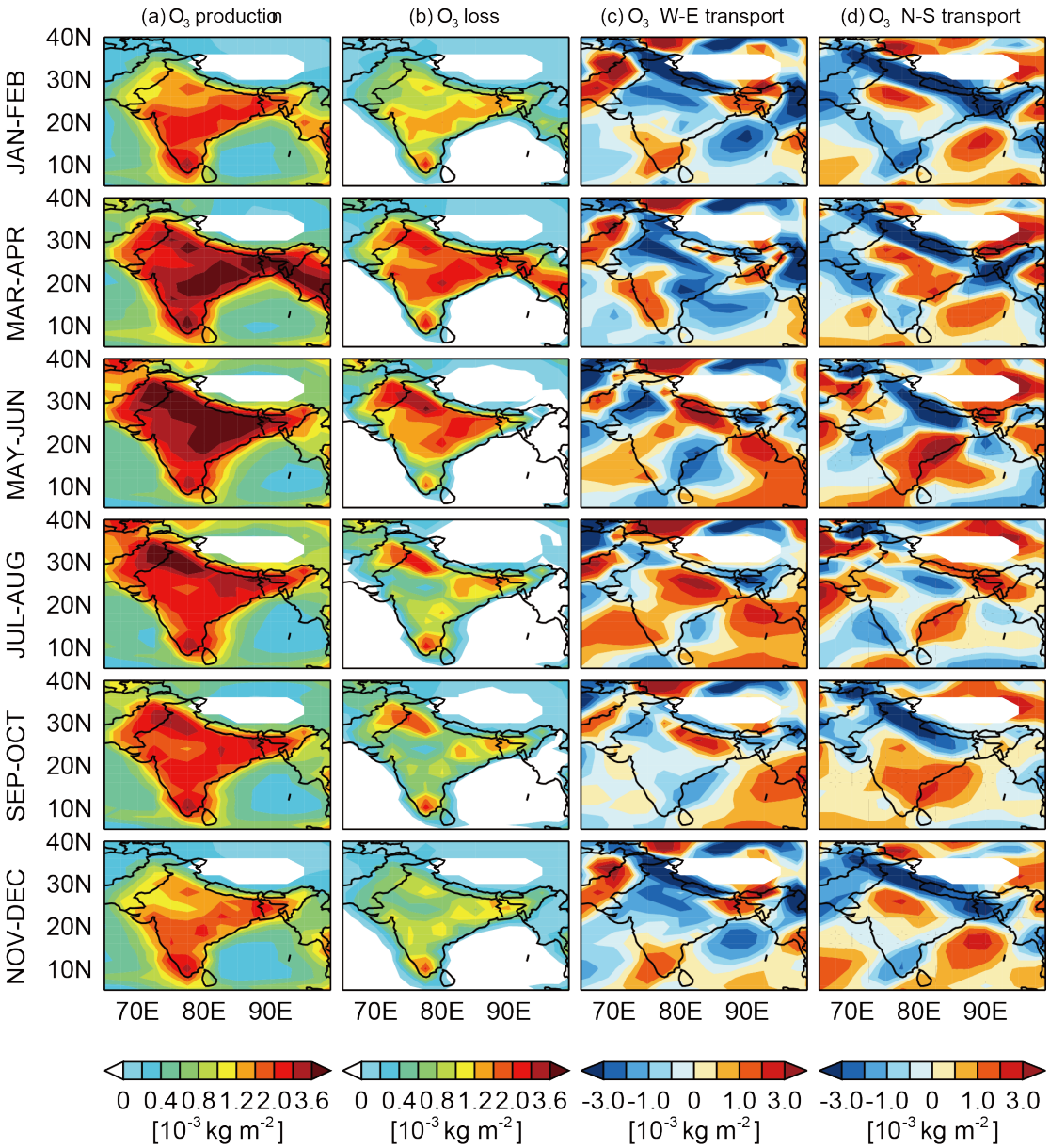

Figure S2. Spatial distributions of bimonthly mean (a) lower tropospheric (surface to 600 hPa) ozone chemical production, (b) chemical loss, (c) net east–west transport, and (d) net north–south transport integrated over the lower troposphere for 2006–2010.

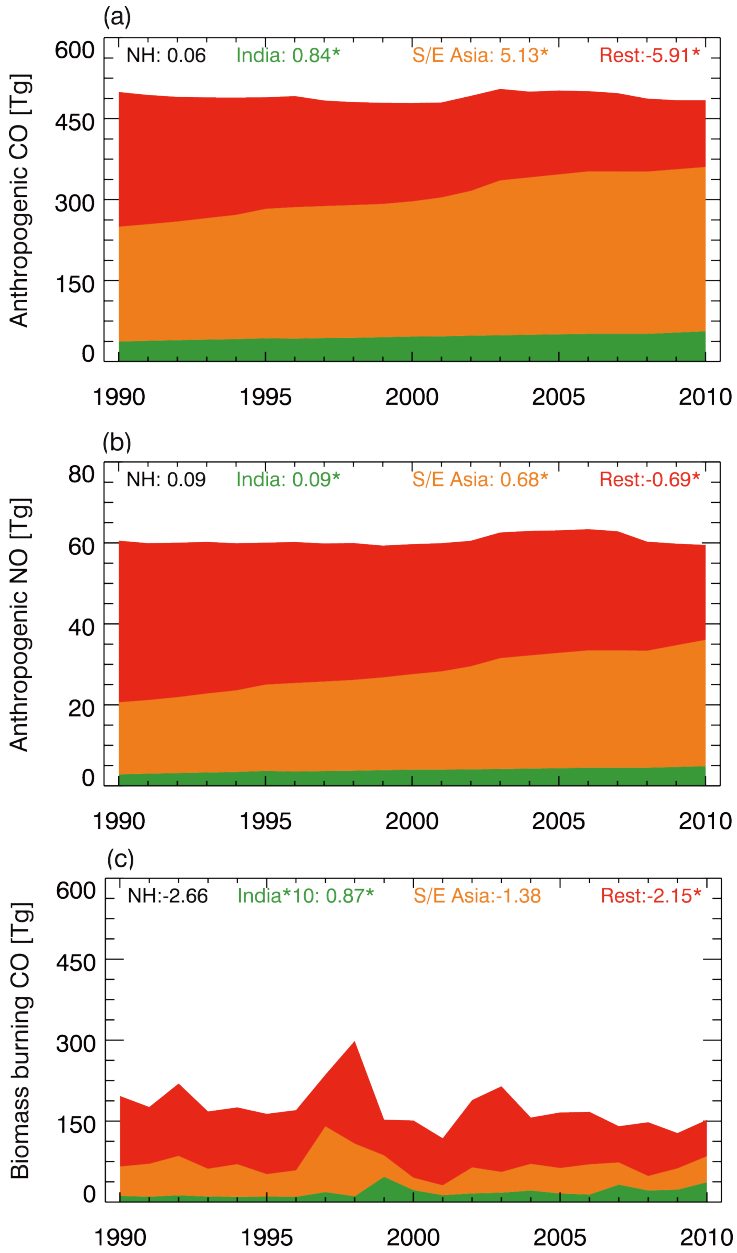

Figure S3. Annual anthropogenic emissions of (a) carbon monoxide (CO), (b) nitrogen oxide (NO), and (c) biomass burning CO emissions over 1990-2010 used in GEOS-Chem. Values inset are trends in emission totals in the Northern Hemisphere (NH), South and East Asia (S/E Asia; 60°–150°E, 0°–50N), India, and the NH rest regions (Rest). Asterisks denote statistically significant (p-value < 0.05). Note that biomass burning emissions over India are magnified be a factor of 10 for illustration purpose (green shading in (c)).