

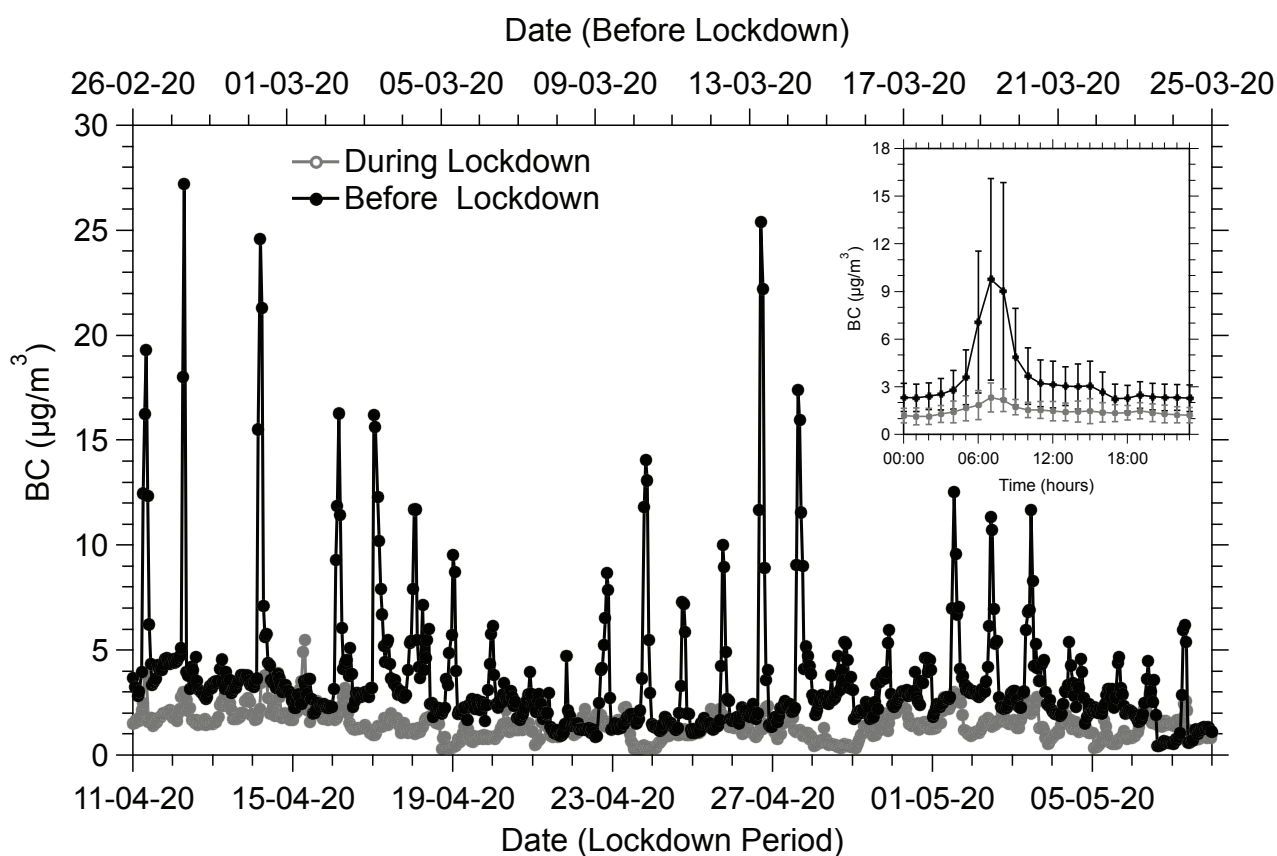


Figure S1: Time series of the total BC mass concentration as obtained by AE 33 measurements for two distinct period of lock-down (gray points) and for the similar duration during business as usual scenario. Please note that the abscissa for BC concentration during business as usual scenario represents the scale on the top of the graph. The graph in inset shows the diurnal variations in BC concentration for the two scenarios mentioned above. The error bars extend as standard deviations.

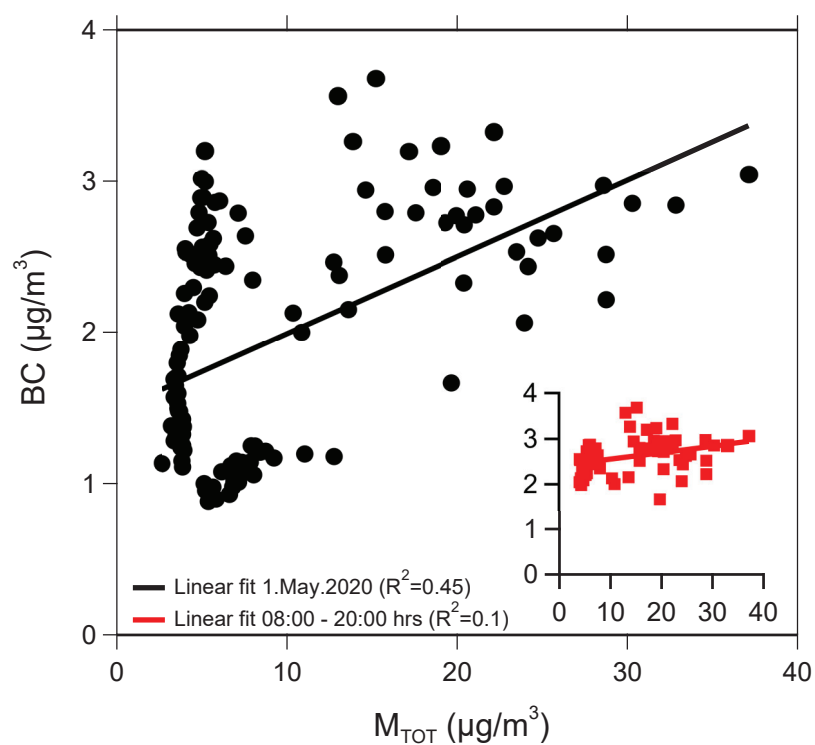


Figure S2: The scatter plot between M_{TOT} as derived from the SMPS measurements (refer to method section for more details) and BC mass concentration for 1st May (black points) and the black solid line indicates the linear fit to the black points. The inset with red points shows the similar correlation for the period when the rapid particle growth was observed.

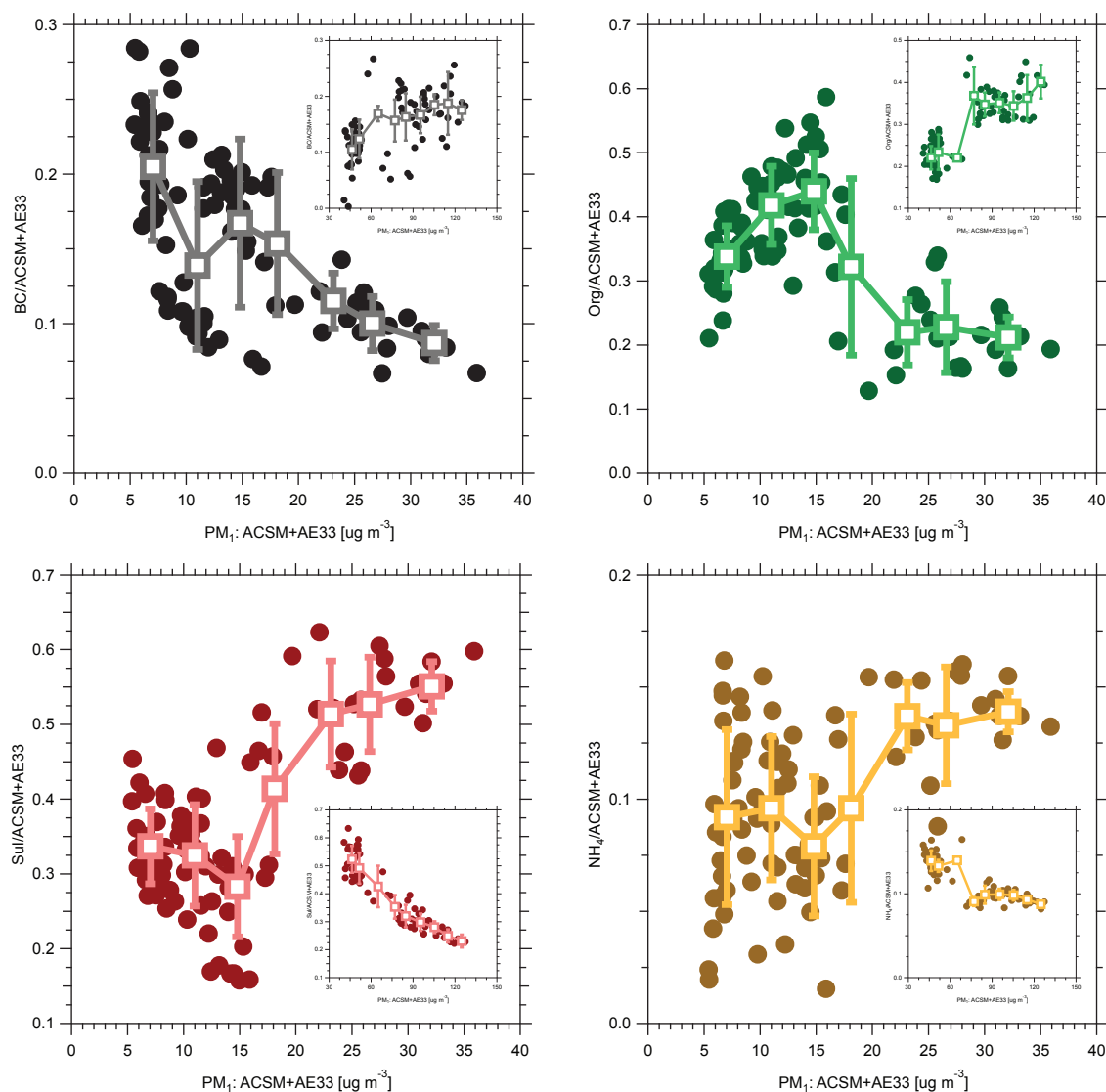


Figure S3: Scatter plot of mass fraction various chemical compounds (NH_4 , SO_4 , Org, and BC) measured using ACSM and AE33 versus absolute mass during the lock-down period. The inset shows the similar graphs but for the different measurement period as business as usual scenario.

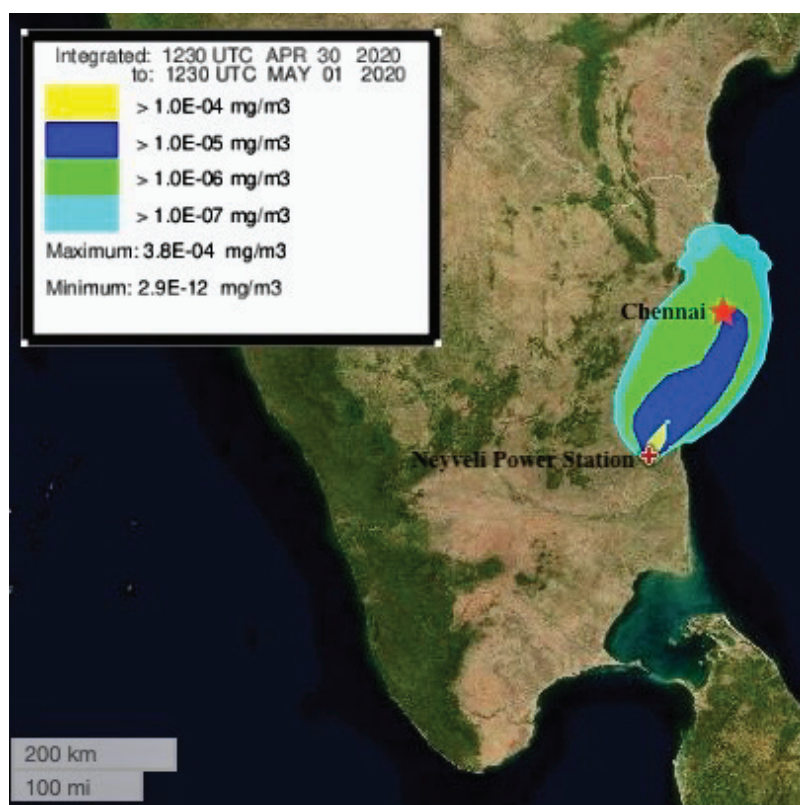


Figure S4: HYSPLIT forward dispersion modelling result for 1 May 2020, showing sensitivity of the measurement site to potential SO₂ emission from Neyveli power plant located south of Chennai. The HYSPLIT model was driven with meteorological data obtained from NCEP/NCAR Global Reanalysis Data Archives for different pressure levels, with a spatial resolution of 2.5 x 2.5 degrees. The model was run in forward mode, assuming continuous emission at a rate of 822 kg/day (from Fioletov et al., 2020) and model top height was fixed at 1500 metres above ground level to depict typical boundary layer height.