**urban\_case\_initial.xlsx**

This dataset contains the initial conditions and meteorological input data applied by all aerosol process models in the simulation of the “Urban Case” scenario and is partly shown in Table 4 of the published article.

**Sheet Initial**

Meteorological data is from the meteorological preprocessor MPP-FMI for the selected day, given as hourly records in Sheet FMI-MPP. Emission data and traffic counts for line source 1 (lane 1 + 2) and for line source 2 (lane 3 +4). Initial Ntot and gas-phase concentrations from background measurements.

**Sheet FMI-MPP**

Hourly meteorological data calculated with the meteorological preprocessor MPP-FMI for the selected day, based on meteorological measurements at Helsinki Vantaa airport (60.3267 N; 24.95675 E), station-id 301. The record no 8319 was used for the simulation. Time is UTC.

The output files of MPP-FMI are located in folder “fmi-mpp”.

**urban\_case\_aerosol.xlsx**

This dataset contains the mass fractions of particle constituents in the background aerosol / initial aerosol and the exhaust aerosol (vehicle-emitted particles) applied by MAFOR and SALSA in the simulation of the “Urban Case” scenario

**Sheet Background-Initial**

Chemical composition of the background aerosol. The initial (pre-existing) aerosol has the same composition as the background.

Mass fractions of chemical components in the aerosol modes: Nucleation (1-10 nm), Aitken (10-100 nm), Accumulation mode 1 (100-400 nm), Accumulation mode 2 (400-1000 nm).

**Sheet Exhaust-Emissions**

Chemical composition of the vehicle-emitted particles.

Mass fractions of chemical components in the aerosol modes: Nucleation (1-10 nm), Aitken (10-100 nm), Accumulation mode 1 (100-400 nm), Accumulation mode 2 (400-1000 nm).

**urban\_case\_sizeNemis.xlsx**

This dataset contains the relative emission fractions per size bins applied to distribute the total particle number emission (emission size spectrum) used by all aerosol process models in the simulation of the “Urban Case” scenario.

**Sheet EmissionN**

Diameter of dry particles (nm) in a size section

Relative emission fraction per size section

Emission of total particle numbers were distributed over the particle size spectrum by utilizing the number size distribution when Sniffer was driving on Mannerheimintie to North so that the modelled size distribution after 5.5 m distance from start (on the middle of lane 2; d = -17 m; point A) matched with the measured size distribution on lane 2.

**urban\_case\_LGRtimes.xlsx**

This dataset contains the emission rates of particles and gases, air parcel height, as well as dilution rate as function of time (time step 0.5 s) between road edge (0 m) and 120 m distance, used by all aerosol process models in the simulation of the “Urban Case” scenario.

**Sheet TOTAL**

**Place name** is a descriptive name of the location in the street environment

**Distance on X-axis (m)** is the distance d from the kerbside (d=0 m) as reference point

**Time after start (s)** is the time after release of the air parcel (i.e. simulation time)

**Distance after start (m)** is the distance in space calculated as “time after start” times wind speed (1 m/s).

**Time after roadside (s)** starts at 0 s when the air parcel has passed over the street.

**Plume height (m)** is the height of the air parcel.

**PN emission rate (#/m3/s)** is the emission rate of total particle number in each 0.5 s time interval.

**NO emission rate (mlc/m3/s)** is the emission rate of NO in each 0.5 s time interval.

**NO2 emission rate (mlc/m3/s)** is the same for NO2.

**H2SO4 emission rate (mlc/m3/s)** is the same for H2SO4.

**SVOC emission rate (mlc/m3/s)** is the same for SVOC.

**Unit concentration of a diluted tracer** is an example calculation for the dilution of an inert tracer with initial concentration of 1000 ng/m3.

**Dilution ratio increase (1/s)** is the calculated time derivative of the dilution ratio (dDR/dt) according to the dilution function.

**Dilution ratio** is the calculated dilution ratio, as