Atmospheric
Chemistry
and Physics

Supplement of

Coupled mesoscale–microscale modeling of air quality in a polluted city using WRF-LES-Chem

Yuting Wang et al.

Correspondence to: Yuting Wang (yuting.wang@polyu.edu.hk) and Yong-Feng Ma (mayf3@sustech.edu.cn)

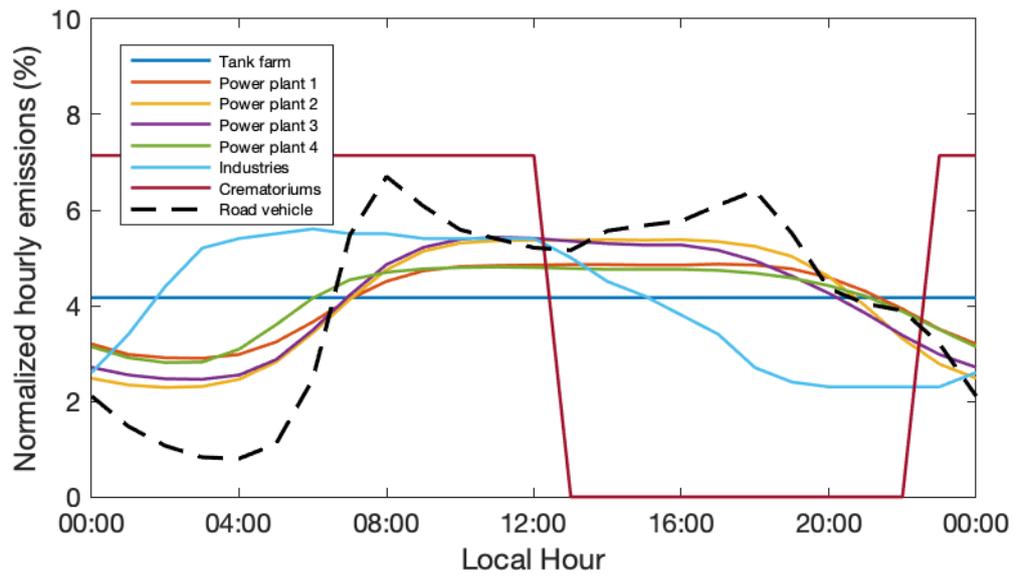# 1 Diurnal profiles of road and point emissions.

Figure S1. The diurnal profiles of the road and point emissions. Black dashed line represents the road emissions; colored solid lines represent various point emissions (power plants, industries, crematorium, and tank farms) with different diurnal variations.
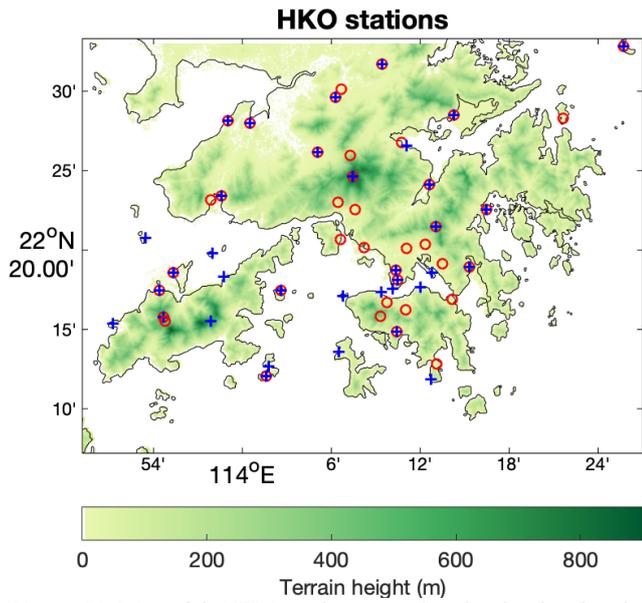
2 Evaluation with HKO meteorological measurements.

Figure S2. Map of the HKO stations covering the simulated period. Red circles are the sites with temperature observations; blue crosses are the sites with wind observations.
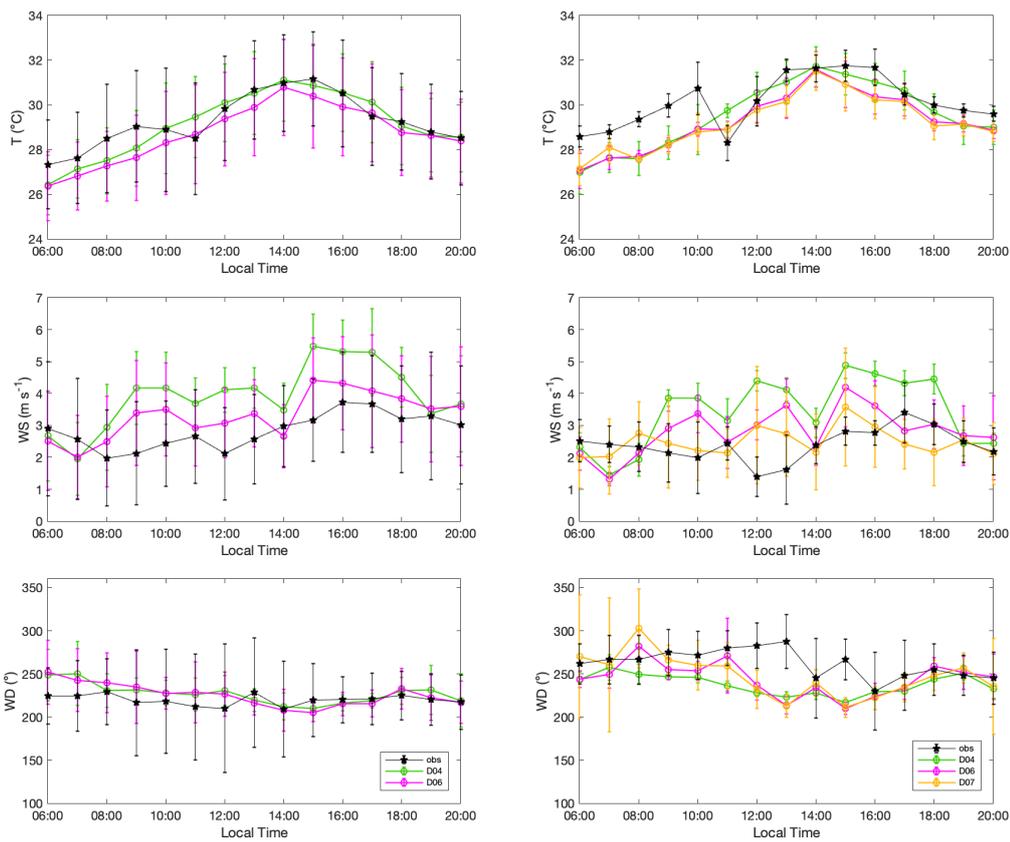

Figure S3. Time series of temperature (T), wind speed (WS), and wind direction (WD) averaged from stations covered by D06 (left) and D07 (right). The black pentagrams are the observations; the circles with different colors are the simulations with different resolutions (green: D04, 900 m; magenta: D06, 100 m; yellow: D07, 33.3 m). Error bars refer to the standard deviations.

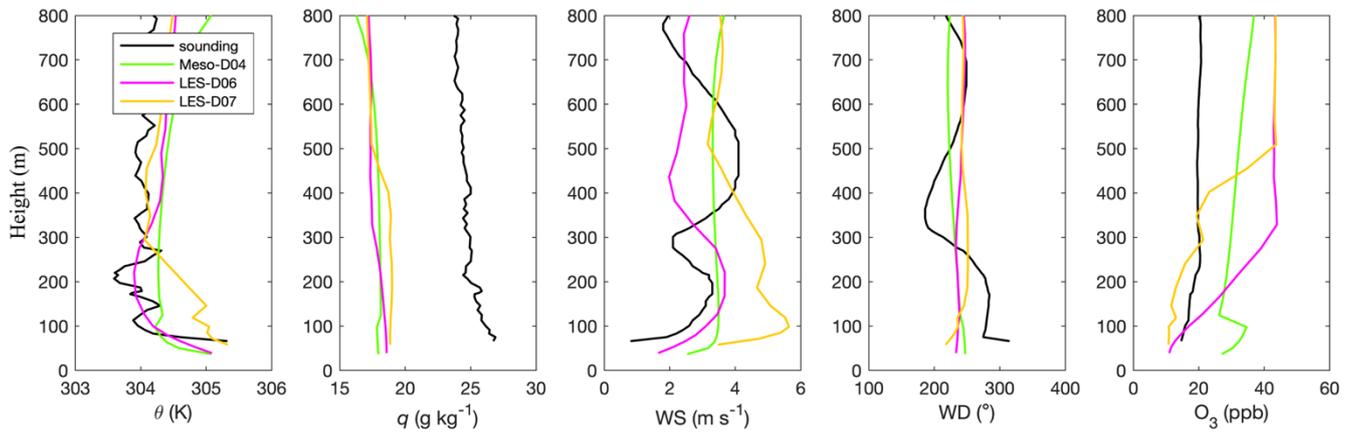# 3 Evaluation with ozone sounding observations in the boundary layer.

Figure S4. Comparison between ozone sounding measurements and model simulations in the boundary layer at 13:55 LT. The variables are the potential temperature (θ; a), the water vapor mixing ratio (q; b), wind speed (WS; c), wind direction (WD; d), and ozone mixing ratio (O_3; e). The black lines represent observations; the green lines the simulations from D04 with resolution of 900 m; the magenta lines the simulations from D06 with resolution of 100 m; and the yellow lines the simulations from D07 with resolution of 33.3 m.