Black carbon:

Basic Model Performance

MAE: 4.6258

(MAPE) Accuracy = 55.53%

MSE: 37.6455

importance

ExpRL.100 0.058860

BldArD.50 0.050136

BldVolD.50 0.043848

Lat 0.039934

MainAADT.50 0.034583

ExpRL.5000 0.029006

IndT.1500 0.028044

InterD.100 0.027441

IndT.2000 0.020426

LnDist\_ShenzhenP 0.019805

OpArT.5000 0.018568

ExpRL.200 0.015756

OpArT.4000 0.015058

SecRL.300 0.014438

Elevation 0.014354

RF Model with hyperparameter tuning Performance

MAE: 4.5256

(MAPE) Accuracy = 56.60%.

MSE: 37.7440

importance

BldVolD.50 0.023799

Dist\_ShenzhenP 0.016235

Lat 0.015690

BldArD.50 0.015463

BldVolD.500 0.014793

ExpRL.3000 0.013455

LnDist\_TollGate 0.012788

ExpRL.5000 0.012787

LnDist\_ShenzhenP 0.012464

Dist\_TollGate 0.012321

LnDist\_Lamma 0.011851

ExpRL.2000 0.010798

LnDist\_ShippingLanes 0.009867

Dist\_Lamma 0.009701

BldArD.100 0.009651

NO2:

Basic Model Performance

MAE: 26.7848

(MAPE) Accuracy = 65.20%

MSE: 1005.2970

importance

Predictions-Lenwo 0.238679

MainAADT.50 0.136540

MainAADT.100 0.087060

BldVolD.25 0.037600

SecRL.50 0.019883

MainAADT.200 0.019417

CarPD.4000 0.013391

LnDist\_MTRstn 0.013187

ParkT.500 0.013121

PopD.200 0.012801

PopD.100 0.011863

MainRL.500 0.011762

Dist\_MTRstn 0.010606

MainRL.100 0.010360

Lat 0.009098

RF Model with hyperparameter tuning Performance

MAE: 25.4555

(MAPE) Accuracy = 67.62%.

MSE: 969.6757

importance

Predictions-Lenwo 1.979659e-01

MainAADT.50 7.406461e-02

MainAADT.100 4.927497e-02

BldVolD.25 2.710805e-02

ParkT.500 1.997584e-02

SecRL.50 1.817517e-02

MainAADT.200 1.808300e-02

PopD.100 1.450556e-02

LnDist\_MTRstn 1.421114e-02

CarPD.4000 1.111282e-02

MainRL.500 1.089211e-02

SecRL.25 1.037754e-02

PopD.200 1.037325e-02

InterD.100 9.876645e-03

LnDist\_TollGate 8.748842e-03

best parameters:

{'bootstrap': True, 'max\_depth': 50, 'max\_features': 'auto', 'min\_samples\_leaf': 1, 'min\_samples\_split': 2, 'n\_estimators': 400}

PM 2.5:

Basic Model Performance

MAE: 4.3470

(MAPE) Accuracy = 86.01%

MSE: 29.6406

importance

IndT.5000 0.208193

PrkArD.1500 0.076396

IndT.4000 0.058165

CarPD.1000 0.040503

OpArT.1500 0.031770

PrkArD.1000 0.023706

ParkT.3000 0.021787

MixT.5000 0.021223

CarPD.500 0.020984

ParkT.5000 0.018847

LnDist\_ShenzhenP 0.018368

ExpRL.3000 0.017907

IndT.1000 0.016886

IndT.3000 0.013266

Dist\_ShenzhenP 0.012419

RF Model with hyperparameter tuning Performance

MAE: 4.3857

(MAPE) Accuracy = 85.89%.

MSE: 31.5060

importance

IndT.5000 0.220948

PrkArD.1500 0.065623

IndT.4000 0.047869

CarPD.1000 0.036373

OpArT.1500 0.024951

PrkArD.1000 0.024845

ParkT.3000 0.021558

IndT.1000 0.020642

Dist\_ShenzhenP 0.018960

CarPD.500 0.018213

IndT.3000 0.017908

MixT.5000 0.016979

BldArD.200 0.015670

ResT.2000 0.015454

ParkT.5000 0.015190

best parameters:

{'bootstrap': True, 'max\_depth': 20, 'max\_features': 'auto', 'min\_samples\_leaf': 4, 'min\_samples\_split': 10, 'n\_estimators': 200}