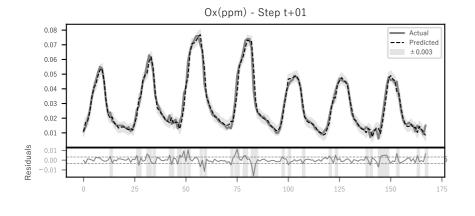
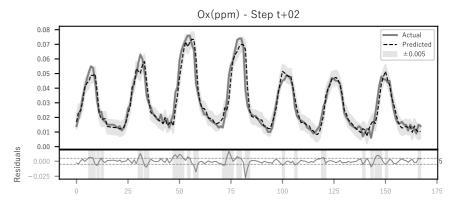
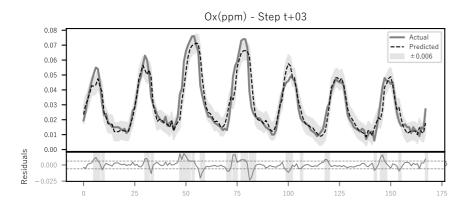
西条 - オキシダント予測の分析

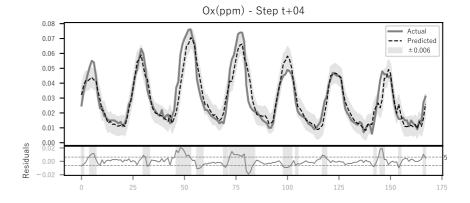
Model Parameters: Prefecture code: 38 Station code: 38206050 Station name: 西条 Target item: Ox(ppm) Number of data points in the train set: 13685 Number of data points in the test set: 5866 Forecast horizon (hours): 24 Model: LightGBM Objective: regression Boosting type: gbdt Number of estimators: 400 Learning rate: 0.04 Elapsed time: 0 min 28 sec Number of used features: 141 Features: Ox(ppm), NO(ppm), NO2(ppm), U, V Ox(ppm) lag1, Ox(ppm) lag2, Ox(ppm) lag3, Ox(ppm) lag4, Ox(ppm) lag5 Ox(ppm)_lag6, Ox(ppm)_lag7, Ox(ppm)_lag8, Ox(ppm)_lag9, Ox(ppm)_lag10 Ox(ppm) lag11, Ox(ppm) lag12, Ox(ppm) lag13, Ox(ppm) lag14, Ox(ppm) lag15 Ox(ppm)_lag16, Ox(ppm)_lag17, Ox(ppm)_lag18, Ox(ppm)_lag19, Ox(ppm)_lag20 Ox(ppm)_lag21, Ox(ppm)_lag22, Ox(ppm)_lag23, NO(ppm)_lag1, NO(ppm)_lag2 NO(ppm)_lag3, NO(ppm)_lag4, NO(ppm)_lag5, NO(ppm)_lag6, NO(ppm)_lag7 NO(ppm)_lag8, NO(ppm)_lag9, NO(ppm)_lag10, NO(ppm)_lag11, NO(ppm)_lag12 NO(ppm)_lag13, NO(ppm)_lag14, NO(ppm)_lag15, NO(ppm)_lag16, NO(ppm)_lag17 NO(ppm)_lag18, NO(ppm)_lag19, NO(ppm)_lag20, NO(ppm)_lag21, NO(ppm)_lag22 NO(ppm)_lag23, NO2(ppm)_lag1, NO2(ppm)_lag2, NO2(ppm)_lag3, NO2(ppm)_lag4 NO2(ppm) lag5, NO2(ppm) lag6, NO2(ppm) lag7, NO2(ppm) lag8, NO2(ppm) lag9 NO2(ppm)_lag10, NO2(ppm)_lag11, NO2(ppm)_lag12, NO2(ppm)_lag13, NO2(ppm)_lag14 NO2(ppm)_lag15, NO2(ppm)_lag16, NO2(ppm)_lag17, NO2(ppm)_lag18, NO2(ppm)_lag19 NO2(ppm)_lag20, NO2(ppm)_lag21, NO2(ppm)_lag22, NO2(ppm)_lag23, U_lag1 NO2(ppm)_lag20, NO2(ppm)_lag21, NO2(ppm)_lag21, NO2(ppm)_lag21, Vlag6 U_lag2, U_lag3, U_lag4, U_lag5, U_lag6 U_lag7, U_lag8, U_lag9, U_lag10, U_lag11 U_lag12, U_lag13, U_lag14, U_lag15, U_lag16 U_lag27, U_lag18, U_lag19, U_lag20, U_lag21 U_lag22, U_lag23, V_lag1, V_lag2, V_lag3 V_lag4, V_lag5, V_lag6, V_lag7, V_lag8 V_lag9, V_lag10, V_lag11, V_lag12, V_lag13 V_lag14, V_lag15, V_lag16, V_lag17, V_lag18 V_lag19, V_lag20, V_lag21, V_lag22, V_lag23 $Ox(ppm)_roll_mean_3,\ Ox(ppm)_roll_std_6,\ NO(ppm)_roll_mean_3,\ NO(ppm)_roll_std_6,\ NO2(ppm)_roll_mean_3,\ Ox(ppm)_roll_mean_3,\ Ox(ppm)_roll_mean_4,\ Ox(ppm)_roll_mean_4,\ Ox(ppm)_roll_mean_4,\ Ox(ppm)_roll_mean_4,\ Ox(ppm)_roll_mean_4,\$ NO2(ppm)_roll_std_6, U_roll_mean_3, U_roll_std_6, V_roll_mean_3, V_roll_std_6 Ox(ppm) diff 1, Ox(ppm) diff 2, Ox(ppm) diff 3, NO(ppm) diff 3, NO2(ppm) diff 3 U_diff_3, V_diff_3, hour_sin, hour_cos, dayofweek is weekend Metrics per Forecast Step: Ox(ppm)_t+01 - R2: 0.9442, MAE: 0.0027, RMSE: 0.0037 Ox(ppm)_t+02 - R²: 0.8753, MAE: 0.0040, RMSE: 0.0056 Ox(ppm)_t+03 - R²: 0.8193, MAE: 0.0049, RMSE: 0.0067 Ox(ppm) t+04 - R²: 0.7720, MAE: 0.0055, RMSE: 0.0075 Ox(ppm)_t+05 - R²: 0.7216, MAE: 0.0061, RMSE: 0.0083 Ox(ppm)_t+06 - R²: 0.6795, MAE: 0.0066, RMSE: 0.0089 Ox(ppm)_t+07 - R²: 0.6445, MAE: 0.0069, RMSE: 0.0094 Ox(ppm)_t+08 - R²: 0.6053, MAE: 0.0073, RMSE: 0.0099 Ox(ppm)_t+09 - R²: 0.5849, MAE: 0.0075, RMSE: 0.0101 Ox(ppm)_t+10 - R²: 0.5655, MAE: 0.0077, RMSE: 0.0104 Ox(ppm) t+11 - R²: 0.5452, MAE: 0.0079, RMSE: 0.0106 Ox(ppm)_t+12 - R²: 0.5333, MAE: 0.0080, RMSE: 0.0108 Ox(ppm) t+13 - R²: 0.5121, MAE: 0.0081, RMSE: 0.0110 Ox(ppm)_t+14 - R²: 0.4933, MAE: 0.0083, RMSE: 0.0112 Ox(ppm)_t+15 - R²: 0.4903, MAE: 0.0084, RMSE: 0.0113 Ox(ppm) t+16 - R²: 0.4774, MAE: 0.0085, RMSE: 0.0114 Ox(ppm)_t+17 - R²: 0.4700, MAE: 0.0086, RMSE: 0.0115 Ox(ppm)_t+18 - R²: 0.4581, MAE: 0.0087, RMSE: 0.0116 Ox(ppm)_t+19 - R²: 0.4534, MAE: 0.0087, RMSE: 0.0117 Ox(ppm)_t+20 - R²: 0.4539, MAE: 0.0087, RMSE: 0.0117 Ox(ppm) t+21 - R²: 0.4386, MAE: 0.0088, RMSE: 0.0118 Ox(ppm)_t+22 - R²: 0.4355, MAE: 0.0088, RMSE: 0.0119

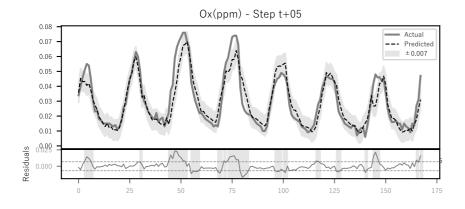
Ox(ppm)_t+23 - R²: 0.4411, MAE: 0.0088, RMSE: 0.0118 Ox(ppm)_t+24 - R²: 0.4401, MAE: 0.0089, RMSE: 0.0118

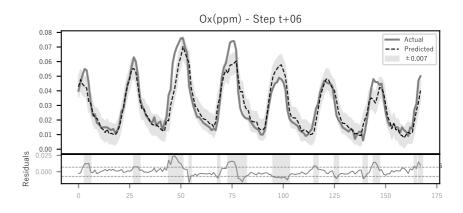


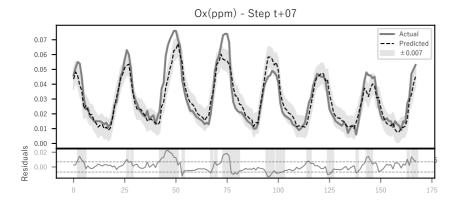


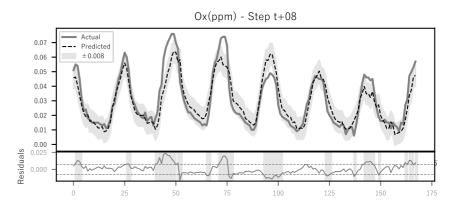


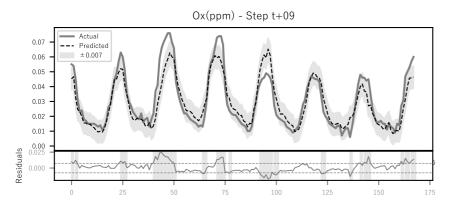


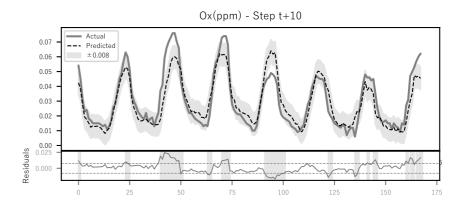


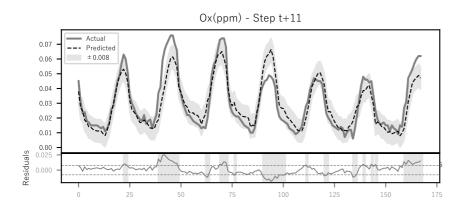


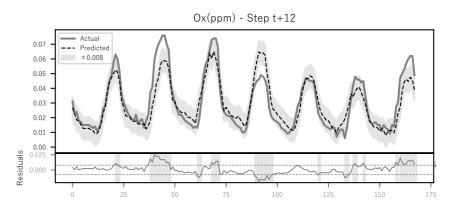


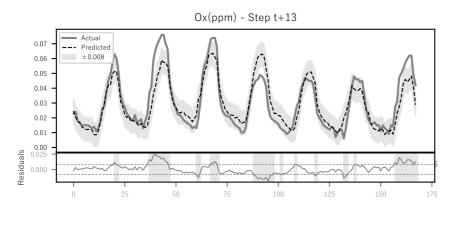


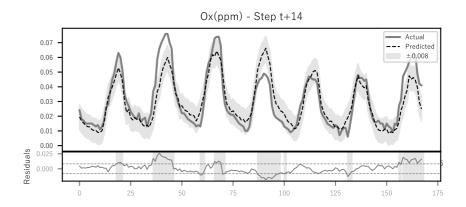


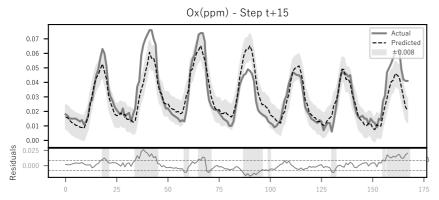


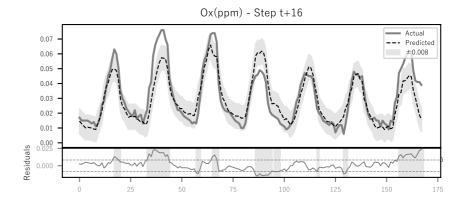


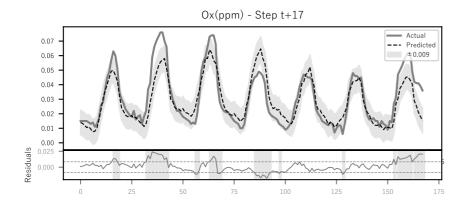


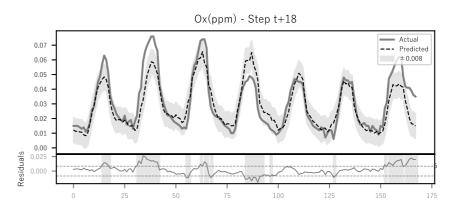


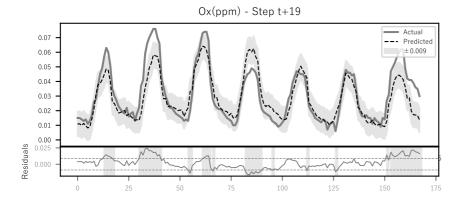


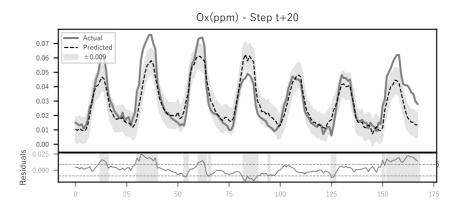


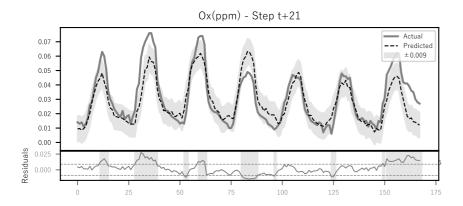


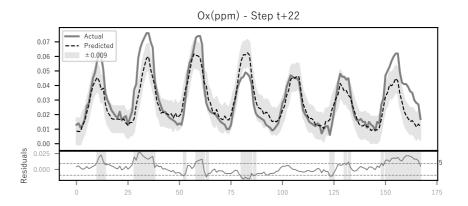


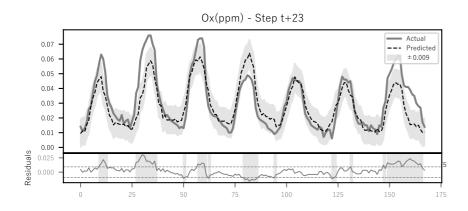


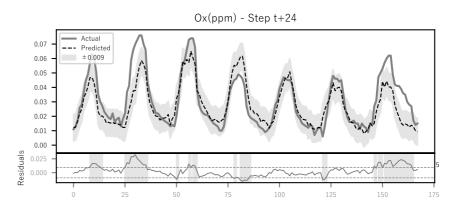












Normalized Feature Importance (per feature) 1.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.95 0.64 | 0.74 0.00 0.08 0.00 0.00 0.00 0.00 0.00 0.27 Ox(ppm) 1.00 U_roll_std_6 - 0.10 0.09 0.17 0.16 0.15 0.32 0.37 0.56 0.94 0.78 0.70 | 0.81 0.87 0.73 0.73 0.87 0.89 1.00 1.00 0.8 Normalized Importance (per feature) 1.00 1.00 1.00 dayofweek - 0.00 0.00 0.00 0.08 0.18 0.27 0.17 0.40 0.80 0.80 1.00 0.99 | 1.00 | 1.00 1.00 1.00 1.00 0.90 0.81 0.82 hour_sin - 0.14 0.18 0.25 0.38 0.75 0.73 0.36 0.66 0.53 | 0.76 0.00 0.00 0.00 0.13 0.16 0.24 0.33 0.35 0.25 0.19 0.12 0.36 0.30 0.70 0.41 1.00 0.87 0.71 0.43 0.41 0.74 0.65 0.80 0.43 0.43 0.60 0.41 0.74 0.68 0.22 0.43 0.32 0.21 0.15 0.01 0.02 0.03 $V_{roll_std_6} - 0.08 + 0.08 + 0.06 + 0.12 + 0.00 + 0.00 + 0.00 + 0.00 + 0.00 + 0.00 + 0.01 + 0.029 + 0.07$ 0.27 0.42 0.43 0.43 0.38 0.30 0.24 0.36 - 0.2 0.38 0.18 0.16 Ox(ppm) roll mean 3 - 0.02 0.00 0.01 0.04 0.10 0.11 0.08 0.01 0.26 0.29 0.24 0.16 0.00 0.09 0.25 0.30 0.62 | 0.74 0.30 $Ox(ppm)_roll_std_6 - 0.07$ 0.14 0.09 0.09 0.03 0.00 0.01 0.03 0.03 0.00 0.00 0.00 0.00 0.30 0.40 0.38 0.35 0.38 0.07 0.11 0.09 0.00 - 0.0 00 Ox(ppm)_t+10 0x(ppm)_t+02 Ox(ppm)_t+05 0x(ppm)_t+12 0x(ppm)_t+13 0x(ppm)_t+23 0x(ppm)_t+24 Ox(ppm)_t+ Ox(ppm)_t+ Ox(ppm)_t+ Forecast Step Normalized Feature Importance (per step) 1.0 - 1.00 0.83 0.76 0.75 Ox(ppm) U roll std 6 - 0.00 0.05 0.30 0.36 0.37 0.65 0.63 0.61 0.42 0.42 0.39 0.37 0.60 0.80 0.83 1.00 0.96 0.8 0.56 0.62 0.73 0.71 | 0.73 | 0.84 0.85 0.83 1.00 1.00 | 1.00 dayofweek - 0.00 0.11 0.20 0.27 0.55 | 0.66 | 0.70 0.77 0.91 0.91 Normalized Importance (per step) hour_sin **-** 0.32 0.40 0.77 0.82 1.00 0.95 0.79 0.28 0.00 0.10 0.35 0.33 0.40 0.19 0.35 0.43 0.42 0.37 0.49 0.66 0.68 0.79 0.67 0.61 0.70 0.61 0.69 | 1.00 0.70 0.65 0.70 0.68 | 0.78 | 0.82 0.62 0.75 0.76 0.71 | 0.79 0.75 0.79 0.87 0.99 0.78 1.00 U_roll_mean_3 - 0.00 0.19 0.37 0.68 0.80 0.81 0.96 0.81 1.00 0.94 0.39 0.41 0.30 0.26 0.10 0.24 0.28 0.35 0.42 0.36 0.68 0.82 0.87 0.80 0.84 0.85 0.80 V_roll_std_6 - 0.00 0.12 0.29 0.65 0.73 0.77 1.00 - 0.2 Ox(ppm) roll mean 3 - 0.00 0.06 0.20 0.35 0.62 0.66 0.42 0.38 0.33 0.26 0.42 0.29 0.31 0.82 1.00 0.77 0.77 0.78 1.00 0.85 Ox(ppm) roll std 6 - 0.000.41 0.71 | 0.77 0.80 0.95 0.39 0.69 - 0.0 0x(ppm)_t+02 Ox(ppm)_t+10 0x(ppm)_t+24 Ox(ppm)_t+ (mdd)xO Ox(ppm)_ Ox(ppm)_

Target