

# LSTM parameter selection Report - 西条

Prefecture code	38
Station code	38206050
Station name	西条
Target item	Ox(ppm)
Number of data points in the train set	17996
Number of data points in the validation set	4500
Number of features	25
Model	LSTM
Lag (sequence length)	24
Epochs	200
Batch size	128
Learning rate	0.0005
Horizon	24
Hidden size	20
Layers	1
Dropout	0.0
Patience	5
Best val loss	0.018322
R <sup>2</sup> (t+1)	0.78556
MAE (t+1)	0.007582
RMSE (t+1)	0.009433
Residual mean	0.001659
Residual median	-7.6e-05
Residual mode	-0.005805
Predictions mean	0.032
Predictions std	0.013
True mean	0.034
True std	0.02
Residuals std	0.012888
Residuals skew	0.428
Residuals kurtosis	0.243

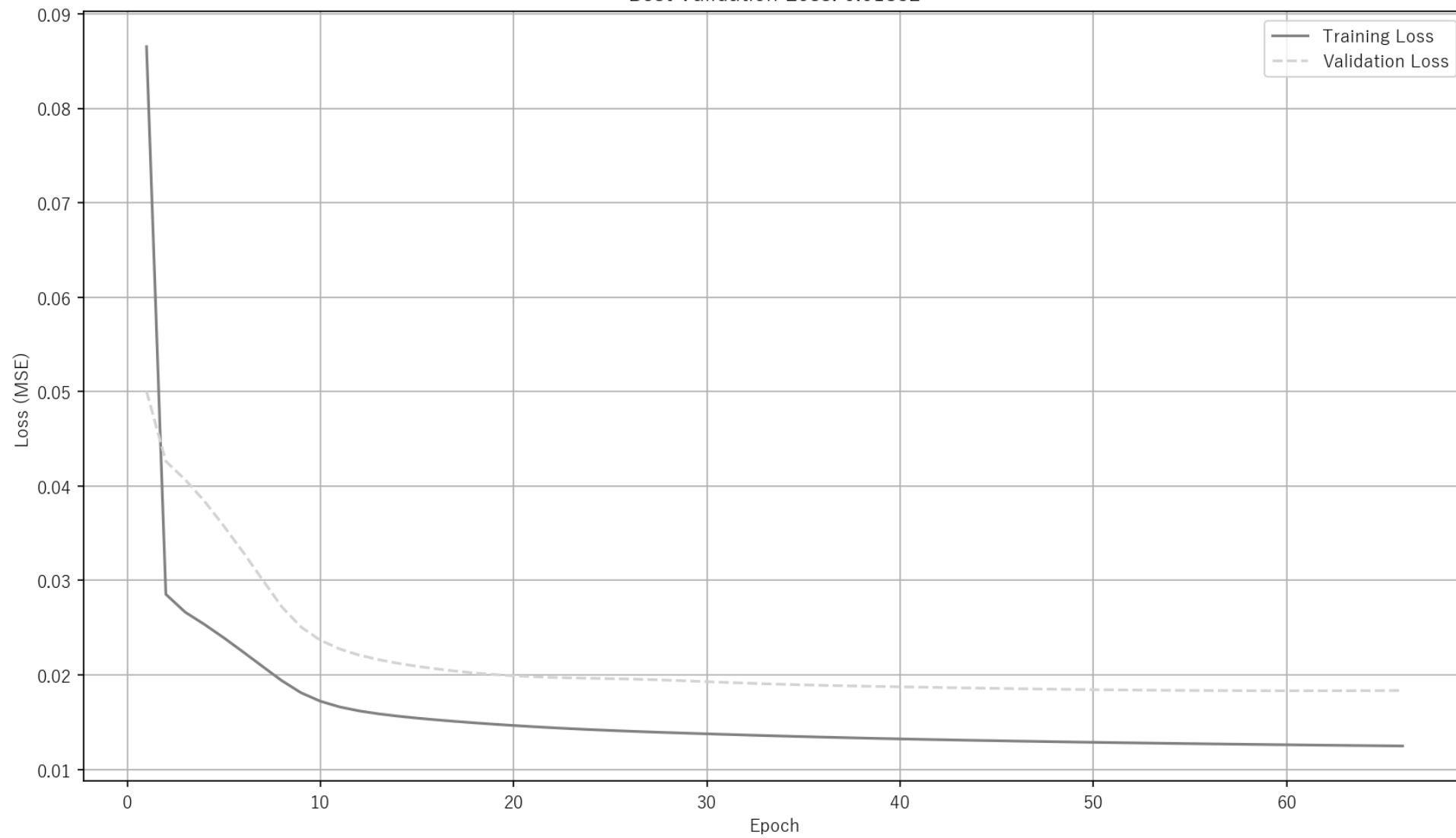
Features used for prediction

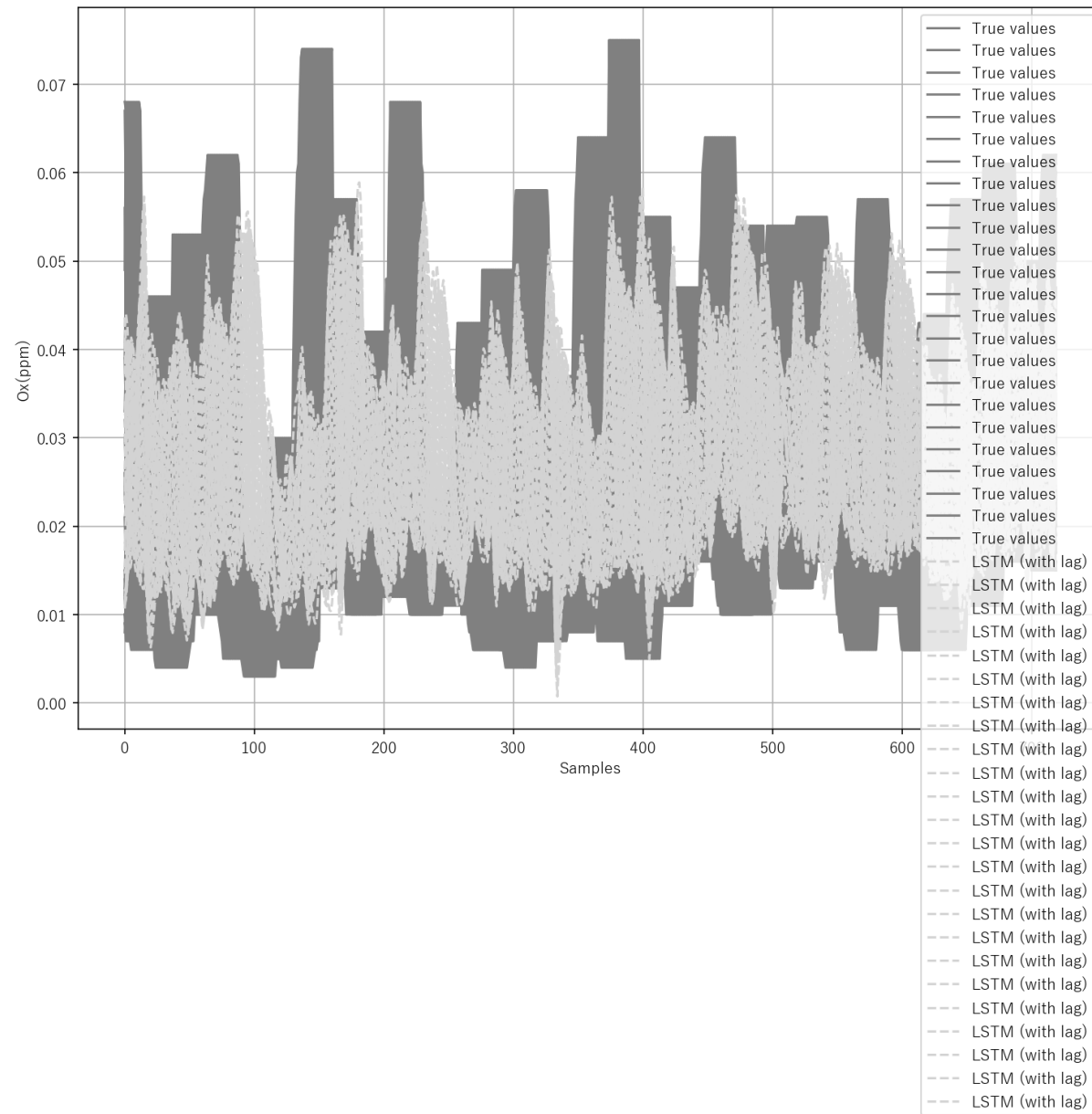
NO(ppm)	NO2(ppm)	U	V	Ox(ppm)_roll_mean_3
Ox(ppm)_roll_std_6	NO(ppm)_roll_mean_3	NO(ppm)_roll_std_6	NO2(ppm)_roll_mean_3	NO2(ppm)_roll_std_6
U_roll_mean_3	U_roll_std_6	V_roll_mean_3	V_roll_std_6	Ox(ppm)_diff_1
Ox(ppm)_diff_2	Ox(ppm)_diff_3	NO(ppm)_diff_3	NO2(ppm)_diff_3	U_diff_3
V_diff_3	hour_sin	hour_cos	dayofweek	is_weekend

Model accuracy

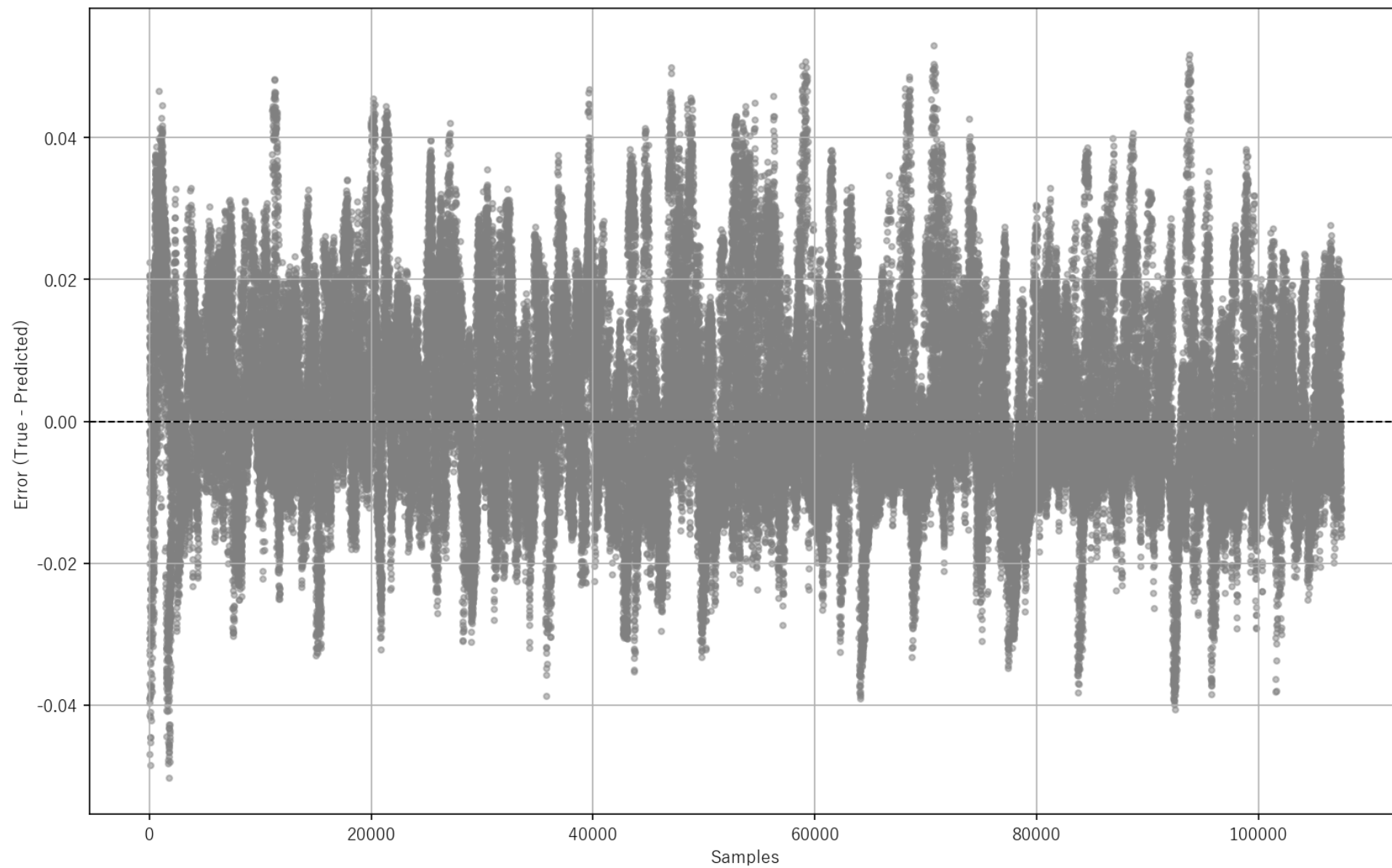
Target	R <sup>2</sup>	MAE	RMSE
Ox(ppm)	0.7856	0.0076	0.0094

Learning Curve (LSTM)  
Best Validation Loss: 0.01832



$R^2: 0.78556$ 

Distribution of Residual Errors



Histogram of Residuals – Distribution & Central Tendency

