

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 used	25
Model	LSTM
Lag (sequence length)	24
Epochs	200
Batch size	128
Learning rate	0.0005
Hidden size	20
Number of layers	1
Dropout	0.0
Patience	5
Best validation loss	0.017661
Predictions mean	0.032
Predictions std	0.015
True mean	0.034
True std	0.02
Residuals mean	0.001993
Residuals median	0.00077
Residuals mode	-0.002561
Residuals std	0.012601
Residuals skew	0.315
Residuals kurtosis	0.495

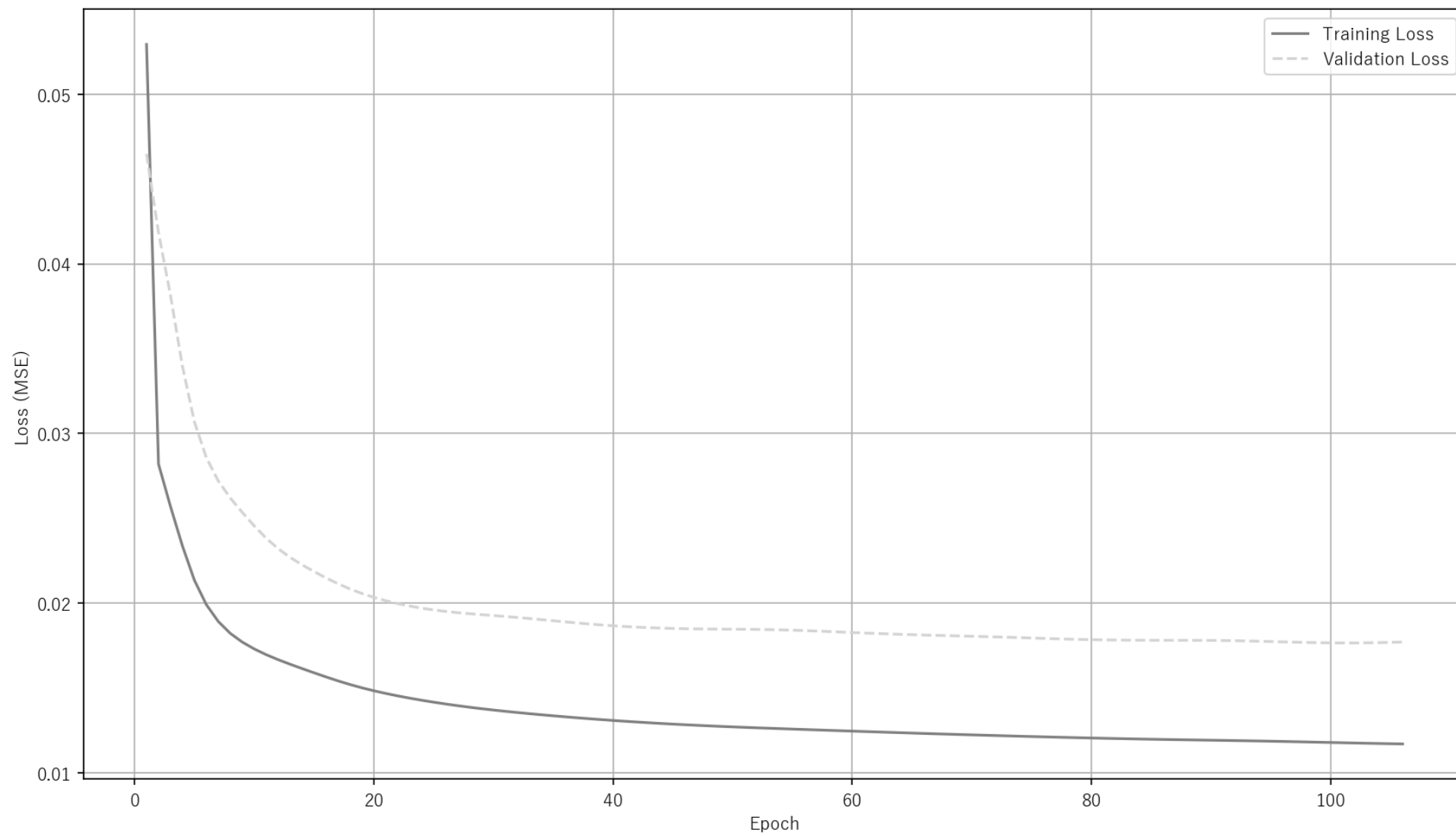
Features used for prediction

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

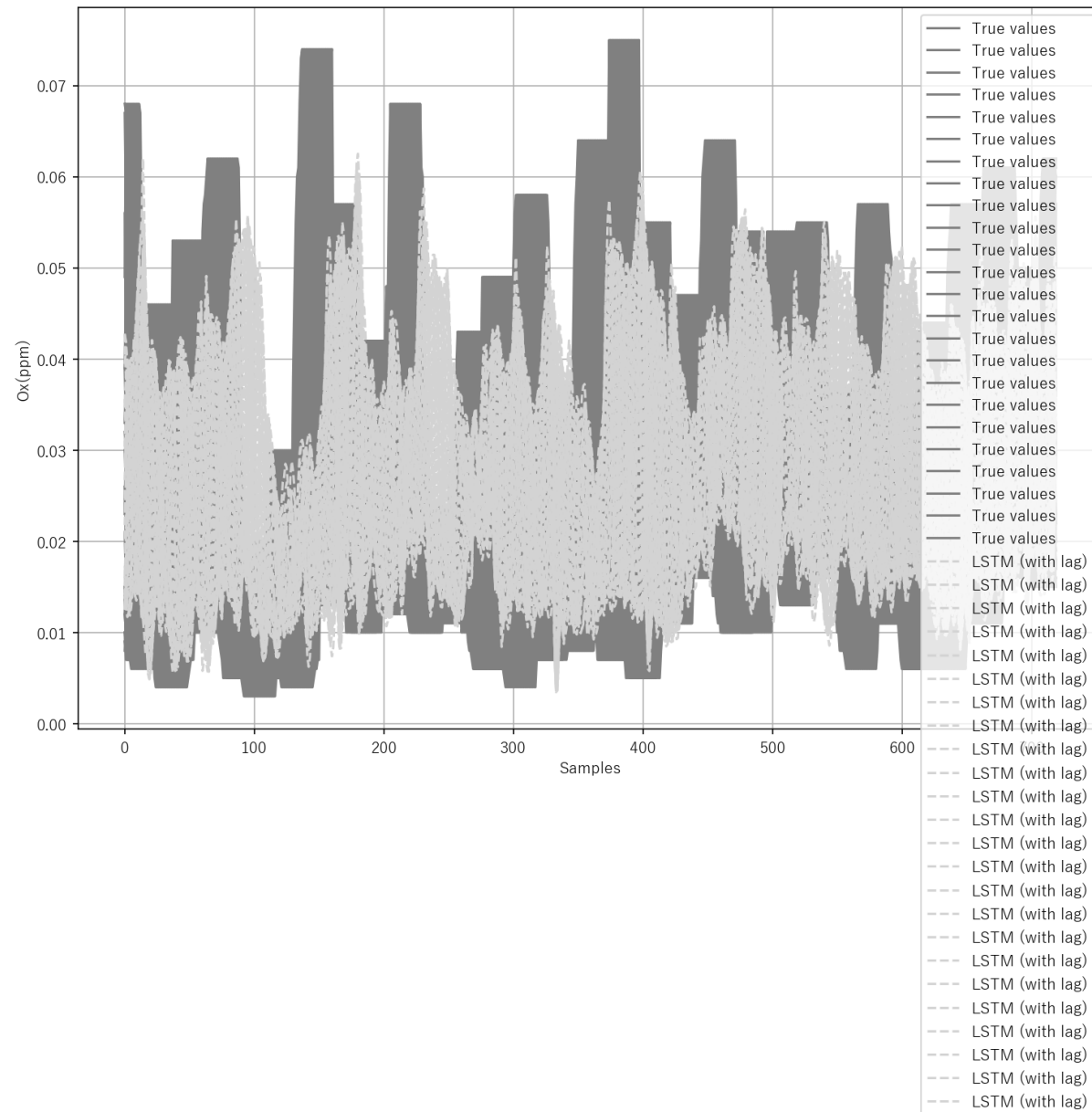
Model accuracy

Target	R ²	MAE	RMSE
Ox(ppm)	0.7992	0.0071	0.0091

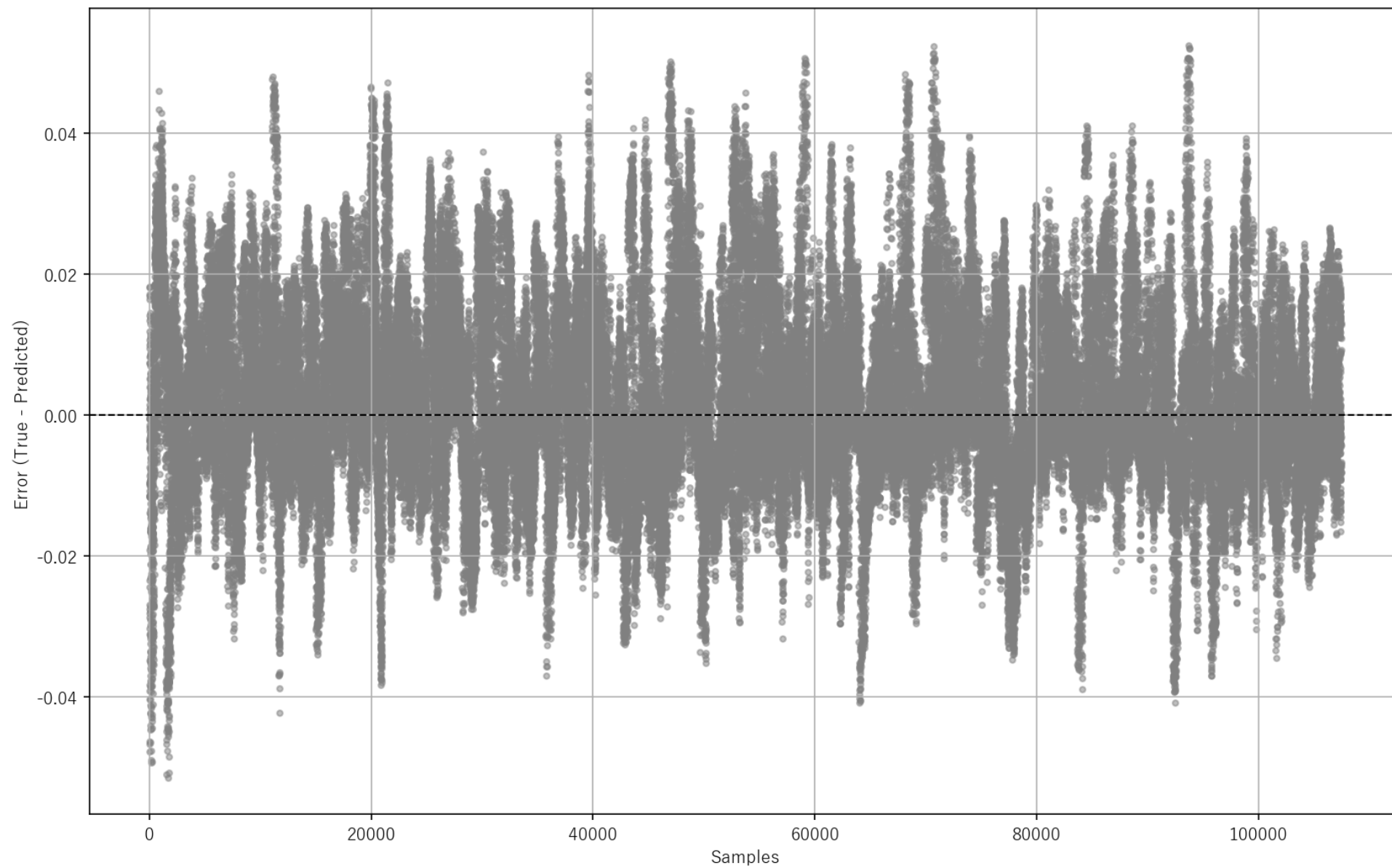
Learning Curve (LSTM)
Best Validation Loss: 0.01766



LSTM Regression with lag
 $R^2: 0.79920$



Distribution of Residual Errors



Histogram of Residuals – Distribution & Central Tendency

