

# GRU Multi-step Forecast Report - 西条

Prefecture code	38
Station code	38206050
Station name	西条
Target item	Ox(ppm)
Model	GRU (Recurrent NN)
Horizon	24
Lag	24
Hidden units	[128, 64]
Dropout	0.1
Batch size	128
Learning rate	0.0005
Epochs	200
Patience	10
R <sup>2</sup> (t+1)	0.827507
MAE (t+1)	0.006543
RMSE (t+1)	0.008615
Residual mean	4.7e-05
Residual median	-0.00072
Residual mode	-0.000836

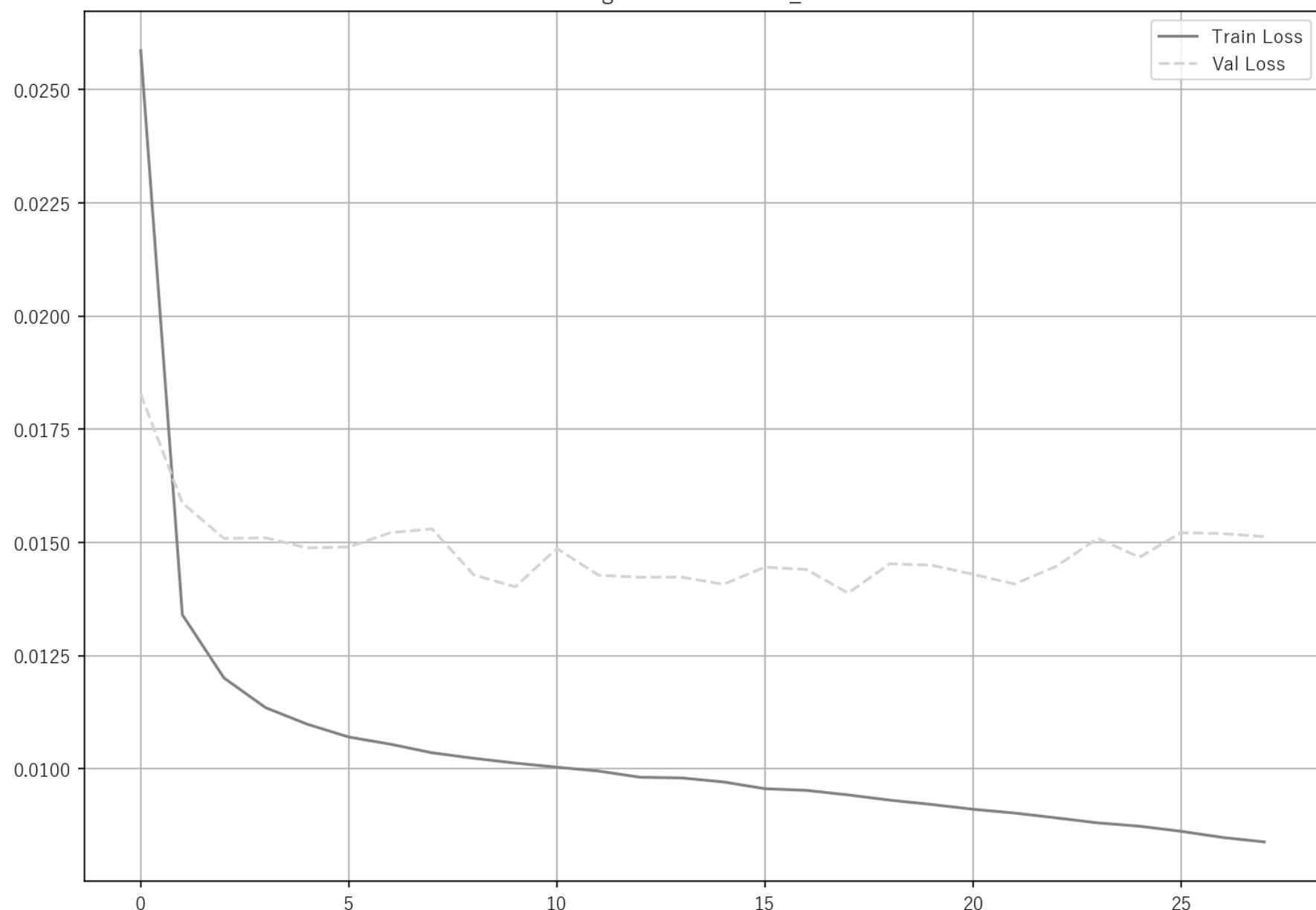
## Features used for prediction

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_3	NO(ppm)_diff_1	NO(ppm)_diff_3	NO2(ppm)_diff_1	NO2(ppm)_diff_3
U_diff_1	U_diff_3	V_diff_1	V_diff_3	hour_sin
hour_cos	dayofweek	is_weekend		

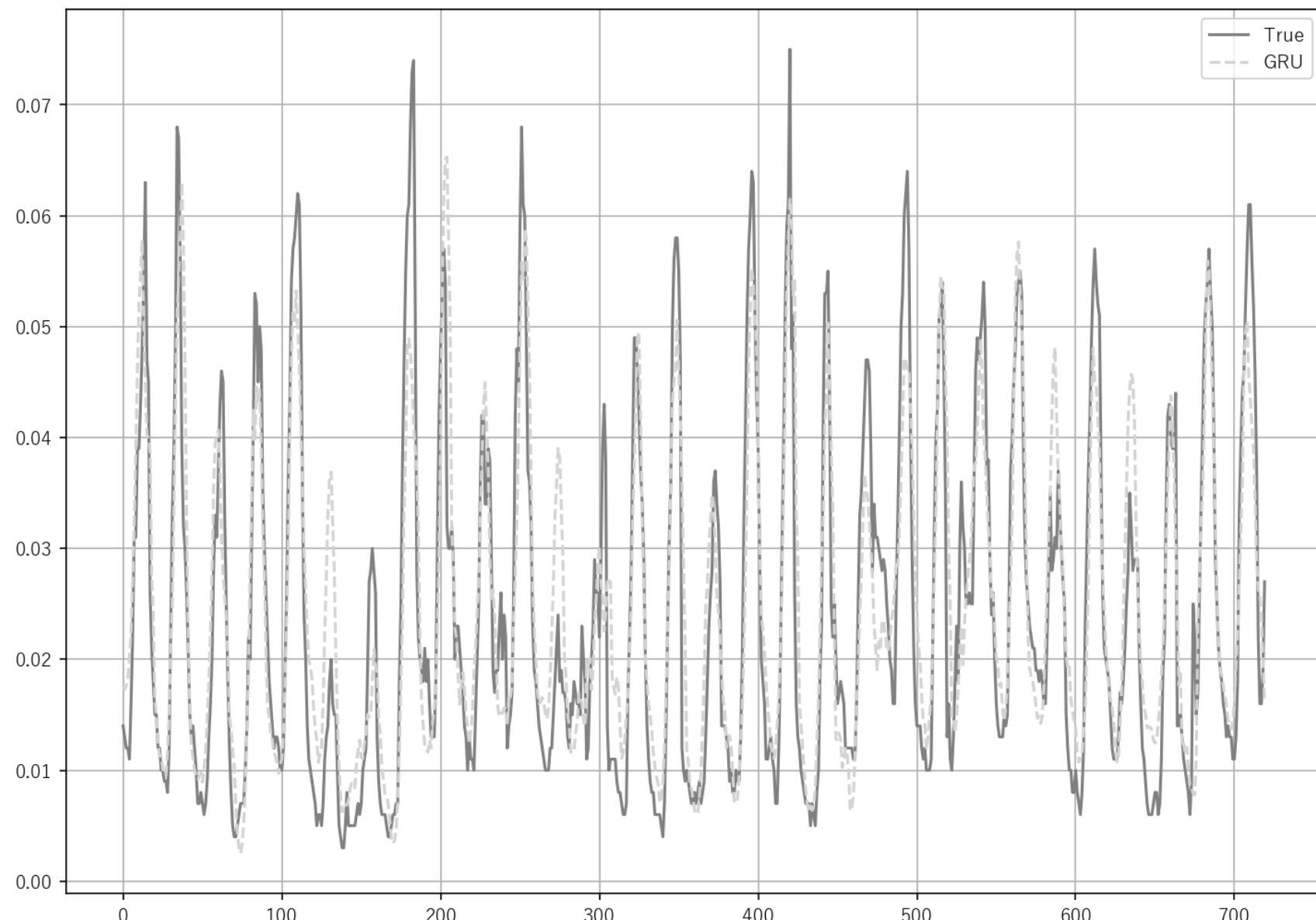
## Model accuracy

Target	R <sup>2</sup>	MAE	RMSE
Ox(ppm)	0.8275	0.0065	0.0086

GRU Learning Curve – Best val\_loss: 0.01388



GRU Forecast (t+1)  
 $R^2: 0.82751$



Residual Distribution

