NHITS 24-hour Forecast Report - 西条

$$\mathbf{x}_t \in \mathbb{R}^L \text{ (input window)}$$
$$\theta^{(b)} = f_{\text{MLP}}^{(b)}(\mathbf{x}_t)$$
$$\hat{\mathbf{y}}^{(b)} = P^{(b)}\theta^{(b)}$$

$$\hat{\mathbf{y}} = \sum_{b=1}^{B} \hat{\mathbf{y}}^{(b)}$$

$$\mathcal{L} = \frac{1}{N}\sum_{i=1}^{N} |y_i - \hat{y}_i|$$

$\mathbf{x}_t$: input lookback window (L=720 hours)

$f_{\text{MLP}}^{(b)}$: block-specific multi-layer perceptron

$\theta^{(b)}$: basis coefficients estimated by block b

$P^{(b)}$: hierarchical interpolation operator

$\hat{\mathbf{y}}$: 24-hour direct multi-step forecast

$\mathcal{L}$: Mean Absolute Error minimized during training

The N-HiTS model is a hierarchical multi-resolution neural architecture for multi-step time series forecasting.

In this configuration, the model uses calendar-based future-known exogenous variables (hourly cyclical encoding and weekly indic

The forecast horizon is predicted simultaneously using a direct multi-output strategy.

Prefecture code	38
Station code	38206050
Station name	西条
Target item	Ox(ppm)
Model	NHITS (Fixed, Rolling stride=1)
Forecast horizon	24
Input size	720
Future exogenous	hour_sin, hour_cos, dayofweek, is_weekend
Training samples	2160
Test samples	720
Elapsed time	8 min 18 sec

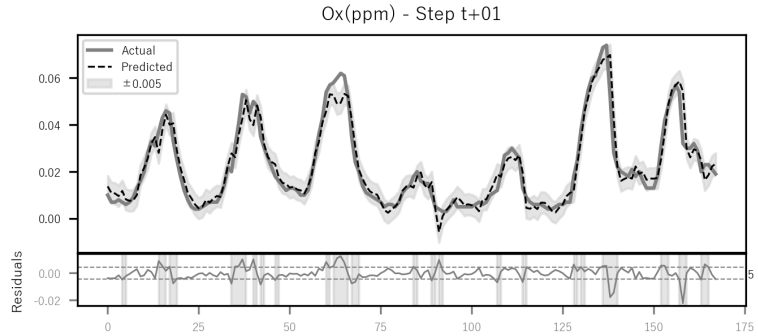
Features used for prediction

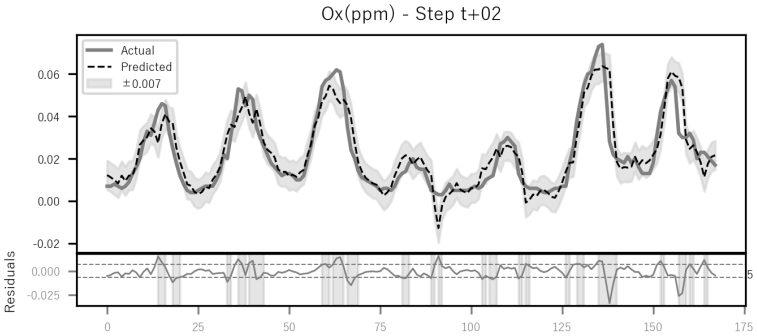
hour_sin hour_cos dayofweek is_weekend

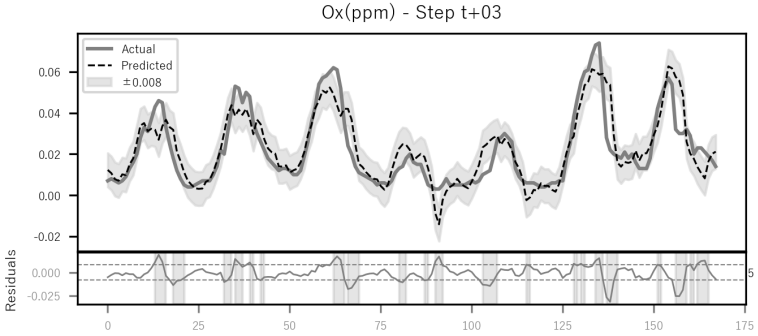
Model accuracy

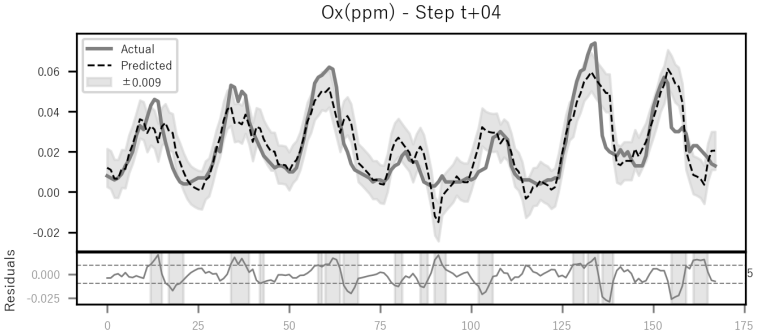
Target	R^2	MAE	RMSE
t+01	0.8952	0.0036	0.0052
t+02	0.7868	0.0053	0.0074
t+03	0.6949	0.0065	0.0088
t+04	0.5928	0.0076	0.0102
t+05	0.5136	0.0083	0.0111
t+06	0.4395	0.0090	0.0119
t+07	0.3804	0.0096	0.0125
t+08	0.3495	0.0098	0.0128
t+09	0.3283	0.0100	0.0130
t+10	0.3041	0.0102	0.0133
t+11	0.2974	0.0105	0.0134
t+12	0.2865	0.0108	0.0135
t+13	0.2662	0.0110	0.0137
t+14	0.2627	0.0112	0.0138
t+15	0.2800	0.0111	0.0137
t+16	0.2929	0.0109	0.0136
t+17	0.2917	0.0108	0.0136
t+18	0.2857	0.0107	0.0137
t+19	0.2862	0.0106	0.0137
t+20	0.2765	0.0106	0.0138
t+21	0.2684	0.0105	0.0138
t+22	0.2338	0.0104	0.0142
t+23	0.2161	0.0105	0.0143
t+24	0.2191	0.0104	0.0143

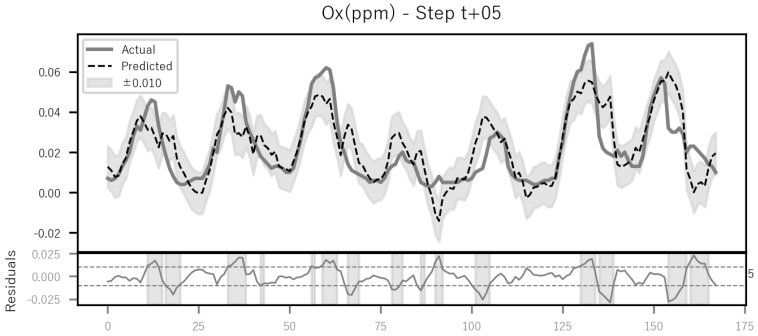
Comparison between actual and predicted values
with ± Standard Deviation Bands

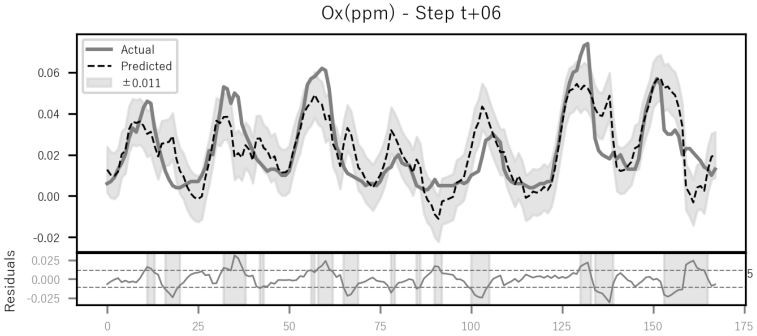












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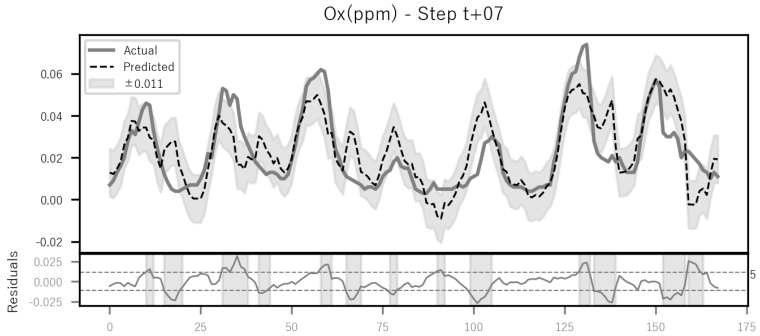

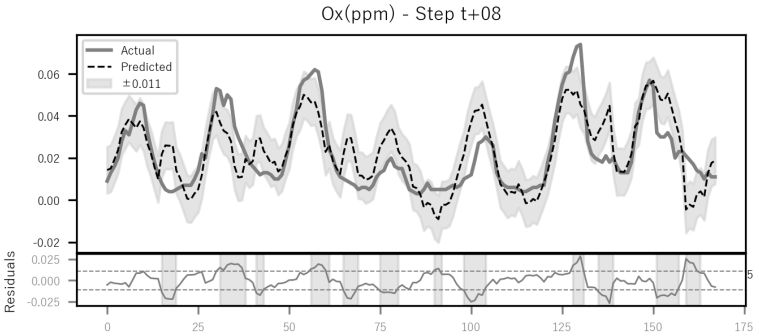

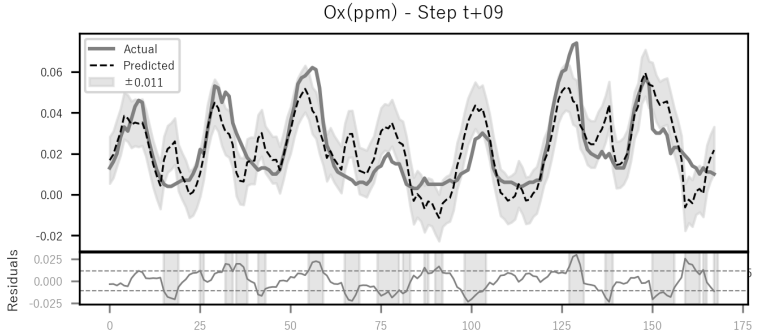

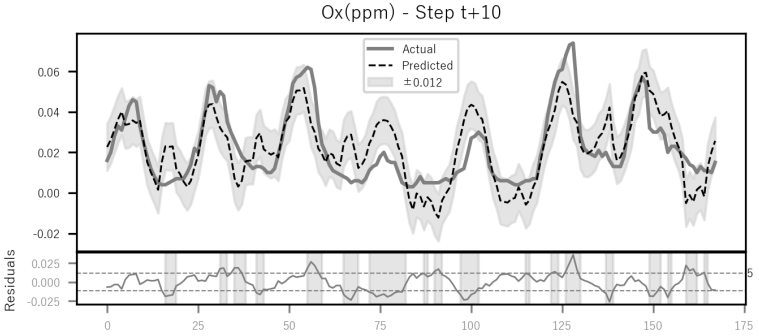

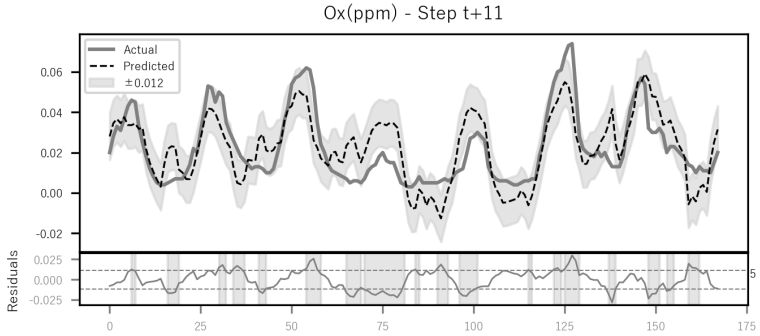

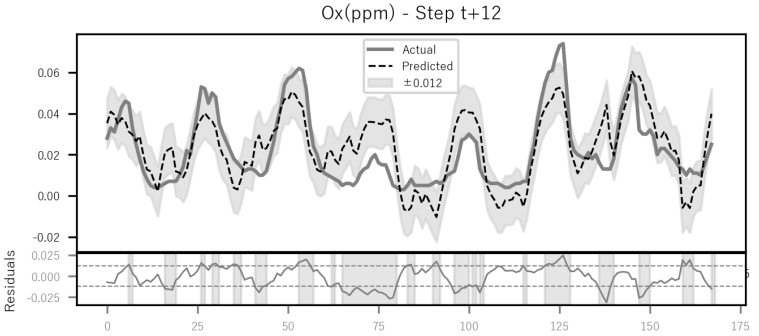

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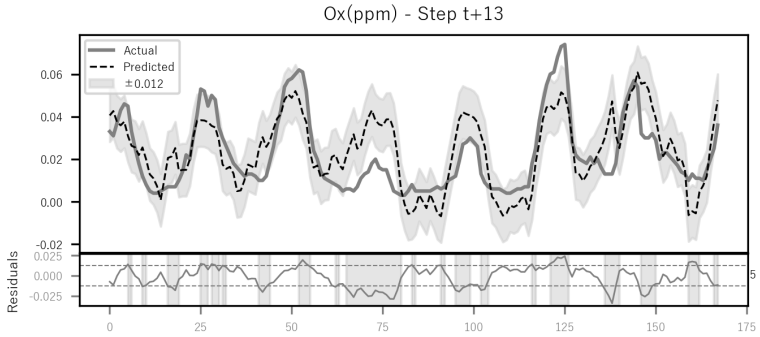

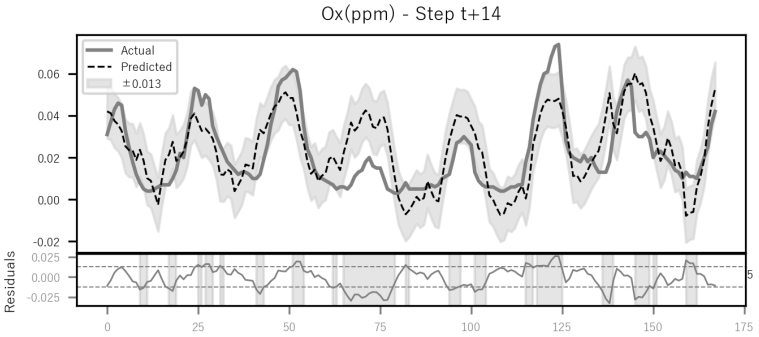

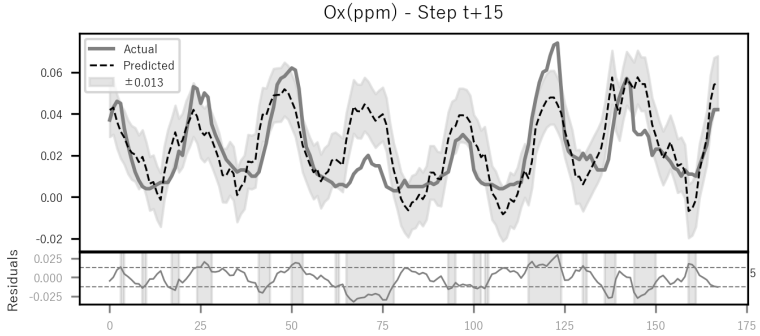

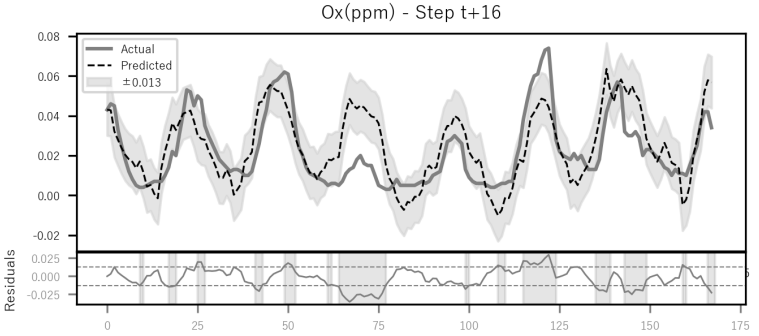

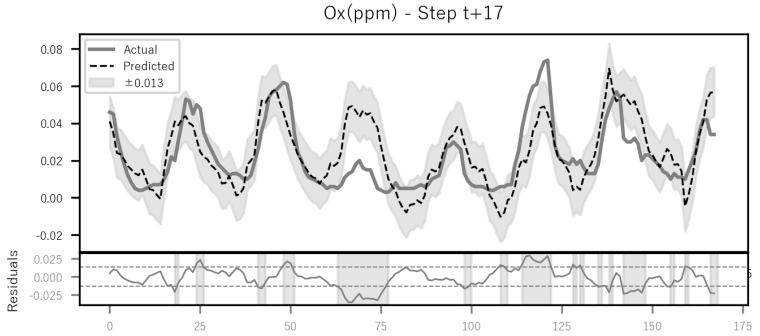

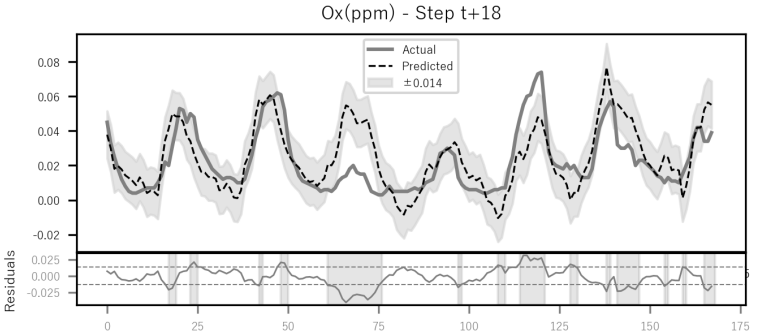

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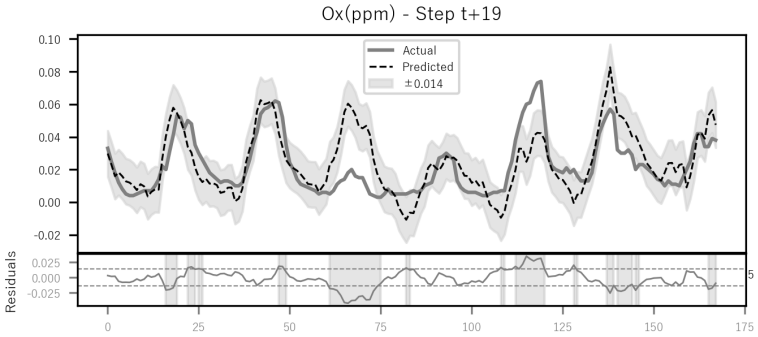

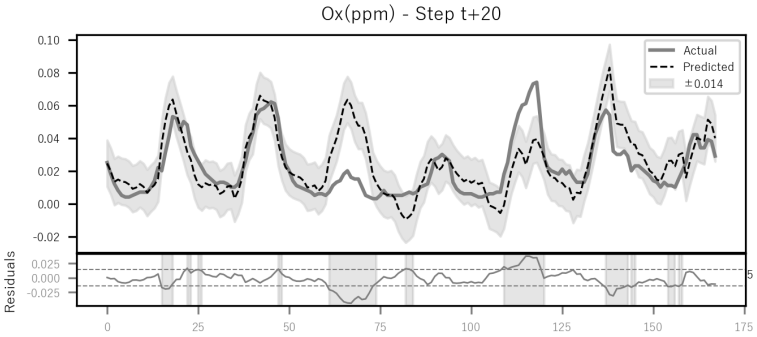

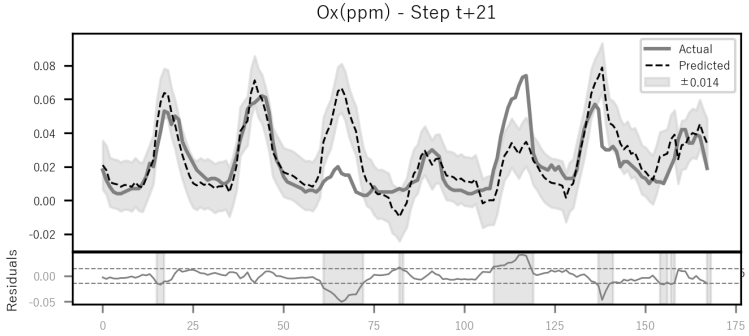

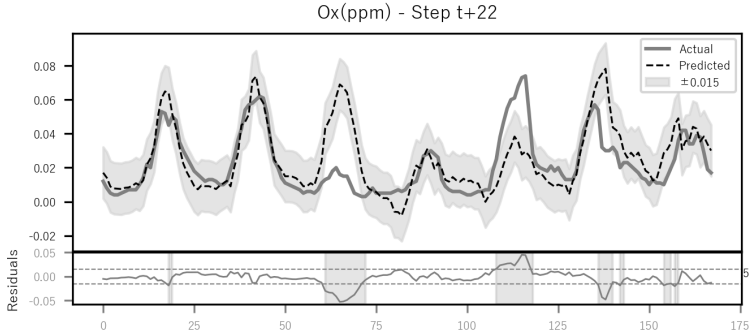

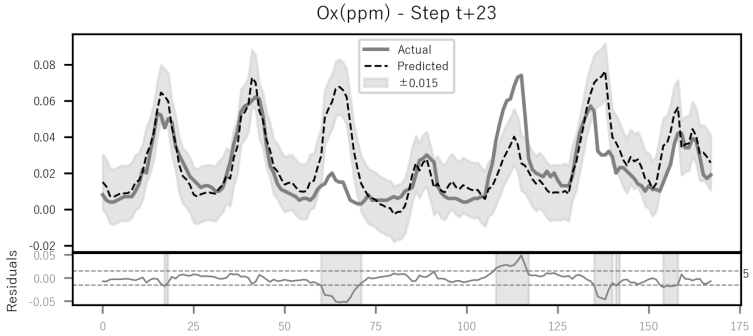

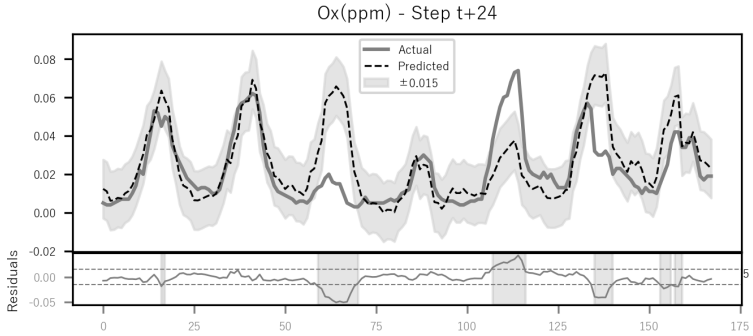

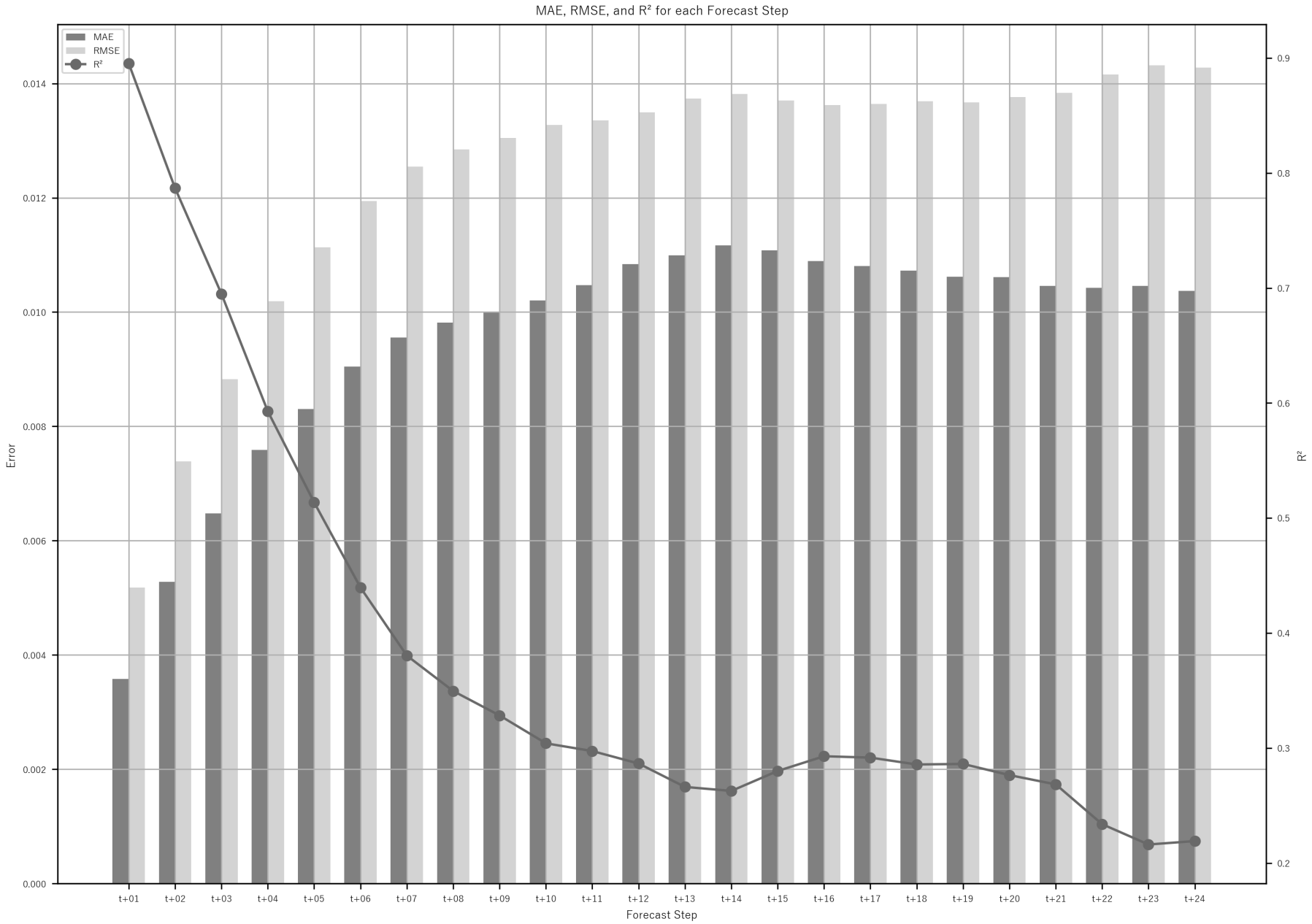
MAE, RMSE, and R² for each Forecast Step
MAE
RMSE
R²
Error
R²
Forecast Step
0.000
0.002
0.004
0.006
0.008
0.010
0.012
0.014
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
t+01
t+02
t+03
t+04
t+05
t+06
t+07
t+08
t+09
t+10
t+11
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