

# Seasonal Decomposition Report - 西条

$$X_t = T_t + S_t + R_t$$

$X_t$ : observed value of the time series at time  $t$   
 $T_t$ : trend component (long-term progression of the series)  
 $S_t$ : seasonal component (repeating short-term pattern)  
 $R_t$ : residual component (random noise or irregular fluctuations)

In the additive model, the series is assumed to be the sum of these components.  
For multiplicative models, the relationship becomes  $X_t = T_t \times S_t \times R_t$ .

The seasonal decomposition separates the time series into four components:

- 1. **Original series** — the observed Ox concentration over time.
- 2. **Trend component** — shows the long-term direction of variation.
- 3. **Seasonal component** — highlights repeating periodic patterns, such as daily or monthly cycles.
- 4. **Residual component** — contains random fluctuations not explained by the trend or seasonality.

By examining these components, we can better understand whether variations in measurement levels are due to systematic seasonal patterns, long-term environmental changes, or random noise.

Prefecture code	38
Station code	38206050
Station name	西条
Model type	Additive decomposition
Period	720
Data points	22526
Start date	2023-03-01 01:00:00
End date	2025-10-01 00:00:00

