Supplement:

Mean normalized bias (MNB), mean normalized error (MNE), normalized mean bias (NMB), and normalized mean error (NME) are defined as the followings:

\[
MNB = \frac{1}{N} \sum_{i=1}^{N} \frac{(C_i^s - C_i^o)}{C_i^o} \times 100\%
\]

\[
MNE = \frac{1}{N} \sum_{i=1}^{N} \left| \frac{C_i^s - C_i^o}{C_i^o} \right| \times 100\%
\]

\[
NMB = \frac{\sum_{i=1}^{N} (C_i^s - C_i^o)}{\sum_{i=1}^{N} C_i^o} \times 100\%
\]

\[
NME = \frac{\sum_{i=1}^{N} \left| C_i^s - C_i^o \right|}{\sum_{i=1}^{N} C_i^o} \times 100\%
\]

where \(C_i^s\) and \(C_i^o\) represent simulated and observed concentrations at the same monitoring site for the same hour, respectively, and \(N\) is the total number of such data pairs of interest.