Supplementary Material

Enhancing the advection module performance in the EPICC-Model V1.0 via GPU-HADVPPM4HIP V1.0 coupling and GPU-optimized strategies

Kai Cao[1], Qizhong Wu[2], Xiao Tang[1,3], Jinxi Li[1], Xueshun Chen[1,3], Huansheng Chen[1], Wending Wang[1], Huangjian Wu[1], Lei Kong[1], Jie Li[1,3], Jiang Zhu[1,3], and Zifa Wang[1,3]

[1]State Key Laboratory of Atmospheric Environment and Extreme Meteorology, Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing 100029, China

[2]College of Global Change and Earth System Science, Faculty of Geographical Science, Beijing Normal University, Beijing 100875, China

[3]College of Earth and Planetary Sciences, University of Chinese Academy of Sciences, Beijing, 100049, China

Correspondence to: Qizhong Wu (wqizhong@bnu.edu.cn); Xiao Tang (tangxiao@mail.iap.ac.cn)

1. The formulas for calculating the root mean square error (RMSE) and correlation coefficient are :

$$\mathrm{RMSE} = \sqrt{\frac{1}{n}\sum_{i=1}^{n}(M_i - O_i)^2}$$

$$\mathrm{R} = \frac{\sum_{i=1}^{n}(M_i - \bar{M})(O_i - \bar{O})}{\sqrt{\sum_{i=1}^{n}(M_i - \bar{M})^2}\sqrt{\sum_{i=1}^{n}(O_i - \bar{O})^2}}$$

where M_i and O_i are simulated and observed concentrations, respectively; $\bar{M}$ and $\bar{O}$ are the simulated and observed mean concentrations, respectively; and n is the total number of individual observations.