

Response to Reviewer 1

Dear Reviewer,

We greatly appreciate your efforts and your helpful comments in reviewing our article. We have incorporated all of your comments in the revised manuscript.

We respond below in blue to your comments item-by-item.

Sincerely yours,

Yuanjian Yang and Kai Qin on behalf of all co-authors

Reviewer #1: General comment

The manuscript by Duan et al describes a significant database of eddy-covariance and micro-meteorological measurements in a typical East Asian monsoon region of China. The data quality control for EC data is introduced in detail, and the manuscript also presents the variations of each variable at diurnal, daily and monthly scales, to some extent, indicating that the data accuracy is reasonable. This dataset will contribute to multiple research fields, including studying land - atmosphere interaction, improving the boundary-layer parameterization schemes, evaluating remote sensing algorithms, and developing climate models in the typical East Asian monsoon region. The manuscript is well written and documented, and I suggest it will be published after some revision.

Response: Many thanks for your positive comments.

Major comments:

[1] The description of the time used is unclear in the data file. Is it local time or UTC?

Response: Thank you very much for pointing this out. We have added this description in the “Data availability” section as follows (Line 277): “The local time (UTC+8) was used at four sites.”

[2] For long term data sets, sensor calibration is important, especially for radiation measurements. The sensor calibration in the current Manuscript may need to be supplemented.

Response: Thank you very much for your kind suggestion. More information about sensor calibration has been supplemented as follows (Lines 132 – 136):

“All instruments were calibrated by professional engineers. For example, the calibration steps of CO₂/H₂O open-path infrared gas analyzer mainly included: (a) determining the calibration coefficients and (b) setting zero and span. The three-dimensional sonic anemometer needed a factory calibration (i.e., test for wind offset and check for diagnostic flags) every two years, while the four-component net radiometer was calibrated every year to guarantee the radiation data quality.”

[3] Define the radiation, turbulent, and CO₂ flux direction in section 2.4.

Response: Thank you very much for pointing this out. We have defined the radiation, turbulent, and CO₂ flux direction in section 2.4 as follows:

Line 172: “ R_n (positive radiation toward the surface) is derived from incoming (\downarrow , downward) and outgoing (\uparrow , upward) components of shortwave radiation (K) and longwave radiation (L):”

Line 175: “ H and λE (positive flux away from the surface) are estimated by the EC methods (Kaimal and Finnigan, 1994):”

Line 182: “ F_c (positive CO₂ flux away from the surface) is calculated as follows (Ohtaki and Matsui, 1982):”

Minor comments:

Line 20: “four component radiation components” should be “four radiation components”.

Response: Corrected. (Line 20)

Line 43: replace the word “influence” with “influenced”.

Response: Corrected. (Line 42)

Line 45: change the word “both co-exist” with “both of them co-existed”.

Response: Corrected. (Line 45)

Lines 69–72: the sentence is better to modified as follows: “Although China Meteorological Data Service Center (<http://data.cma.cn/en>, last access: 30 April 2022) has provided some meteorological data in recent years, EC sensors have not been commonly equipped in those meteorological stations, making it difficult to obtain heat and CO₂ flux data at some specific places or periods (Flerchinger et al., 2009).”

Response: Corrected. (Lines 70 – 73)

Line 151: change “Kljun et al. (2015) footprint model” to “the footprint model proposed by Kljun et al. (2015)”.

Response: Corrected. (Line 156)

Line 174: add the word “and” before “ P is the air pressure (hPa)”.

Response: Corrected. (Line 180)

Line 178: “Where” should be “where”.

Response: Corrected. (Line 184)

Figure 7e: The unit of albedo should not be “W m⁻²”.

Response: Figure 7e has been revised as follows:

