

# ***Interactive comment on “Measurement report: Long-term variations in carbon monoxide at a background station in China’s Yangtze River Delta region” by Yijing Chen et al.***

## **Anonymous Referee #1**

Received and published: 23 August 2020

This manuscript reports a 12-years continuous measurement of CO at the GAW’s regional atmospheric background station in eastern China (Lin’an). Temporal variations, especially the long-term trend, as well as the causes and implications of the CO decline were analyzed. Long-term observations of atmospheric compositions are crucial for understanding the variation trends of atmospheric chemical processes, but are relatively limited in China. The data presented in the present study are thus much valuable, and the data analysis and interpretation of results are fairly well. The organization and writing of the manuscript are also good. Hence, I would like to suggest that this manuscript can be accepted for publication after the following minor comments being properly addressed.

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## Specific Comments:

L62: from the perspective of atmospheric chemistry, intermediate is usually used to denote the 'product' of chemical reactions what may undergo further chemical reactions. So, I suggest the authors to change to another word, such as player?

L76-78: in general, the contribution of CO to ozone formation is not quite important in polluted atmospheres where the abundances of VOCs are high, but it may become important in the rural areas.

L84-85: the time period from July 2008 to January 2009 is too short to derive a "trend".

L99: have been emitted. . .

L114: Monitoring site. . .as you only have one site in this study.

L127-134: it would be better if the authors could provide the standard deviations for the average values (if any).

L140-141: rephrase "a one half of which is filled with CO and the other with nitrogen"

Fig. 1: the content in the figure is not consistent with that described in the figure caption. Please check and revise.

L240: delete the extra space between "Global" and "Fire"

L253: change "Nevertheless" to "In comparison" or "In contrast".

Fig. 4: please indicate the source of measurement data from Shanghai, Nanjing and Hangzhou. Are they also long-term data from 2006 to 2017?

L343-352: I suggest the authors to move this discussion (comparison with other sites) to Section 3.1.

Fig. 7: it is unclear why you show a number of "353" in the summer panel?

L389-392: a direct comparison in the average CO concentrations is quite rough. What

are the impacts from meteorological conditions on these differences?

L402: “transmission capacity” is hard to follow. What do you mean by this?

L425: showed a convex shape. . .

L466: Fig. 11 displays the change. . .

L470: with an average decline. . .

L500-501: rephrase this sentence.

Data availability: the measurement data must be made available for the research community. The authors are encouraged to deposit their data to an accessible repository.

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