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Comment

## ***Interactive comment on “In-situ measurement of atmospheric CO<sub>2</sub> at the four WMO/GAW stations in China” by S. X. Fang et al.***

### **Anonymous Referee #1**

Received and published: 27 December 2013

This paper is reporting CO<sub>2</sub> records at regional 3 sites in China for the first time. The precision of measurement is well evaluated. Reporting Chinese regional CO<sub>2</sub> data and its analysis are highly welcome and scientifically very important because Chinese CO<sub>2</sub> emission is the largest in the world in recent years and also have a possibility that the emission amount will rapidly change in the future. Authors reported that even they focused on only the regional (not local) CO<sub>2</sub> data, their average concentration levels were considerably higher in some cases. Such findings are important and the paper is well suited for ACP.

Detailed comments:

2.2 measurement system : Measurement system should be written briefly. Especially

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how you dry the air.

3.4 Impact of surface wind : Please explain what data did you use to draw the figures (fig 5-8) Did you use 1 hr data or 1day average for both CO<sub>2</sub> and wind ? Did you use all the data? If you use data at night when CO<sub>2</sub> concentration is very high, CO<sub>2</sub> average may be much higher and it must be very difficult to evaluate source and sink intensities. Could you add some indicator of sources and sinks for each direction on fig 5-8 for easy understanding? Because this analysis is very basic, sometimes your explanations are hard to confirm the facts. You may concise the text.

In Fig 5-8 : How did you distinguish data between locally influenced or not? It looked that you just picked up relatively higher sectors for local one. Is it good way?

3.5 long-term trend : You cannot use linear fit to evaluate growth rate in this case, because they have seasonal variation. Only WLG data has different duration. You should use curve fitting technique similar to Thoning, changing trend part to linear fitting ( $a + bt$ ). WLG should have similar increase rate if you use correct technique. I think that 1.2 ppm/y is wrong.

P 27319 Fig 2. explanation " See text for detail" => "See section 3.5 in detail"

P 27326 Fig 9. What does 5m mean in the figure?

P 27292 line 8 Fang et al (2003) is not listed as reference

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Interactive comment on Atmos. Chem. Phys. Discuss., 13, 27287, 2013.

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