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Interactive comment on "Sulfur dioxide emissions in China and sulfur trends in East Asia since 2000" *by* Z. Lu et al.

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We thank Referee #2 for the overall very positive evaluation. Our responses to the referee's comments are listed below.

"I understand that the focus of the paper is on trends and inter-annual variability, for which it is valuable to plot normalized values to compare different quantities. However, it seems that some figures could be shown in absolute values without obscuring the trends, and thus convey more information. For example, I think Fig. 7b could be shown in absolute values since it is the ratio of North to South China emissions or concentrations. Also, in Fig. 13, it would be interesting to see the absolute values, unless the model is so far off from observations as to distract from the trend comparison."

Response: We thank the reviewer for this valid comment. However, we do not think it is appropriate to show non-normalized model results in Fig. 7 and Fig. 13. The main reason is that the model results of STEM were taken from discrete simulations for specific time periods and not from long-term runs with the same model settings (see Table 1 in the manuscript for details). Hence, if all the data points are shown in absolute values in one figure, they will deemphasize the trend comparison. In addition, for Fig. 7, the country boundary and artificial North/South China boundary is not obeyed by the ambient pollutants, as they will be transported across boundaries. This means that emissions from outside China will have some impact on the aerosol composition within China; emissions in the north of China will have some effect on the sulfur concentration in the south of China and vice versa. These effects will be dependent on meteorology and seasonal change. Therefore, after consideration of the comment, we prefer to show normalized values in Fig. 7 and Fig. 13.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 8657, 2010.