

## ***Interactive comment on “The importance of vehicle emissions as a source of atmospheric ammonia in the megacity of Shanghai” by Y. H. Chang et al.***

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General comments Ammonia is regarded mainly as emissions from agricultural sources (e.g. ammonium-based N fertilizers and animal husbandry). However, ammonia emissions from non-agricultural or urban sources have been paid much less attention currently. This manuscript provides a strong evidence that traffic vehicles are significant urban ammonia sources which contribute to ground level NH<sub>3</sub> in megacity of Shanghai. The authors use an one-year continuous monitoring data from a super site in Pudong (east of Shanghai) and monitoring results from an urban tunnel (west of Shanghai) to support their conclusions. In addition, using bottom-up approach,

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they have estimated overall annual vehicle emissions of ammonia in the megacity of Shanghai (1300 t yr<sup>-1</sup>) for the first time, in spite of some uncertainties. Although non-agricultural source NH<sub>3</sub> emission is not new topic, the manuscript systematically proves the nonnegligible contribution of traffic vehicles, as an important non-agricultural source, to urban ammonia pollution. The related results may provide implications for haze or PM<sub>2.5</sub> pollution in megacities worldwide. I strongly support the publication of the manuscript after minor revisions as suggested in the specific comments. Specific comments 1. The title of the paper could be slightly modified as "Nonnegligible contribution of vehicle emissions to atmospheric ammonia in the megacity of Shanghai" 2. In the section of Results and Discussion, I suggest the authors provide a combined analysis of ammonia and ammonium (ion) dynamics in PM<sub>2.5</sub> at the PD super site; 3. Legend (of land use) in Figure 1: using "upland cropland" instead of "drought land"; 4. Lines 7-8 in Page 38422: "Despite the focus on ammonia sources mainly from agricultural and rural environments,..."; 5. Mileage emission factor for NH<sub>3</sub> in this study is quite different from other reports and it can be discussed for details in the revision.

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