

## ***Interactive comment on “Nitrogen oxides in the global upper troposphere: interpreting cloud-sliced NO<sub>2</sub> observations from the OMI satellite instrument” by Eloise A. Marais et al.***

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Well written paper about the cloud slicing method.

I have a few comments below:

- 1) L120: What's the definition of correlation between coincident gridsquare (R)? How did you calculate that?
- 2) L205: What's the ratio between intra-cloud (IC) and cloud-to-ground (CG) lightning? This will also affect UT NO<sub>2</sub>.
- 3) L208: You mentioned that the modeled lightning flashes are redistributed to match  
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LIS/OTD HRMC. How did you redistribute these flashes? Because lightning NO<sub>x</sub> can affect chemical reactions. Is this method online?

4) L210: It's better to explain the origin of both lightning production rates.

5) L215: How about the result of adjusting the production rate when compared with OMI?

6) L237: Did you exclude contamination of UT NO<sub>2</sub> like southern Africa and northeast China when calculating the relationship?

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