

## ***Interactive comment on “Simultaneous measurement of NO and NO<sub>2</sub> by dual-channel cavity ring down spectroscopy technique” by Renzhi Hu et al.***

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Thanks for the reviewer's questions. The manuscript will be revised following the reviewer's suggestions.

I don't think NO<sub>x</sub> is not a secondary pollutant. Unfortunately, I have no access to the paper you cite (Crutzen 1979) in order to confirm, but I invite you to re-verify this paper to see on what basis Crutzen said that NO<sub>x</sub> is a secondary pollutant. Also, from NO<sub>x</sub> to the formation of secondary aerosols it is a long stretch, maybe it's better to remove.

Reply: In order to avoid the ambiguity caused by this sentence, I will rewrite it although

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I think that NO<sub>2</sub> is a secondary pollutant. And I agree with the reviewer's idea that from NO<sub>x</sub> to the formation of secondary aerosols it is a long stretch, I will remove it.

Page 2, line 78: indicating several seconds in combination with high sensitivity is strange: do you mean a low detection limit with several seconds time resolution?

Reply: Yes, I mean that the optical methods can achieve a high detection sensitivity and the detection limit is several ppt level with several seconds time resolution.

You give several times your ring-down times with 2-digit precision (24.12 and 22.90 μs), however mirrors get polluted, alignment changes etc, so I guess the ring-down times you have given here are the result of one measurement at one moment? Or do you really measure over several days or weeks always exactly the same ring-down time?

Reply: The ring-down times I have given here are the results of one measurement and the ring-down times are used to calculate the detection limit in both channels. However, in field measurements, the ring-down times when the targeted gases are not in the cavity ( $\tau_0$ ) are measured every 10 min for a time period of 1 min, the measurement results show that the ring-down times during the 10-min interval change slightly. The ring-down time will change after measuring over several days or weeks influenced by temperature, pressure, alignment changes etc. This may slightly affect the detection limit of the instrument but can not affect the concentration retrieval.

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