

## ***Interactive comment on “Nitrous oxide net exchange in a beech dominated mixed forest in Switzerland measured with a quantum cascade laser spectrometer” by W. Eugster et al.***

### **Anonymous Referee #1**

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The paper of Eugster et al. deals with N<sub>2</sub>O in a mountain forest in Switzerland. The paper does a good job in testing and describing a new measurement technology and a less good job in describing biological processes behind it. I would recommend the paper for publication after moderate revisions.

From the biological point of view, one of the main problems is that the measurements have been running during a fairly restricted period during autumn. The authors make incorrect statements on the yearly N<sub>2</sub>O fluxes based on this very limited data. Every reference to yearly fluxes or offsets of CO<sub>2</sub> fluxes by N<sub>2</sub>O fluxes **MUST BE REMOVED** from the paper. I also disagree with their statements on the effects of fog on the emis-

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sion of Nitrous oxides. I think taht the theory and statements on that are pretty swampy. I would think that particular conditions related to the onset of fog could be responsible for that. Also, simple solution dissolution processes when fog evaporates could be responsible? Nitrous oxide is quite soluble in water and could well get fixed in a water film on the leaves.

The technical side on the paper is quite strong. I have, however, serious doubts on the correctness of the correlation method to remove "bad" flux data. Firstly, the method should remove fluxes around 0 (contrary to what the authors state) since correlations are usually lower when fluxes are low. For example, if we would measure the fluxes above and inert surface we would have 0 correlation and 0 fluxes. So I would think taht the correction method could well bias the fluxes by removing mostly 0 values. Since the average of the data is not 0 this will bias longer period flux estimates. Methods based on standard errors of the estimates would be more appropriate.

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