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Interactive comment on "Methane emissions from boreal and tropical forest ecosystems derived from in-situ measurements" *by* V. Sinha et al.

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We would like to thank the reviewers, named and anonymous, for their rigorous examination of our manuscript. We believe we have addressed the comments thoroughly in the replies given on-line and have accordingly formulated a revised manuscript. In particular we appreciate that the instrument in question is new and needed to be better described for readers to ascertain the data quality. The additional table, figures and detailed description covers all salient points in this regard. A short summary of all the changes/key points made is given below for completeness in this section.

Summary of changes in the revised version for ACP:

1) Removed all mention of global extrapolation of derived boreal flux from the abstract

2) Cited Forster et al. 2007 for the new IPCC report

3) Typo of SCHIAMACHY has been corrected by replacing it with the correct spelling SCIAMACHY

4) More experimental and instrumental details have been added to Section 2.3, which describes the sampling procedure and measurements. Three new figures on 1) the linearity of the detector signal, 2) Investigation of the ambient air pressure influence on the measurements and 3) 15 minute averaged raw data for one full diel cycle showing the instrument’s variability, have also been included in this section of the revised version. Moreover a new table showing the behavior of monitored instrumental parameters has also been added in the revised version.

5) Figure 6 in the ACPD version (mentioned in Section 3.3.2) which showed the CO2 profiles within the NBL as percentages for different height levels has been replaced by two new Figures. The first one, Figure 9 in the revised version shows the actual measured mixing ratios of CO2 at different heights within the NBL. The second one, Figure 10 in the revised version, shows the logarithmic fits for the vertical profiles of methane within the NBL, at Hyytiäla.

6) The flux calculation in the revised version (Section 3.3.3) now takes into account the weak logarithmic profile of methane within the NBL to derive a more accurate flux.

7) The comparison with Aalto et al., 2007 has been added in the revised version in Section 4.1, which discusses the boreal forest methane measurements. Furthermore the comparison with SCIAMACHY data has also been rephrased. The boreal vegetation flux discussion has also been changed based on the more accurately derived net ecosystem flux.

8) In the revised version, the comparison with methane measurements from Cape Grim has been added to Section 4.2, which discusses the tropical forest data.

9) Discussion of the potential tropical forest ecosystem methane flux using the tropical forest measurements of this study, have been removed from Section 4.2 in the revised

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version.

10) In Section 5 (Conclusion and outlook) we have added the lines, “This work has employed in-situ measurements from a boreal forest ecosystem to assess the potential impact of boreal vegetative emissions. All previous works on vegetative emissions (e.g. Keppler et al.,2006; Dueck et al.,2007; Houweling et al., 2007) have been based on either extrapolation of laboratory data or models, even though the mechanism of methane production from aerobic plants is still unknown.”

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 14011, 2007.