

## ***Interactive comment on “Effect of UV radiation and temperature on the emission of methane from plant biomass and structural components” by I. Vigano et al.***

### **Anonymous Referee #1**

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General comments: In this paper a recently highly debated finding, i.e., aerobic methane production from terrestrial plants, is highlighted. This novel finding was first published by Keppler et al. in 2006 and resulted in much debate regarding the possible pathway of production as well as, and perhaps mainly, the up-scaling attempts. The debate and scepticism that resulted from the Keppler et al. (2006) article emphasizes the importance of this well written follow-up paper. On page 246 the authors state that "the principle scientific question is if, how much and how methane is emitted from plant matter under normal atmospheric conditions and without bacterial activity". The findings presented in this paper indeed verify the existence of an aerobic methane production pathway and should leave little remaining doubt that methane can be produced

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aerobically in the presence of UVB.

Specific comments: The findings presented show that methane can be produced aerobically in the presence of UVB. However, many of the experiments are conducted at UVB levels above the natural range and never on intact living plants. Consequently they do, as I am sure the authors fully appreciate, not entirely pinpoint how much methane that is emitted from plants under normal atmospheric conditions. As pointed out by the authors it is now highly important to investigate the extent of aerobic emissions from living plants. It might be stressed that this should be conducted under normal atmospheric conditions before any wide conclusions can be drawn regarding the importance of these findings to the methane budget of natural ecosystems.

On page 247 the authors state that the findings by Keppler et al. (2006) were highly debated partly since "The first extrapolations from the laboratory measurements to the global scale indicated that these emissions could constitute a large fraction of the global emissions of CH<sub>4</sub>". In the current publication no attempts are made to address the possible importance of the findings to the global methane budget. It would be highly interesting to get an "update" on the authors current state of opinion, something that could be elaborated upon in the discussion.

Technical corrections: Page 248, line 14/15: a 2) is missing. Page 245, line 21/22: Frankenberg et al. is repeated. Page 246, line 3: Houweling et al 2007 change to 2008.

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**BGD**

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