

Interactive comment on “Physical injury stimulates aerobic methane emissions from terrestrial plants” by Z.-P. Wang et al.

Anonymous Referee #1

Received and published: 20 March 2009

This is a well prepared manuscript that makes some useful contributions to the intense debate about aerobic methane production in plant foliage. A number of minor points are noted below which I suggest would enhance the manuscript. I agree with the comments of Anonymous Referee 2.

P1404 L17 ..a variety OF environmental stresses. Insert of

P1405 L7-8 Add the new references suggested by Ref 2

L9 Not all these studies used stable isotopes which the statement implies.

L14 The observations reported by Frankenberg et al (2005) have now been qualified by further investigation and published by Frankenberg et al (2008) GRL doi: 10.1029/2008GL034300. This new citation should be included as it explains a problem

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with the conclusions of the earlier manuscript.

P1406 L 11 Suggested addition ..may be affected by O2 availability OR ANY STRESS LEADING TO ROS PRODUCTION.

L18 semi-arid Insert hyphen

P1407 L 24 Do you mean that EACH individual twig came from a different individual plant? This is not quite clear.

L26 Do you mean silicon sealant rather than silica?

P1409 L2 I believe that multiple range/comparison tests are performed after a One-way ANOVA between treatments but this is not clearly stated. Please explain in full if an ANOVA was used, state the SAS Procedure used and if ANOVA provide details of the overall test significance. L15 Why are the hypoxic tests only 16 hours versus 24 h for the aerobic tests?

P1410 L16 State species referred to here

P1411 L3 Please explain why these xerophytes would be particularly susceptible to hypoxia. Section 4.2 The generation of ROS from the respiratory ET chain is very different in mechanism and cellular location from the UV-driven cleavage of methyl groups suggested in earlier publications. This point should be made here.

P1412 L9 involve rather than revolve

P1413 I recommend some slightly more cautious wording e.g. L3 Functional types CAN emit SOME CH4

L13 considerable is rather too strong. I would recommend replacing this with e.g. an important component of aerobic methane emissions. This leaves the magnitude open to question.

L18 yes it could be important but it would be more cautious to say that it could be

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MORE important allowing for an as yet unknown global magnitude and significance.

Table 1 footnotes: during 17-18 August not in (but detached) not detachment initially AMBIENT CH₄ concentration in air Insert ambient Emission values are means.. not Emission is mean..

Over what period are these rates calculated in Table 1 and Figures, especially since it is stated that not all species emit continuously over the experimental period. How is this dealt with in the rate calculations?

Fig 1 label: Uncut, stem end sealed not sealing As above do you really mean silica or silicone sealant? If the later you should identify in the text as some sealants produce methane.

The figure captions should state at what point the rates in part (b) of the figures are calculated.

Fig 3. You only need to label symbols as cut/uncut and it is clearer if you just label each box in larger font as Aerobic/Hypoxic.

Interactive comment on Biogeosciences Discuss., 6, 1403, 2009.

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6, S511–S513, 2009

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