

page 1 line 26: "The stability of the mound gas fluxes over diurnal and annual scales coincides with the constant nature of the nest internal gas and thermal environment that guarantees continuously favorable conditions for the fungal symbiont."

This is saying that mound fluxes are stable, but contradicts line 22 where it is stated that there can be quite large (~30-60% increase/decrease) in seasonal flux. I'd rephrase one or the other to keep the message consistent – is the main finding that fluxes are highly variable or not?

page 2 line 2: can define methane and carbon dioxide abbreviations here

page 13 line 2: add space after period in '5).However, '

page 17 line 7: is this a small intra-annual difference in flux? I wouldn't necessarily see a 64 % decrease at the grassland and 35 % increase at the bushland as 'small' – see comment from abstract as well. Perhaps think of rephrasing this finding – it seems that season certainly plays a role, and also has differential effects depending on the species.

In the following few sentences you discuss why intra-annual variation could exist – I'd frame the finding as the fluxes do indeed vary, and this could be due to the following factors you discuss from line 9 – 24.

page 18 line 6 – A bit late to mention this, but for mounds that started off in bad shape and then were deemed dead on the second measurement, are these worth including in the study at all? They don't seem to represent fully functioning termite mounds, which is what most of the discussion throughout the paper lies around. What do we gain from including mounds that were incomparable across seasons, or partially functioning from the start?

page 19 line 3: I'd be careful interpreting the spike in flux at midnight – it's one mound and one measurement, so not a lot of data to go off of there.

page 19 line 15: "supports the interpretation" is a bit awkward phrasing, maybe it's more of a hypothesis rather than interpretation?

page 19 for section 4.3: any CO<sub>2</sub> fluxes coming from the soil are not restricted to termite-derived: could also be from microbial activity. Therefore, I think it's more useful to consider how CH<sub>4</sub> changes in soil going further from the mound, as that's the real indicator of termite activity. CH<sub>4</sub> values were near zero or negative, so I'd reduce the argument that this finding supports termites having a broad soil network where gas exchange is being significantly impacted.

For further study, it could be interesting to compare methane flux across diurnal cycles for soil/mound fluxes - to see if you can support or describe when termites are out foraging based on when methane is being picked up in greater concentration from the soils. Not sure if it would be a very clean way to answer that question, but just an idea!