**Biogeosciences
Discussions**

Interactive
Comment

Interactive comment on "Land use change and the impact on greenhouse gas exchange in north Australian savanna soils" *by* S. P. P. Grover et al.

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Author's response Thank-you for your detailed comments on our manuscript. 1. The effect of drawing air from the headspace of the static chambers on the estimated fluxes. Chambers are not entirely gastight and thus air is drawn in from outside (rather than sucked out of the soil) to compensate for air removed in the sample line. This has been ascertained in previous work with these chamber systems (Rosenkranz et al., 2006), as underpressure was never measured while taking samples The dilution effect is only significant at rather high chamber N2O concentrations. Since the chamber volume is approx. 38 l, a dilution of 38 l chamber air at 400 ppb with 0.5 l ambient air at 315 ppb may lower headspace concentration by only approx. 1 ppb (398.9 ppb). This is marginal and has no major effect on flux calculation (<1%). 2. Structure Separate

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sections on the effects of land use change and seasonal change for each gas provide clarity and guide the reader through the maze of results, which could otherwise be confounded. While this does entail minor repetition, it is preferable to the confusion of lumping all factors together. 3. Finer points There are no line or page numbers on the manuscript, making it difficult to provide detailed comments. This is related to the journal presentation, our uploaded manuscript had line and page numbers 'Exutainers' is a trademark and thus the manufacturer needs to be identified. This is already included at line 162 on page 7. The formula in section 2.5 is not dimensionally correct. It should be MDL=2*SD*V/(A*T) Thanks for pointing this out. We have corrected the equation to read MDL (μL N2O-N m-2 h-1) = SD x 2 x V / (A * T) and included new MDL values of N2O = 1.35 μg N m-2 h-1 CH4 =2.88 μg C m-2 h-1 Section 2.6 (labelled as 2.5) Para 3. Improve clarity of fire sentence ... In the dry season of ... This is correctly labelled in the uploaded manuscript Section 2.7 and elsewhere 'flux' is a 'rate', so do no use 'flux rate' rectified. Section 3.4 Pa1 ... wetting event the N2O flux ... Following addition of 40 mm of water, fluxes increased ... rectified Section 4.1 Pa1 L3 & L6 do no use different units in this comparison rectified Table 1. Omit column with soil type – it is the same for each site. The fact that soil type is the same is the point we wish to emphasise References Rosenkranz, P. et al., 2006. N2O, NO and CH4 exchange and microbial N turnover over a Mediterranian pine forest soil. Biogeosciences, 3: 121-133 s

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