

This paper contains useful information on the fluxes of CO₂, CH₄ and N₂O between soil and the atmosphere in the savannas and pastures of the Northern Territory, Australia. The major finding is that conversion of savanna woodland to pasture significantly increases the net efflux of CO₂ from the soil from around 53 to 70 t CO₂-e ha⁻¹ y⁻¹. Land use change and moisture content both affect CH₄ and N₂O fluxes but these are extremely small compared to those for CO₂.

The quality of the data is generally sound but there should be a short discussion to estimate the effect of drawing air from the headspace of the static chambers on the estimated fluxes. This will be significant because four samples of 0.5 L each are withdrawn from a headspace of 20 – 30 L (Section 2.5). Withdrawal of air causes air to flow through the soil from the surroundings and the error in the flux estimates will depend on the difference in concentration between that in the chamber and that outside.

The paper needs significant editing to remove unnecessary repetition of information and to shorten the paper. The Introduction can be shortened to arrive at the aims of the paper more quickly. The Discussion especially needs to be reduced in length. This can be achieved by not repeating earlier information and by not having separate sections on effects of land use change and seasonal change for the three gases.

There are no line or page numbers on the manuscript, making it difficult to provide detailed comments.

Para before Section 2.2 Avoid repeating information provided earlier. Also 1st para of section 2.2

'Exutainers' is a trademark and thus the manufacturer needs to be identified.

Para before Section 2.3 Were pressure differences eliminated to stop unwanted fluxes between inside and outside of the chambers?

The formula in section 2.5 is not dimensionally correct. It should be $MDL=2*SD*V/(A*T)$

Section 2.6 (labelled as 2.5) Para 3. Improve clarity of first sentence ... In the dry season of ...

Section 2.7 and elsewhere 'flux' is a 'rate', so do not use 'flux rate'

Section 3.1 Consider supplying significance levels in Table 1.

Note that soil C is greater in pasture than savanna – probably why soil CO₂ fluxes are higher.

Section 3.4 Pa1 ... wetting event the N₂O flux ... Following addition of 40 mm of water, fluxes increased ...

Section 4.1 Pa1 L3 & L6 do not use different units in this comparison

Table 1. Omit column with soil type – it is the same for each site.