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Interactive comment on "Effect of soil saturation on denitrification in a grassland soil" *by* Laura Maritza Cardenas et al.

Anonymous Referee #3

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This is an interesting study that addresses the roles of soil compaction and water saturation levels on N2O production and the microbial origins of N2O. The results are not terribly profound but this is an important contribution to the literature as the precise causes of N2O hot spot production are still unresolved. Overall I found the writing to suffer from incorrect grammar and English writing style. Further, the manuscript is much longer than it needs to be. The manuscript would greatly benefit from a major rewrite and could be re-written as a short concise note rather than a full research paper. I've identified some issues with the writing below but there are numerous problems beyond what I have listed.

Line 26 to 29: As this sentence contains both a colon and a semi-colon it needs to be broken into at least two sentences. I do not understand the meaning of the portion after the colon (28-29).

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[Discussion paper]

Line 73 and 74: Please check with Coplen (2011) regarding the correct usage of "iso-topologues" and " isotopomers".

Line 97-98: Why is "soil volume" the key control on the net isotope effect? This seems more like an experimental condition rather than a governing soil process.

Line 111-112: Generally avoid one-sentence paragraphs. This statement belongs more appropriately in the Methods section and could be deleted here.

Line 159: This paragraph is much longer and more detailed than it needs to be.

Line 323-324: Use past tense here.

Line 338: Delete "already".

Line 351: Incorrect word use. SP values don't "show"; rather they are obtained. Use past tense to describe trends in the experimental data throughout this paragraph.

Line 363: Don't describe "the plot"; rather simply refer to the trends between the parameters.

Line 365: Regressions don't suggest but simply describe a (presumably significant) relationship between two parameters. You can state that the intercept of the regression equation relating SP and the N2O/(N2O+N2) was – 2 per mil.

Line 367-369: The writing is confusing here; I can not follow the meaning of this sentence.

Line 370: It is not helpful to refer to data in a figure of another paper. Describe the main significance to the similarity between these data sets. Line 374: Again, don't state what is plotted in Figure 4, describe the relationships between the variables and refer to the figure.

Line 383: The r2 values by themselves are not very relevant. What is relevant is if the relationships are significant and their associated p values.

Line 389: See comment for line 374.

Tables 1, 4, 5 and 6: These tables could readily be placed in the Supplementary Documents.

Figure 5: These figures are not well organized. Put a box around the legends so that we know they are legends. Within the legend, the line should be placed through the data points rather than defining each line as "Linear". The y-axis title should display delta not "d".

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