**Biogeosciences
Discussions**

Interactive
Comment

Interactive comment on **"Nitrate retention and removal in Mediterranean streams with contrasting land uses: a ^{15}N tracer study"** *by* **D. von Schiller et al.**

Anonymous Referee #3

Received and published: 17 October 2008

General comments:

This study of three streams in Mediterranean environments is well executed and well reported here. I think there are a number of ways to improve the manuscript and I have provided a rather extensive list of these options.

pg 3309: lines 5 to7: These are good lines and have been used often to argue for importance of local uptake. line19: is the 1996 date for Newbold correct?

pg 3310: lines 2 to3: These lines are redundant with pg 3309, lines 5 to7

pg 3311: lines 4 to5: I can t stand these we are the first lines. That s not what s

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

important. How would it read if you just deleted it?

line 24: Table 1 reference. Table 1 is packed full of results and the reader just isn t ready to see them yet. I suggest you make an independent table for the study sites (else a figure).

pg 3312: line 16: replaced injected with released

pg 3317: line 21: Here you describe the KL values. These could be addressed statistically in the among land use categories the same way you test day vs night differences. If you are concerned about the influence of velocity, you could normalize or compare proportional differences in Kl with those suggested by velocity.

pg 3318: line 2: replace the final mean with average to avoid using the same word twice in a sentence line 24: Thus the measure does not account for turnover.

pg 3319: lines 1 to2: probably need to clarify that this is done within a given stream (else you would have to do it with U instead of parsing k values).

line 17 – This line is misleading. It should say that we used the biomass 15N (B) as the source of labeled N that can contribute to regeneration (kREG). You can then model the amount of 15N in B using a longitudinal exponential decline.

line 21 – I m not following the restriction that the fractional uptake rate for ammonium (kw NH4+) has to be less than or equal to kw NO3 because ammonium is a preferred substrate. Did you get the comparative operator backward? If ammonium is preferred, then uptake for ammonium should be larger, right? i.e., kwNH4+ greater than or equal to kw NO3.

pg 3320: lines 3 to6: Consider the units for the slope of the regression line relating flux vs time. It certainly is not a velocity term. If you log transformed, did you use a natural log (i.e., ln) in order to evoke a 1st order decay with time? If so, then you are looking at the proportional decline in the amount of 15N that fluxes out of the reach. The metric allows you to compare among streams, how rapidly a proportional change in tracer

abundance occurs. lines 9&10: As a rule, I tell my students not to construct sentences that say a table or figure exists. Similarly, no sentence should simply describe the result of a statistical test. Instead, imbed those bits of information in lines that tell us something about the data.

lines 8 – 25: Consider the following trend. In this paragraph the following occurs: lowest, low, higher, higher, lower, low, moderately low, highest, highest. These are all comparative modifiers and require objects….higher than what? There is a more accurate and informative way to describe these data.

pg 3321: line 9: standing stocks can t agree with metabolism. You re putting in data interpretation that requires a link between the nature of standing stocks and their assumed contribution to metabolic fluxes. Pull this part of the line. line 23: don t do this line 24 to26: Here s where you could show the results from statistical assessment of Kl across streams with a Bonferroni correction

pg 3322: line 3: Fig 1 – this isn t the way to show these results. This is what we do with raw data. Get a kl and a SE. Plot the day and night kl values and their errors as grouped bars. Use letters and superscripts to show difference with time within a stream or for across stream comparisons. line 4: Fig 2 – What about showing the forested stream results? line 7: This is the sort of data analysis that the reader is looking for compared to higher or lower . line 18: By varied don t you really mean differed ? line 22: What does CBOM was relatively unimportant with respect to FBOM mean? line 26: produce data analysis more like that on line 7.

pg 3323: lines 1 to5: I m not sure about the usefulness of the snail (limpet) data. The use of delta 15N ratios with producers is not explained in the methods and really seems like a tangential assessment of food web relationships that is clearly not the focus of this work. line 25: lLook at the slopes of these lines. They are the same! Doesn t that mean that stream uptake compartments are really similar in their N turnover even across these stream types. Accordingly, differences are related to abundance.

pg 3324: line 6: Use of the term demand is confusing. Demand is defined as an urgent requirement . Which of the three metrics best describes this? I m not sure. Vf is clearly not a good measure of demand. Instead, it represents mass uptake normalized to supply (i.e., U/C). It is really the best measure of efficiency . Newbold first referred to Sw as a measure of efficiency, but he was thinking of that in terms of space (i.e., efficiency of uptake with distance). I suggest that you replace nutrient demand with uptake efficiency here. lines 10 to11: above and below are locations. Use greater than and less than .

pg 3325: line 1: Earl et al. 2006 is an excellent ref for this. lines 21 to22: Consider the U/C perspective. Greater (not higher) vf for NH4 results from a given uptake and a small C compared to NO3. Comparison of U gives the actual amount used. This may be closest to demand . lines 13 to24: This isn t a very strong paragraph. Christensen et al. 1990 didn t work on your streams. Decide what points are being made a rewrite this.

pg 3329: lines 1 to10: These lines should be pulled (see earlier comment regarding limpet results)

pg 3330: lines 16 to18: This really is an awkward way to describe these trends. Percent decline in labeled N export over a 72hr period was virtually identical among streams...etc.

Interactive comment on Biogeosciences Discuss., 5, 3307, 2008.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper