

Interactive comment on “Seasonal, daily and diel N₂ effluxes in permeable carbonate sediments” by B. D. Eyre et al.

Anonymous Referee #1

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This manuscript is clear and well written and presents interesting material that is suitable for Biogeosciences.

I only have some minor comments:

-Abstract: I find the slope for the few “outliers” in Fig 7 not to be the strongest part of this paper. The extrapolation of these results to the potential implications for the global N₂ budget is interesting for the discussion, but to me it is not robust enough to elaborate on this in the abstract.

-Introduction. The introduction rather quickly focuses on details (analytical methods, specific studies, etc) while my feeling is that some more general introduction/context can be added (especially on the potential importance of permeable/carbonate sedi-

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ments in global denitrification).

-line 27: Insert “in” between “increase” and “N₂”?

-Section 2.1: Maybe include coordinates of sampling location?

-Page 17441, line 10: Should “induces” be “induced”?

-Page 17442, line 26: “light fluxes rates” should be “light flux rates”

-Section 2.3: explain “ve” in formulas

-Section 3.1: In this first section of the Results I would expect some general introduction of the main results and trends. Instead, this section now starts directly with statistical results. This involves a lot of “x was significantly greater or smaller than y” while the quantitative aspects of these results (how much greater or smaller?) seem to be missing.

-Page 17445, line 22: “p/r ratios ... were the only benthic fluxes ...” > ratios are not fluxes?

-Section 4.2. I was not entirely clear to me what kind of response of the sediment biogeochemistry/N-cycling to the coral spawning was expected and by which mechanisms/pathways. Maybe add 1-2 sentences about what exactly was observed in the previous studies mentioned in line 27 (page 17447).

-Page 18448, lines 5 and 23: Is “uptakes” a correct word?

-line 10: “NH₄-” should be “NH₄+”.

-Page 17449, line 1: “be” should be “have been” Line 1: “turf algae” may not be a familiar term for all readers (I had to Google it). Lines 4-7: Why is the steeper slope for winter not indicated in Fig. 6?

-Page 17454, line 1: “psuedo” should be “pseudo”.

-Figure 5: I did not find this figure very helpful. It may be more interesting to show a

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correlation plot with light versus denitrification rates and/or other fluxes.

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