

Interactive comment on “Physico-chemical and biological factors influencing dinoflagellate cyst production in the Cariaco Basin” by Manuel Bringué et al.

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Author Comments on “Physico-chemical and biological factors influencing dinoflagellate cyst production in the Cariaco Basin”, by Manuel Bringué et al. (bg-2017-497)

Response to Referee 1 (B. Dale)

The authors wish to deeply thank B. Dale for his very positive and constructive review of the manuscript. The referee raised three points that will be addressed below:

1- Suggestion ‘to indicate any currents affecting the water entering the basin (possible cyst transport?)’ We (the authors) agree that the manuscript would benefit from

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adding a statement about currents entering the basin that can potentially transport cysts. The following statement will be included in Section 2 of the revised manuscript: "Observations (and models) of horizontal velocities of currents in the basin indicate that horizontal transport is weak in the upper water column (U and V components $< 0.2 \text{ m s}^{-1}$) and negligible below sill depth (Alvera-Azcárate et al. [2009], *Ocean Dynamics* 59:97–120; see their Fig. 6). The potential for horizontal transport is thus believed to be minimal at the CARIACO station." In addition, as the referee mentioned, the use of Trap A samples (shallow trap at 275 m depth) also reduces the possibility for long cyst transport.

2- Suggestion 'to indicate if possible what proportion of the cysts trapped had "fresh" cell contents.' While we report the proportions of cysts with cell content in Fig. 5, it is true that the overall proportion of such cysts vs empty ones is not stated. The main reason is that this constitutes an aspect that is worth investigating in detail and will be done in a follow up study. Given the focus of the present study, we found limited relevance in discussing the proportion of cysts with cell content, because 1- the potential for cyst transport is minimal in this setting, and 2- the signal did not seem to show any particular seasonality for any given cyst taxon (i.e., the proportion of cysts with cell content varied by species, but for each taxon the signal was rather consistent throughout the time series). This will be added to Section 4.3 in the revised manuscript.

3- The referee hopes the authors 'will continue to investigate the lower trap samples eventually to see how accurately the cyst signal they identify is translated into the sediment' Our next study will focus on this specific issue, in the Cariaco Basin as well as in other coastal settings.

(A formatted version of these comments is provided as pdf file).

Please also note the supplement to this comment:

<https://www.biogeosciences-discuss.net/bg-2017-497/bg-2017-497-AC1-supplement.pdf>

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