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Interactive comment on “Chemical fate and settling of mineral dust in surface seawater after atmospheric deposition observed from dust seeding experiments in large mesocosms” by K. Desboeufs et al.

Anonymous Referee #2

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The paper by Desboeufs et al. could potentially make a significant contribution to the scientific body of work that emerges from the DUNE-1 and DUNE-2 experiments, worthy of inclusion in the Special Issue of Biogeosciences titled “Impact of atmospheric inputs on an oligotrophic ecosystem – the DUNE experiment”. I consider these experiments to be unique and ground-breaking in marine biogeochemistry, especially in the Mediterranean. The studies in this special issue rely on two sets of experiments conducted in 2008 and 2010 (DUNE-1 and DUNE-2, respectively), and each one focuses on a special aspect of the experiments. As such, special attention must be paid

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to clearly indicating which data are being used, whether they have been published elsewhere, and what each study contributes that is original and significant.

While the current Methods section gives credit to other papers submitted to BGD/BG regarding all of the above, the substantial length of the text leaves the reviewer searching for original analyses and original work not described in these other publications. Therefore, I had difficulty isolating its strength and original major contribution(s). I suspect that they lie on the analysis and re-analysis of the already published data to answer questions not posed (and answered) in these other publications. However, instead of finding these re-analyses in the Methods section and presenting the results in the Results section, I encountered them in the Discussion, along with new exploratory figures (e.g., the linear correlations/regressions of total mass vs Al and N mass in Figure 4, etc.) and tables with new calculation results (the enrichment factors of various elements vs Al in Table 4, etc). Characteristically, 4 of the 7 tables (Tables 4-7) and 2 of the 5 figures (Fig. 4 and 5) are not referred to before the Discussion section. The unusual position of these particular investigations of the data in the manuscript does a disservice to the hard work of the authors and considerably inhibits the reviewers from assessing whether the whole study significantly complements the papers already published. In a way, this manuscript suffers to a certain degree from a minor identity crisis.

Therefore, I strongly recommend that the authors reconsider the questions that they are trying to answer with the study described in this paper. They should rewrite it, by retooling the Methods section (to eliminate extensive description of the methodologies described in other publications), and moving all their work presented in sections 4.1-4.3 earlier in the manuscript along with the questions it aims to answer and the ways it does so.

Some care must be taken to stick to the presentation of results in the Results section and leave interpretations for the Discussion. Statements that begin with “This is consistent” (p. 4917, l. 24), or “This means” (p. 4918, l. 23), should be modified (to de-

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scribe a quantitative correlation) or eliminated, respectively, from the Results section, and addressed later on.

While the language is generally good, the number of syntactical errors and odd word selection was sufficient to interfere with the story-telling. Following, are some selected examples from p. 4912: l. 5 – replace “provide” with “contribute to” l. 7 – replace “depth” with “bottom” l. 19 – replace “stream” with “currents” (?) The authors should seek the help of colleagues who are proficient in English and can briefly proof-read the next manuscript.

Finally, the authors should check the bibliographic information and ensure that all citations refer to publications listed in the back of the paper. For example, Guieu et al. (2013) is cited on p. 4913, l. 22, but does not exist in the References section. I suspect it is the second Guieu et al. (2014) reference.

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