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Interactive comment on "Fluxes of sedimenting material from sediment traps in the Atlantic Ocean" *by* S. Torres-Valdés et al.

Anonymous Referee #2

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The authors compile sediment trap data from the Atlantic and Arctic basins and Mediterranean. It is nice to see these data compiled, and have, at a glance, some figures showing the major particle composition in these regions. That said, there are some details that the authors should address to ensure data quality and to make this dataset much more useful.

I appreciate the challenge in sorting through all the variable names, methods, and units. It's a tedious and messy business. However, this frustration is perhaps a little too apparent in the description of each major parameter (subsections in section 2.2). This is partly a style issue, but also an issue with giving confidence to the reader/data user (and in this case, reviewer) that the authors have adequately dealt with the unit conversions. There are a couple of unit conversions that the authors appear not to

understand:

p. 547, lines 24-25: factor of 2.5 for biogenic Ca is simply the weight ratio between CaCO3 and Ca=100g/mol CaCO3 / 40g/mol Ca=2.5

p. 549, lines 26-29: multiplying Al by 12.15 to estimate lithogenic mass assumes a crustal Al composition of 8.2% (1/12.5=0.082), which is certainly reasonable (even if not referenced).

I would suggest that the authors step back and present a more synthetic overview of the methods, variable names, and conversion factors used. It isn't necessary to document each minor variation in the calculation of a parameter, particularly if they're all ultimately based on the same principle. This is especially the case for sections 2.2.3 and 2.2.4, which could be merged into one subsection, and for which all the variations described are simply variations on unit conversions to relate measurements of Ca to CaCO3 or measurements of PIC to CaCO3. The point to doing this more synthetically is not just stylistic; it would also allow the authors to give a sense of the overall error introduced by the range of conversion factors used. For example, they state that conversion factors for POC to POM range from 2 to 2.5 and for biogenic silica to opal range from 2.1 to 2.4. With the exception of converting all major particle phases to units of mg/m2/d, the authors do not generally attempt to further standardize the data. This means that there is a built in 20% error in the organic matter and biogenic silica parameters by putting these datasets together. Ideally, a compilation would try to standardize the conversion factors so that the data are internally consistent. I realize this is a lot of work, and it might not be possible to do this given the data reported, but at minimum, the authors should discuss the overall error introduced by the range of conversion factors used, and at best, the authors should consider applying a consistent standardization to all parameters where possible.

The issues raised in the biogenic silica flux section are more worrisomeâĂŤthe authors say that they sometimes cannot tell whether their source data are reporting Si or SiO2,

which would introduce a potential factor of 2 error. I should think that a closer reading of the papers would make it obvious which one is reported from the context in which the data are discussed. If there are studies in which it is truly impossible to tell which it is, I strongly suggest adding a column to the data table with a quality flag for the Si numbers, so that users can easily flag the ones that are suspicious. As it is, it is quite difficult to read through all the notes to determine which ones are truly uncertain.

Additional comments on the data tables: The dataset lists the location (latitude and longitude) of the traps up in the header. It would be much more useful if the latitude and longitude were listed as columns in the data table.

I also strongly suggest adding quality flag columns, ideally associated with each variable, to indicate when reported values may have been ambiguous in the source text (eg. biogenic Si), but also to indicate which values have had a conversion factor applied, what deployments were short/long. . . In its current form, it is very difficult to go through the notes column to pick out what data have had additional processing, etc. Having a flag column for each variable will ultimately make the dataset much more usable.

Figures: Figure 3: outline of continents is not visible; colorbar choice makes it impossible to distinguish between the lowest end and highest end observations (they're both pinkâĂŤindeed, almost all stations look pink).

The authors should define what they mean be an "observation point". If POC is reported at 3 depths every month for 12 months, or POC, CaCO3, bSi are reported at 1 depth over 12 months, are those both counted as 36 observations each? What about variables derived from each other (eg. Al and lithogenic mass)âĂŤare those 2 observations or 1?

Interactive comment on Earth Syst. Sci. Data Discuss., 6, 541, 2013.