Biogeosciences

Discussions

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Interactive comment on "Mercury distribution and transport in the North Atlantic Ocean along the GEOTRACES-GA01 transect" *by* Daniel Cossa et al.

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Received and published: 16 December 2017

Great paper describing concentrations and trends from a critical stretch of ocean. The incorporation of the eOMP is particularly interesting. I was left wishing the authors had done a bit more with this information. For example, could they have compared the eOMP reconstructed end-members to the age of those water masses across the section? Something like this is done in Figure 6 for the LSW, but I was curious to see it for all the water masses.

The difference between filtered and unfiltered was interesting to see, and I was wondering if there was any particle mass data generated by the science team such that a

Kd could be generated?

Line 20, why the geometric mean rather than the arithmetic mean? Lines 38-39, net flow toward the poles? Can the authors comment on how this can be? Evasion at high latitude is the balance? Line 55, "leading to a doubling"...some of the papers cited suggested a higher impact, more like factor 3...perhaps put a range in here. Line 95, "several water masses are stacked up from surface to bottom..." sounds a little awkward. Perhaps change to "several water masses can be identified. Listing them from top to bottom..." Line 104, change to read "...often notated with a temperature as a subscript..." Line 119, "LSW has been variably produced in the past fifty years..." Given the apparent importance of LSW and AMOC as a sink for Hg, is the variability in LSW production reflected in atmospheric concentrations? For example, at times of weak LSW formation, was the atmospheric Hg concentration a bit higher than times when LSW formation was strong? Line 292, a concentration of 63 pmole/L is mentioned...typo? Line 323, change "amplitude" to "magnitude". Later, the phrase "the position of the upper peaks suggests a relation with the abundance of phytoplankton." It was unclear to me what that was based on...abundance of chlorophyll? Line 356, change "entails the existence of relationships" to "results in a relationship" Line 369-371, comparing the measured to the predicted values is worthwhile, but I was unclear what the implications of the correlation coefficient were. The fit should be fairly good since the measured were used to generate the predicted values...is the point that the fit is not 100%? The point of the remineralization line in Figure 5 was a little confusing to me. Is the essential point that the real data vs. AOU have an intercept as opposed to going through zero? The only difference between the two lines is that one is forced through the origin and the other is not...so, the discussion about the water masses on the low AOU end being above the line felt like a "self-fulfilled prophecy."

Interactive comment on Biogeosciences Discuss., https://doi.org/10.5194/bg-2017-467, 2017.