

***Interactive comment on* “Total Observed Organic Carbon (TOOC): A synthesis of North American observations” by C. L. Heald et al.**

C. L. Heald et al.

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Reviewer #1 (D. Parrish) We thank the reviewer for his helpful comments and suggestions. We have addressed specific major comments below:

1. We fully agree with the reviewer's comments regarding Trinidad Head and its consistency with the other "clean" sites shown. We have added to the discussion in this section.
2. We have expanded the comparison of the 1993 and 2004 Chebogue Point observations to include the reviewer's comments.
3. We have pared down the discussion of photochemical clocks in the discussion as suggested by the reviewer. We retain the discussion of organic aerosol and photochemical clocks to reinforce the difference between the observed trend aboard the

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Ron Brown for anthropogenic plumes and at the suite of sites reported here.

4. Based on the reviewer's concerns, we did confirm that the correlations between TOOC and the biogenic tracers are substantially higher than the same tracers with CO. A comment has been added to the manuscript text indicating this.

5. We addressed the C14 apparent inconsistency in Section 3 however it is unclear whether the C14 issue is indeed an "experimental problem" as suggested by the reviewer or whether, as we suggested in the text, the carbon may be biogenic but the formation processes anthropogenically controlled. We have added a statement to the manuscript to highlight the importance of further measurements.

Minor comments:

1. Corrected

2. Corrected

3. This may be the case, however the lifetime of TOOC may represent the degrading TOOC-TOC closure with time and thus should not be compared with the lifetime of a conserved tracer such as CO. Clearly more work is necessary to establish the level of closure.

4. Table symbols did not accurately convert on ACPD, we will bring this to the attention of the editorial staff.

Reviewer #2 (J. Rudolph) We appreciate the reviewer's comments and discussion of the organic carbon budget and the framework presented in our manuscript. Following the comments, we have added a short discussion on the closure between TOOC and TOC to Section 4.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 17825, 2007.

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