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Interactive comment on “Atmospheric oxidation of 1,3-butadiene: characterization of gas and aerosol reaction products and implication for PM_{2.5}” by M. Jaoui et al.

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See our response to reviewer 1 Comment # 7

“I had one further comment about this manuscript in regards to the 1,4-anhydroerythritol (MW 104) compound observed in the 1,3-BD SOA. The authors should recall work conducted by Lin et al. (2012, ES&T) and Zhang et al. (2012, ACP) by the UNC group. They showed the IEPOX from isoprene oxidation undergoes an acid-catalyzed rearrangement on sulfate aerosol to form cis- and trans-3-methyldihydroxytetrahydrofurans, which are exactly the same as the 1,4-

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anhydroerythritol found here (minus the methyl group). This is further evidence that 2,3-epoxy-1,4-butanediol (BEPOX) is being formed from the oxidation of 1,3-BD in these experiments and playing a role in forming the SOA constituents found in this study.”

Response. See our response to the first comment (reviewer 1). The following sentences were included in the new section and reflect the reviewer comments:

“In addition, 1,4-anhydroerythritol compound was detected in 1,3-BD SOA (Table 2). This compound is similar to 3-methyldihydroxytetrahydrofurans formed from the oxidation of isoprene through IEPOX oxidation via acid-catalyzed rearrangement on sulfate aerosol (Zhang et al., 2011; Lin et al., 2012). 1,4-Anhydroerythritol observed here may be formed through similar reactions starting from BEPOX, and presents further evidence that BEPOX is being formed from the oxidation of 1,3-BD and playing a role in SOA formation.”

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 14245, 2014.

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