

## ***Interactive comment on “A case study of aerosol depletion in a biomass burning plume over Eastern Canada during the 2011 BORTAS field experiment” by J. E. Franklin et al.***

**J. E. Franklin et al.**

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We would like to thank reviewer #2 for the helpful comments on our manuscript. We have revised the paper in the following ways:

**1. I would really like to see more evidence of the "scavenging" that the authors claim. I think an additional figure showing this, augmented by a few sentences of explanations would improve the manuscript.**

We have created an additional figure. Please see response to Reviewer 1.

**2. Page 3401, chapter 3.1.1: Please explain what is meant by "dynamically aligned"**  
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**aligned"**

Original:

"The heart of the DAO-DA8 is a dynamically aligned Michelson Interferometer with a maximum optical path length of 250 cm providing an unapodized resolution of  $0.004 \text{ cm}^{-1}$ .

New text:

"The heart of the DAO-DA8 is a Michelson Interferometer with a maximum optical path length of 250 cm providing an unapodized resolution of  $0.004 \text{ cm}^{-1}$ . Alignment is maintained over the full optical path by monitoring the modulated signal of an internal HeNe laser."

**3. Page 3404: second to last paragraph: Please briefly mention the altitude ranges of the radiosondes used.**

Original:

"These profiles were calculated from radiosondes released every 12 h from Yarmouth, NS."

New text:

"The lowest 20 km of the WACCM V6 water vapour VMR profile was replaced with profiles calculated from radiosondes released every 12 h from Yarmouth, NS."

**4. Page 3409, chapter 4.3. It is not immediately clear why the backward trajectories were initialized at different times.**

The backward trajectories were initialized at different times to reflect the delay between arrival of the two airmasses at the DGS. Please see more detailed discussion and changes listed in response to Reviewer 1

**5. Page 3410, second to last and last paragraphs: The authors claim: "However,**

**there is a general agreement between the models that the air mass west of 25 The Pas, Manitoba (53.8 N, 101.2 W) underwent 18 h of moderate to strong vertical ascent associated with a significant convective weather event." It is not clear to me as to where or how this was shown in the paper.**

We have removed "associated with a significant convective weather event" from this sentence as you are correct that we do not discuss the nature of the vertical motion until the following section.

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Interactive comment on Atmos. Chem. Phys. Discuss., 14, 3395, 2014.