

Response to referee #2

Minor comments:

This is the second review on this manuscript. The authors adequately responded to my comments and concerns on the first review by restructuring the manuscript and I find this manuscript almost ready for publication. This manuscript should be published, as it is relevant and well-constructed.

I have a few, very minor comments:

1.) lines 29-30 in the abstract have Whistler Peak listed in two sentences, one describing significant effects and one describing minor effects. It cannot be in both.

Author's response: Whistler Peak listed in error for describing minor effects.

Abstract text on ln 29-30, pg1 revised to: Lesser enhancements of 10-12 ppbv for 8-hr O₃ and of 4-9 µg/m³ for 24-hr PM_{2.5} occurred across coastal British Columbia and Washington State.

2.) The last paragraph (1 sentence) of the introduction is essentially a rewording of the second to last sentence. Suggest removing the last sentence or reducing the wording in the second to last sentence.

Author's response: Amalgamated text and themes from the last two sentences together.

Introduction text on ln 10-14, pg 3 revised to

" This study expands on the Cottle et al. (2014) work in a number of significant ways: it analyzes potential air quality impacts over a much greater geographical area encompassing large parts of British Columbia and Washington State; it uses detailed air quality measurements at a high elevation background site to provide insight into plume chemistry; and it makes use of photochemical modelling to establish baseline air quality conditions in the absence of any wildfire emissions to determine the smoke plume's contribution to degraded air quality and exceedances of regional air quality objectives and national standards of O₃ and PM_{2.5}."

Removed text on ln15-18, pg 3

Also noticed some redundancy in introduction text on ln 7-8, pg3 and it was revised to:

"Aerosol backscatter measurement and low depolarization volume ratios during the event showed the progressive entrainment of smoke into the LFV through July 10th, 2012 which coincided with the high PM_{2.5} observed by the region's fixed air quality monitoring network. "

3.) Page 8, line 14, "... since the size distribution data from 10 nm to 1000 microns, measured by OPC,..." has limits incorrect for an OPC. Likely the 10 nm refers to an SMPS instrument, which was not working for some or most of the time under study...

Author's response: In 14, pg8 revised to:

"PM₁ mass is estimated from the ACSM, since the size distribution data indicate that most of the mass is below 0.7 μm; in Figure S3, an example is shown for July 9th, 2012 when the SMPS became operational again."

4.) page 11 line 19, "Fine organic aerosol mass (~88% based on the ACSM measurements)..." should include "mass fraction" in parentheses to be clear that 88% of the mass of the particles were organic.

Author's response: In 19, pg 11 revised to:

"Fine organic aerosol mass (based on the ACSM measurements) accounted for the majority (~88% by mass fraction) of the 1-hr and 24-hr PM_{2.5} enhancements of 23 μg/m³ and 10 μg/m³, respectively."