

To the Co-Editor – Thank you for your help and time with this manuscript. With the exception of one highlighted comment below, all corrections have been made. The corrections are highlighted in yellow in the manuscript.

Co-Editor Decision: Publish subject to minor revisions (review by editor) (21 Dec 2017) by Willy Maenhaut

Comments to the Author:

The authors have reasonably addressed the comments of the two anonymous referees and they have modified their manuscript accordingly. However, the comments given below should be addressed and several alterations are needed for the Main text and Supplement before the manuscript can be published in ACP.

Main text:

Page 1, line 1: Since the study pertains to the Alert station, I suggest to insert ", 62.5°W" after "82.5°N" in the title.

Page 1, line 15, and also further in the manuscript (e.g., in Table 1): Concentration data starting with "2" or higher as first significant figure should be provided with at most 2 significant figures; in case the first significant figure is "1", 3 significant figures can be used.

Page 2, lines 4 and 5, and throughout the remainder of the text: Replace "e.g. " by "e.g., ".

Page 2, line 13: Replace "Stohl (2006)" by "Stohl, 2006".

Page 3, line 20: Replace "Zeppelin, indicates" by "Zeppelin indicates".

Page 3, line 26: Replace "5% of" by "5% of the".

Page 3, line 33: Replace "75°W" by "62.5°W".

Page 4, line 19: Replace "Teflon for" by "Teflon filters for".

Page 4, lines 21-22: Delete ", also sampled at 27 L min<sup>-1</sup>," as the flow rate was already mentioned in line 19.

Page 5, line 4: Replace "0C" by "0°C".

Page 5, line 6: Replace "20C" by "20°C".

Page 5, line 6: The "2" of "N2" should be in subscript.

Page 5, line 29: The "μ" character after "to 10 " did not come out properly in the pdf file.

Page 5, line 34: Replace "One hour" by "One-hour".

Page 5, line 36: Replace "AMT, 2014" by "2014".

Page 7, line 3: It is not clear to what the OM in equation (1) refers. This should be clarified. I suspect that it refers to the OFG-OM.

Page 8, line 20: Replace "i.e. winter" by "i.e., winter".

Page 10, line 1: Replace "differences" by "difference". Response – Because the difference being referred to is among 3 summers, I believe it is correct as "differences".

Page 10, line 3: Replace "3.3 – Potential" by "3.3 Potential".

Page 10, line 12: Abbreviations or acronyms, here "BB", should be defined (written full-out) when first used within the main text after the Abstract.

Page 10, lines 16-19: The wording in the second part of this sentence starting with "and times over the dominant" is strange and unclear to me.

Page 10, line 19: It is unclear which measures are meant by "the same two measures".

Page 12, line 13: Abbreviations or acronyms, here "DL", should be defined (written full-out) when first used within the text.

Page 14, line 4: Replace "3.5 – Positive" by "3.5 Positive".

Page 15, line 23: Replace "occurs during" by "occur during".

Page 16, line 19: Replace "BB" by "biomass burning (BB)".

Page 16, line 21: Replace "respectively were" by "respectively, were".

Page 16, line 29: Replace "biomass burning (BB)" by "BB".

Page 18, caption of Fig. 5: The caption disagrees with what is shown. Figures (a) and (b) should be exchanged.

Page 18, line 33: "for all" by "for a) all".

Pages 19-28, References: Titles of journal articles should be in lower case instead of in Title Case.

Page 21, lines 17-30: "Fu, P., et al., 2015" should come before "Fu, P. Q., et al., 2009a".

Page 21, line 24: Replace "Fu, P. K." by "Fu, P. Q.".

Page 24, line 5: Replace "R. and Deschler" by "R., and Deschler".

Page 25, lines 33-37: "Quinn et al., 2007" should come before "Quinn et al., 2009".

Page 29, heading of Table 1: Replace "Mass Concentrations" by "mass concentrations".

Page 29, footnote of Table 1: Replace "(BDL)" by "(DL)" and replace "carbonyl BLD" by "carbonyl below DL".

Page 29, heading of Table 2: "group-2 regions" is confusing and can in my opinion simply be replaced by "regions". Furthermore, replace "in brackets" by "in parentheses".

Page 30, heading of Table 3: Replace "of Determination for Linear Regressions" by "of determination for linear regressions".

Supplement:

Caption of Figure S1: Replace "station Influence" by "station influence".

Caption of Figure S4: Replace "region 11 (Canadian NWT)" by "Canadian NWT region" as there is no region 11 in Figure 1.

Heading of Table S1: Replace "in brackets" by "in parentheses".