Review of Atherton et al. for Atmospheric Chemistry and Physics

General Comments

In "Mobile measurement of methane emissions from natural gas developments in Northeastern British Columbia, Canada", Atherton et al. describe with lucidity and apply with care an improved mobile survey technique for identifying methane leaks in an understudied region of Canada's oil and gas fields. The measurements are used to probe which aspects of the oil and gas infrastructure in the portion of the Montney region surveyed are most likely to emit methane. A conservative estimate of the bottom up inventory for entire Montney development is calculated and compared against state-based estimates, which is the most uncertain part of the analysis. The manuscript clearly describes the measurement and analysis techniques, highlights the limitations of the approach, and contextualizes the results nicely. I recommend this manuscript for publication in Atmospheric Chemistry and Physics with only minor changes.

Specific Comments

Line	***Comment***
p. 2, l. 13	"ostensibly less environmental impact" – People have been more concerned about water-based impacts of hydraulic fracturing than those of coal, so restating this perceived advantage to be specific to atmospheric drivers of climate might be more accurate.
p. 3, l. 13	"super-emitters, and reduction" should be "super-emitters and reduction"
p. 3, l. 26	"significantly, with thousands" should be "significantly with thousands"
p. 4, l. 3	"August 14 2015 and September 05 2015 we" should be "August 14, 2015, and September 5, 2015, we"
p. 8, l. 20	"probably" should be "probable"
p. 9, l. 7-8	Indeed, accurate infrastructure inventories can be difficult to maintain. This statement seems to indicate that the correlations were not what was expected, which led to suspicion of the infrastructure inventories. Could you rephrase this statement to describe the limitations on analysis that uncertainties in the inventory induce?
p. 7, l. 25	"FLIR" is first used here, but the acronym is first defined on page 10. Could you please reorder?
p. 12., l. 20-1	"Montney based" should be "Montney-based"
Figure 2	If I understood correctly, industrial sources were passed on multiple routes. Could these dots and bars be color-coded (with colors from Figure 1) by the route on which the source was observed?
Figures 5,6,7	Please add to the caption the meaning of the grey-shaded areas around the line.