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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Oil and gas impacts on air quality in federal lands in the Bakken region: an overview of the Bakken Air Quality Study and first results" *by* A. J. Prenni et al.

Anonymous Referee #2

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The manuscript by Prenni et al. summarizes the context for the Bakken Air Quality Study. Much of the paper is a summary of long-term data form monitoring sites in the region. This analysis is interesting and compelling in showing that emissions from coal-fired power plants have decreased while emissions from the oil and gas sector have increased. The remainder of the paper is a summary of 2 wintertime field intensives that occurred in 2013 and 2014. While the results presented from these two intensives is not terribly surprising, it does demonstrate a clear, though small, impact of oil and gas activities on a number of species relevant to air quality (EC and NOx in particular).

Overall, this is a solid paper that demonstrates a relatively small, but significant impact

of oil and gas operations on the air quality in this region. It should be published and needs only minor revisions. The revisions I suggest are given in the points below.

1.) It should be clarified in the introduction that while VOC and NOx from oil and gas operations can drive high ozone, this requires strong inversions and has not been observed in the Bakken.

2.) The introduction references Howell et al. to say that oil and gas can impact particulate pollution. However, this reference is a study of oil sands, which is a very different process than that occurring in the Bakken, this should be noted.

3.) It would be good to have some type of figure or more quantitative measures demonstrating the results of the HYSPLIT analysis indicating that higher concentrations were from lower wind speeds (Section 3.1).

4.) For Figure 12, it needs to be made more clear if all the species are averaged between 8 a.m. and 4 p.m. measurements as ethane is or if the other species are a single measurement and when that measurement is made.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 28749, 2015.