

## ***Interactive comment on “Analysis of the latitudinal variability of tropospheric ozone in the Arctic using the large number of aircraft and ozonesonde observations in early summer 2008” by Gerard Ancellet et al.***

### **Anonymous Referee #2**

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Review of "Analysis of the latitudinal variability of tropospheric ozone in the Arctic using the large number of aircraft and ozonesonde observations in early summer 2008" by Ancellet et al.

#### General comments:

The paper provides a detailed description of tropospheric ozone measurements during the POLARCAT campaign in summer 2008, and a series of analysis of its variability and possible sources affecting the variability by using WRF-Chem chemistry-transport model. The description is intensive and the analysis is generally sound, reaching some

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interesting conclusions. I found the paper be a nice piece of work contributing to better understanding of sources and processes affecting the summertime ozone at high-latitudes. The paper is well within the scope of ACP, and can eventually be published. However, I found some descriptions/illustrations are redundant. There are many errors in English. Some figures look preliminary. These made me difficult to follow what the authors are trying to tell us. So, I would suggest some technical suggestions that should be addressed before publication.

#### Specific comments:

Figures 5, 7, and 9: The same data are plotted in both linear and logarithmic scales. I doubt if the authors really need logarithmic plots, as they do not discuss much on the log plots. The log plots seem redundant to me.

#### English and technical errors:

There are many errors in English, for example in Abstract:

L1: The goals of the paper are ...

L10: The average ozone concentrations are 65 ppbv ...

L14: ... modeled CO ...

L18: ... ozone gradient of -6 to -8 ppbv ...

Abstract, L7: Ozone, CO and ... is too much detail in Abstract, and can be removed.

P7, L17: MEGAN (Model of ...)

Figure 2 caption: Intercomparison of ozone measurements ...

Captions in other figures: Measured O<sub>3</sub> (ppbv), Modeled O<sub>3</sub> (ppbv) - need units!

Figures 3 and 4:

I would make difference plots between observation and model, to illustrate where in

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height and latitude the model is good or bad. This is not necessary but please consider.

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