

***Interactive comment on “Source attribution and interannual variability of Arctic pollution in spring constrained by aircraft (ARCTAS, ARCPAC) and satellite (AIRS) observations of carbon monoxide” by J. A. Fisher et al.***

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Given that this work heavily exploits AIRS CO retrievals, I would like to see a discussion of the performance of AIRS retrievals specifically in the Arctic environment. In particular, I believe the paper would be more interesting if the following issues were addressed:

1. Given the poor thermal contrast conditions often encountered in the Arctic (relative to the Tropics and midlatitudes), has the AIRS CO product been validated using either in-

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situ data or ground-based FTIR retrievals in the Arctic for the same season considered in this paper?

2. What do the AIRS CO averaging kernels look like for the Arctic? Specifically, examples of the total column averaging kernel should be presented and analyzed. The unique thermal characteristics of the Arctic environment suggest that significant differences should be expected relative to the Tropics and midlatitudes. Do the characteristics of the averaging kernels depend on surface type (which affects thermal contrast) or otherwise vary geographically?

3. Analyzed AIRS data are limited to those that “include only daytime AIRS observations with DOF for signal greater than 0.5 retrieved over surfaces with temperature above 250 K.” I suspect these filters and thresholds were not developed specifically for Arctic conditions. Are they really appropriate for the current study? Are the results sensitive to the chosen thresholds? What fraction of the AIRS retrievals are rejected by these filters?

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