

## ***Interactive comment on “Instrumentation and Measurement Strategy for the NOAA SENEX Aircraft Campaign as Part of the Southeast Atmosphere Study 2013” by C. Warneke et al.***

**Anonymous Referee #1**

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This paper describes the SENEX aircraft campaign and presents some initial results. From what I understand this paper should provide all the general experimental information necessary to understand the contributing SENEX science papers. There are a few places that information is incomplete or vague but generally the paper is suitable for publication with minor comments that I have listed below.

[Comment to editor] I am surprised this paper has been submitted to AMT rather than ACP given the remit of AMT (below).

“Atmospheric Measurement Techniques (AMT) is an international scientific journal dedicated to the publication and discussion of advances in remote sensing, as well as in situ and laboratory measurement techniques for the constituents and properties of the

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Earth’s atmosphere.

The main subject areas comprise the development, inter-comparison, and validation of measurement instruments and techniques of data processing and information retrieval for gases, aerosols, and clouds.”

The first sentence of the abstract should be a statement that can be quantified. Has it or hasn’t warmed more than than the rest of the US?

Line 55: The authors are teasing the reader “...were almost all within the stated uncertainties.” The authors should spill the beans. Which ones weren’t within the stated uncertainties?

Minor comment: the authors used many sections at the start of the paper. Sections 2-4 ought to be lumped together.

In section 5, where the authors start to discuss individual compounds, this reader thought it might be useful to explain their relevance to the SENEX science objectives. Just a few sentences to set the scene.

Line 217: Several VOCs? Could the authors be less vague? A minor edit would help the reader navigate the paper much better.

Line 265: Tell the reader how the power plants plumes were removed.

Line 270. Last statement about missing fraction “may be” comprised largely... supposition? The authors need to provide a little more argument.

In places, the text was a bit wordy. For example, Line 288...We then plotted it... punchier text would be “Figure 8 shows”. . . A related comment was that description of the data being plotted should be reserved for the figure caption leaving the main text for interpretation of the data. Line 299: Again the authors are teasing the reader. Space is limited but a short summary of the findings would be appreciated.

Line 392: The modelling section is poor. The authors have done a good job at de-

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scribing the experiment, instrument payload etc but they have provided almost no information about the models being used to interpret the data. Surely, they are using more than FLEXPART? Even if we assume the authors are just relying FLEXPART, more information should be provided on the calculations being shown, e.g. spatial and temporal resolution of meteorological data being used, etc.

Figure 5: The color coding is a good idea but the palette used is so coarse that you could assume from the Figure that SENEX included only 3-4 flights. Maybe include a color scale? Why was the yellow flight different?

Figure 9: The lower panel is very busy. A suggestion would be to plot the isoprene emissions in grayscale and overplot the data in color. Otherwise it is difficult to interpret.

Figure 12: The color scale for CO<sub>2</sub> has tick mark labels that overlap. You can guess the numbers but using a small font is advisable.

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