You have answered the referee comments well. I have few editorial comments which I list below.

Generally you use lots of parenthesis. This is a style issue that I personally do not like, but I will not push for the change. If a statement is not so important, why mention it at all? If it provides essential information, it should be mentioned without the parenthesis.

Fair enough. I love parentheses (obviously?). I like that we can give varying levels of importance of parenthetical statements. If I'm skimming papers, I generally skip statements in parentheses.

Introduction
First paragraph, last sentence: please remove parenthesis and move the last sentence to the middle of paragraph. At the end of a paragraph the most important thought of the paragraph is summarized.

I disagree that the last sentence of the paragraph summarizes the most important thought. It is disclaimer that the CCN cutoff diameter differs between clouds and acts as an explanation for why I put 50-100 nm as a typical range for the cutoff diameter. Moving it to the middle of the paragraph would make no sense as it needs to follow the previous sentence.

While I prefer to keep that sentence in parentheses (because it's an explanation of a subtlety in the previous sentence rather than a contribution to the larger discussion of the paragraph), I have removed them.

Throughout the text: condensable instead of condensible.

Ha, Libreoffice is saying “condensable” is misspelled and “condensible” is ok (this is with the US dictionary though). I actually used to write condensable rather condensible, but I must have switched at some point because of the text editor. I'm guessing that condensable is UK english and probably preferred for ACP. I've changed them to condensable.

Sect 2.4: the closest

Seems fine to me both with or without “the”, but I've added “the”.

Sect 3.1: 2. paragraph: please use 25% for the survival probability to be consistent with the following paragraph. “ranged from 0.3% to over 90% with a mean and median of 19% and 7% (the mean is higher than the median due to 2 high outliers, see Figure 3)”

Right, done.

Should those two outliers to be removed from the analysis? Also, why use the biased mean instead of a median in the calculations for the contribution of nucleation to total aerosol budget in the following paragraphs? Reference to Paasonen et al. (2013) might fit here as well.

We had a discussion about this with the co-authors and decided to keep them and stick with the mean. I don't think we have enough info to know if the distribution itself is non-gaussian (in which cases some high outliers would be expected and the mean and median would differ). If this is typical at Egbert (would need more years to know), then the mean value here would be more appropriate (if not the median here would be more close to the long-term mean). Since we already have discussion in the aerosol budget section about this, I will leave things as is.

I'm not sure how to work in the Paasonen reference here since it provides how N100 concentrations change with temperature but it doesn't show survival probabilities to compare to (unless I missed something?).

line 308. period missing.

Done, thanks.

‘‘With these assumptions, we calculate a N50NPF of 682 cm-3. The mean measured N50 throughout the entire time period was 1686 cm-3.” Is it reasonable to use so many significant figures? 700 and 1700, respectively.

Good call, changed. Also changed for the N100 analysis.

‘‘Solar radiation drives photochemistry and thus the oxidation of SO2 to form condensible H2SO4 and volatile organic compounds to form condensible organic species.” ELVOC production from initial ozone reactions (Ehn et al. 2014)

Ha, yeah the Ehn paper is appropriate to cite here, though it's a bitter pill to swallow since my 2011 paper (http://www.atmos-chem-phys.net/11/9019/2011/acp-11-9019-2011.html) was not cited in the Ehn paper (even though you and Mikael were both on the 2011 paper). Figure 4 of Mikael's paper is a combination of Figure 9 of mine and figure 2f of Ilona's 2012 paper (http://www.nature.com/ngeo/journal/v5/n7/pdf/ngeo1499.pdf), which you were also a co-author on and also oddly also wasn't cited in Mikael's paper. The main conclusion of our 2011 paper was that a large amount of these C*< 1E-3 ug m-3 compounds had to have been being produced, so it is al stepping stone to Mikael's paper.

However, the Ehn citation is appropriate here, so I've added it (note that Mikael's paper wasn't out when I first submitted in December).

‘‘(3) the condensation sink generally increases with relative humidity due to aerosol water uptake.” In ambient conditions, yes. This is probably not seen in dry aerosol measurement derived CS.

Yes, but ambient wet aerosol is the relevant condensation sink. H2SO4 doesn't care that the extra surface area is due to water uptake.

‘‘Surface pressure anomalies (also the difference of the event-time pressure from the 4-week running mean) also” … Reduce the number of alsos.

Done

H2SO4 vapor, were the highest…
the H2SO4 proxy is the highest… .. SO2 is the highest…

I'm not sure what you are asking here? Are these how you want them to be? Why should the first one be were and not are (I've used present tense throughout this section.)?

I think the following two suggestions sound better without the “the”s added.

Also, please give line numbers. These were very hard to find since I could not search for the text since you changed the text from what I wrote.

Figure 2 caption: Note that multiple undefined events may occur on a given undefined event day. Undefined events may also occur on class I or class II event days; however, these are counted as I or II days.

How does this affect the analysis? Particularly 24-h averaged rates? This is not discussed in the text at all.

The values from the undefined events are not included in the 24-h average rates, so it shouldn't affect anything. I have added “Note, for days where undefined events occur on class I and II days, we do not include the contribution of the undefined events to the class I and II statistics.” to the text.

Figure 4 f) statistical tests are too crowded. g) log-axis for the sulfuric acid proxy?

I'm not sure what the issue is with 4f?

We note the log axis in the text and in regards to Table 2, we discuss why it makes sense: “Because J10s and GRs span several orders of magnitude we take the log of these quantities as well as the log of condensation sink, SO_2 and the H_2SO_4 proxy, which each span orders of magnitude (additionally, a log dependence of J with H_2SO_4 is consistent with the nucleation theorem).” Finally, it seems like the community nearly always thinks about [H2SO4] in log space, so this seems appropriate.

References

Ehn et al. (2013) A large source of low-volatility secondary organic aerosol, Nature 506, 476–479.
Paasonen et al. (2013) Warming-induced increase in aerosol number concentration likely to moderate climate change, Nature Geosci., 6, 438-442, doi: 10.1038/NGEO1800.