We thank both reviewers for catching some import oversights in the paper and suggesting other improvements. We feel that the paper is much improved because of their efforts. Our responses to their comments are below.

Reviewer 1

This manuscript presents analyses new particle formation and growth and subsequent cloud condensation nuclei production at a continental background site in Canada. While the research topic itself is not very original, the authors have managed to bring new insight into it by broadening the analysis beyond what has been usually done in the literature. The paper is well written and easy to follow. I do not find any scientific errors. I am in favor of accepting this paper for publication in Atmospheric Chemistry and Physics after the authors have considered the following, minor comments.

Minor issues
P 709, line 12-14: "when not measured by some instruments" does not sound good here. The authors refer to the inability of (actually most) instruments to detect atmospheric nucleation because the minimum particle diameter they are able to measured is above the size range where nucleation occurs. Please modify.

We have modified the sentence to say, "...distinguish these measured events from nucleation, which is generally not measured directly."

The way the authors classify the nucleation events and determine the particle formation and growth rates works probably fine for the purposes of this manuscript. The authors might, however, say something about whether the used approach is in line with the latest recommendation by Kulmala et al. (2012, Nature Protocols, 7, 1651-1667).

Yes, it is. We have now discussed cited.

P 719: The manuscript might benefit from a bit broader comparison of the observed particle formation and growth rates to the observations elsewhere.

We have added comparison with the sites presented in the review paper: Kulmala, M., Vehkamaki, H., Petajda, T., Dal Maso, M., Lauri, A., Kerminen, V. M., Birmili, W. and McMurry, P. H.: Formation and growth rates of ultrafine atmospheric particles: a review of observations, J. Aerosol Sci., 35(2), 143–176, 2004.

P 723, line 18: What do the authors mean by "other observations" here: other observations by them or observations by other researchers? The work by Hamed et al. (2011, J. Geophys Res., D03202) discusses this issue in quite detail and could be referred to here.

There should have been a citation here. We have added the citation to Hamed et al. (2011)

Technical issues:
P 710, line 23: homogeneous rather than constant air masses

Fixed

Section 4 contains essentially only one paragraph of real conclusions, the remaining part is mainly repetition of the findings reported earlier in the paper. Therefore, I suggest renaming the section as "4. Summary and conclusions".

Done