The research describes in-situ measurements and analysis from the ACTIVATE project over the Western North Atlantic Ocean. Investigation of low level cloud layers and measurements of Cloud Condensation Nuclei (CCN) concentrations below cloud base were compared with droplet number concentrations (CNDC) from just above cloud base. They present this in the context of the vertical wind speed (w) and use a method to relate the updraft velocity to the CDNC just above cloud base.

They found a significant range of CCN concentrations that spanned different seasons. One of the key aspects of the paper split the measured CCN into Low Polluted (LP), Medium Polluted (MP) and High Polluted (HP) groups. The authors found all occurred in the winter while summer was found to be split between LP and HP.

The contributions to the CCN population from the aerosol composition was presented, with the conclusion that Sea Salt Aerosol, although present in significant quantities throughout, was not the driver of the changes in aerosol groups, but rather always present as a background of deliquesced aerosol likely based on the boundary layer windspeeds. During elevated aerosol periods the strongest association was with Organic Aerosol (OA).

They found that the relationship between CCN and CDNC was due to the interplay between the dynamics and availability of CCN for the formation of cloud droplets. For example in the HP cases CDNC was sensitive to the full range of w, where as in more pristine LP cases the CDNC was CCN limited and therefore didn't change as significantly with increasing w values.

I found the paper to be well presented with excellent figures that highlighted the key aspects of the study. I recommend publication with minor corrections -

Minor comments

Section title and numbering missing immediately after the abstract. (should be 1. Introduction?)

L99 *"The FCDP with its fast 100 electronics, small pinhole feature for coincidence reduction and applicable filtering techniques can be classified among the lower end of both propagated uncertainties in size and NC. "*

Has this been demonstrated or is it just an estimation?

L104 It's stated the effective pixel size for the 2D-S is 11.4 μm. Lawson et al. (2006) describes this differently. The effective pixel width used as standard is 10 μm. Please confirm whether your effective size range is different or whether this needs correcting.

L211 I'm not suggesting this should be changed but I've always found the terminology of 'polluted' to be a little misleading. What exactly *is* polluted? Or is it just the same as 'elevated' aerosol.

Figure 4. What type of fit are the lines to the histograms?

Figure 6. a) should maybe refer to a-b)

General Comment: it would be nice to see some FCDP, 2DS size distributions comparisons. The image plot 3b is fine though otherwise.

APPENDIX: N_{gt85} definition missing.