The manuscript by Shang et al. reports the particle number size distributions (PNSD) and new particle formation at a high altitude background site in China. The influences of biomass burning on PNSD and cloud condensation nuclei are investigated, and three new particle formation events were characterized. The sampling site (3410 m) is unique, and the data is also potentially important for validation of climate models. This manuscript is generally well written, and fits within the scope of ACP. I recommend it for publication after addressing the following comments.

Comments:

1. Identification of BB2 needs more evidence. As indicated in Figure 1, f_{60} is very close to that during the background period. Also, the back trajectory analysis in supplementary did not show a strong influence of biomass burning on the sampling site.
2. While discussing the average particle number size distributions, could the authors show the average PNSD during NPF events and non-NPF events. As shown in Figure 1, the three NPF events show very high concentrations of particles between 3 – 25 nm, which are rarely seen during non-NPF days.
3. Please describe the instruments for measuring gaseous species, e.g., SO_2, CO, NO, NO_x etc. Because the concentrations of several gaseous species are very low (e.g., < 0.3 ppb for SO_2), the measurement uncertainties could be large.
4. Some analysis in this work can be more robust by incorporating the HR-ToF-AMS data which is published in Zheng et al. (2017) from the same group.
5. Suggest adding "number" in the title, which is "Particle number size distribution".
6. Line 635, this study did not provide vertical profile of particles.
7. The results can also be compared with another mountain site (3295 m, ASL) in Tibet Plateau (Du et al., 2015).

Reference:

Du, W., Sun, Y. L., Xu, Y. S., Jiang, Q., Wang, Q. Q., Yang, W., Wang, F., Bai, Z. P., Zhao, X. D., and Yang, Y. C.: Chemical characterization of submicron aerosol and particle growth events at a national background site (3295 m a.s.l.) on the Tibetan Plateau, Atmos. Chem. Phys., 15, 10811-10824, 10.5194/acp-15-10811-2015, 2015.