

The authors have satisfactorily answered my comments. As will be shown I have some problems with interpretations or explanations of Figs. 3 and 4. Nonetheless, this manuscript should definitely be published. Field results of such important topics as these need to be made available.

I did detailed editing for the first half of the manuscript. This was intended and resulted mostly in text reductions. In almost every instance maximum numbers of words were used. This was not just the definite article as mentioned in my first review but also prepositions such as of and in. However, it occurred to me that perhaps for some reasons these authors do not want to reduce the length of the manuscript. Thus, since my editing might be in vain I stopped most editing half way through the manuscript. If this notion is incorrect the authors can follow my examples of the first half to edit the 2<sup>nd</sup> half accordingly.

L32. Delete the.

L38. Delete the.

L39. And to with. Change are used to infer to imply.

L40. Delete respectively. The two sets are in order.

L43. Delete the twice.

L44. Delete the. Delete in the. Change changes to variations. Move aerosol in front of variations.

L45. In to within.

L46. From to between. To to and.

L47. Delete the.

L52-3. Change and lower during to than in.

L53. Delete of. Particles singular. Move transport after particle.

L54. Delete the. Delete 2<sup>nd</sup> of. Move focus after chemistry.

L55. Delete in the. Move Arctic in front of research. Delete the. Add time to spring. Delete period. Delete from. Move transition after summer.

L56. Delete 1<sup>st</sup> 2 thes. Opportunity plural. Delete in. move changes after chemistry.

L57. Delete last the.

L59. Delete of the. Move Arctic on front of warming.

L72. Change aerosols to particles.

L73. Delete sources. Delete for. Move of after nuclei.

L74. Drop s of towards.

L76. Delete much. Change sometimes to often.

L82. Explain surface-active. Does this mean hygroscopic?

L83. Delete 1<sup>st</sup> the.

L84-85. Move summertime and Arctic in front of environment. Delete of the.

L85. Particles singular and move in front of concentrations. Delete of. Above to larger than.

L87. Delete nm.

L89. Delete much.

L91. Period after parentheses. And to Moreover.

L92. At to to. ing to e.

L96. Delete made.

L97. Delete that.

L98. Delete the. Delete in the. Move CDNC after model.

L99. Delete will. Above to for.

L100. Insert greater than before 10. Delete in. move increases after CCN. Delete of the. Change phere to pheric. Move cooling after atmospheric. Change the to This.

L101. Move threshold after concentration.

L101-2. Change and it is noted that the value of  $10 \text{ cm}^{-3}$  to although this. Insert a after not. Insert limit after universal.

L103. Delete 2<sup>nd</sup> the. Add time to summer and move in front of microphysics. Clouds singular and move in front of microphysics.

L107. Insert Yum and Hudson, 2001 and Wylie and Hudson, 2002.

L108. Delete 1<sup>st</sup> the. Add time to spring.

L109. Aerosols to particles.

L111. Delete of. Aerosols singular and move in front of observations.

L112. Delete during. Add time to summer and move in front of Arctic.

L113. Delete of. Aerosols singular and move in front of measurements. Add time to summer. Move Arctic in front of clouds.

L114. Period after forcing. Insert They to begin next sentence. ing to ed.

L115. Delete about. Move forcing from these plumes after maximum. Half is approximate.

L117. Among to between. Insert and after coupled. Move uncoupled in front of to. delete versus those. Period after surface. Change but to They. Delete of the. Move observations after microphysics. Insert their after and.

L119. Characterization plural. Was to were.

L119-20. Move June in front of low. Delete in.

L121. Delete the. Delete in the. Tops singular. Move cloud top in front of CDNC.

L121-2. Remove quotes. Move aerosols to end of sentence.

L122. Delete the twice. Bases singular. Insert cloud in front of base.

L123. Delete does. Add s to influence. Delete the.

L124. Delete the twice. Delete in. add time to summer. Cloud plural and move after Arctic.

L127. Aerosols and clouds singular and move in front of observations. Remove of.

L128. The to this.

L153. Delete are.

L157. The to these.

L162. The to these.

L165. Add s to detect. Move detects particles right after that. Uses to using. Delete of. Move scattering after light. Delete to.

L167. Delete a reduced pressure of.

L168. Last The to This.

L169. Delete of. Move measurement in front of stability.

L170. Delete the. Delete of. Particles singular. Move hygroscopicity to end of sentence.

L171. Using to with.

L173. Period after parentheses. Delete and.

L176. Dimensions to dimensional. Move two dimensional in front of Cloud. Delete in. sized from about to between. To to and.

L177. Using to with. Delete For. Delete present. The to this.

L177-8. Move this study to the end of this sentence. insert from after phase.

L179. Period after parentheses. Delete and.  
L182. Delete The.  
L183. Use CO.  
L184. Delete at. Move 150nm in front of excitation. The to This.  
L191. Measured to done.  
L192. The to This.  
L198. Semicolon to period. Insert However before the.  
L199. Insert or below after in.  
L200. Are to was.  
L201. Are to was. Is to was.  
L205. Delete of.  
L206. Delete the.  
L207. Delete of. Particles singular. Move transmission after particle. Approximately to near.  
L211. Delete at.  
L211-2. Move exhaust tube in front of flow.  
L212. Move flow after tube. Delete the four times. Delete of twice. Delete at. Delete allowed. Delete last flow. Delete ly.  
L213. Move flow after intake. Delete at the. Period after TAS. Delete and.  
L216. Delete 1<sup>st</sup> the. Delete of the. Move aircraft in front of forward.  
L217. Change lowered to reduced. 1<sup>st</sup> the to this.  
L220. Delete to. Move Analysis in front of Approach.  
L223. Beginning to between. Delete ending July. The to These.  
L224. Delete relatively. Delete the. Relatively and distinct are opposites.  
L225. Delete The.  
L226. Change calm to light. Change varying to variable. Insert the before south. Delete to north.  
L233. Period after parentheses. Then insert This was. Delete in part. Possibly is enough of a hedge.  
L237. The to this.  
L239. Delete of. Flying to legs.  
L240. Above to altitude.  
L241. Delete the surface. Surface here must me sea level.  
L245. Delete surrounding. Period after surfaces. Change as well as to Furthermore. Delete because. Insert was after 2. Insert by after marked.  
L246. Put Fig. 2 in front of panel. Delete in.  
L247. Flight plural. Delete plans were. Change towards sampling to on.  
L251. Change greater to larger. Delete for.  
L252. Delete The.  
L253. Over to between. Dash to and. Delete data, which are.  
L253-4. Move Fig. S3 in front of example.  
L254. Change shown in to and. Particle singular and move in front of number. Delete of. Delete 1<sup>st</sup> nm.  
L258. In to within. Move study in front of area. Delete of. Move Within the study area to beginning of sentence. Delete when they. Change ideally to mostly. Ascending to ascents.  
L259. Or to and. Descending to descents. Delete through them. Delete the. Base plural. Delete of. Clouds singular. Move bases after cloud.

L260-1. Move only liquid phase clouds after  $\mu\text{m}$ .  
L262. With the caveat to except.  
L264. May to might.  
L265. Period to whereas.  
L266. Move July 7 in front of stratocumulus. Delete sampled on. But to though.  
L270. Insert and when after where. Change was clear and achievable to could be observed. Clear is a poor word choice to describe cloud base. Change semicolon to period.  
L272. In to within. Comma to and.  
L272-3. Move in flight in front of indistinguishable.  
L273. Period after parentheses. And to Thus,. The to such. Cloud plural.  
L278. Are to were.  
L281-2 and elsewhere. Points is not the best word choice unless you are referring to elements of a figure. Sections or segments are alternatives. Or just refer to data without another word.  
L282. Is to was. The to These.  
L288. Delete the.  
L289. Move valid in front of in-cloud. Delete considered. Delete inside of cloud.  
L290. Thermodynamic plural. Delete measurements, it is used twice in this sentence. Delete the. In to within.  
L293. On to upon. Insert Hudson and Frisbie [1991] and Hallett and Christensen [1984].  
L303. Delete on July 7 sampled. Delete 1<sup>st</sup> the.  
L304. Change and the to while.  
L305. Period after altitude. Insert These before features. Change common to the to characterize. Move formation after cloud. Delete of. Change and indicating to so.  
L306. Delete cloud. Delete in air rising. Insert below after from.  
L308. Delete 1<sup>st</sup> the.  
L309. Delete the. In to Within.  
L313. Delete 3<sup>rd</sup> the. Insert Hudson [1993] at end of sentence. Change The to Thus.  
L315. Delete 2<sup>nd</sup> the.  
L317. Insert corresponding before N5.  
L318. Delete the. Move closure after concentration (singular). Delete of.  
L320. Change down to about to as small as.  
L320-1. Move based on maximum CDNC to beginning of sentence.  
L321. Delete the. Delete of. Move particles after sulphate.  
L322. Change the to that. Delete of the. Clouds singular and move in front of bases.  
L324. At to of.  
L325. And to while.  
L326. Change but there are to except that. Insert is before more. Insert broken after more.  
L326-7. Move the July 17 profile right after except that.  
L327. Delete what is left of this line.  
L328. Delete adiabatic lifting. Insert lower LWC before intervals. Delete with decreasing LWC. Change associated with to due to.  
L329. Change the to cloud. Delete of the stratocumulus. Profile plural. Last the to this.  
L330. Move LWC in front of peak. Delete in the. Change below to from.  
L331. Move CO in front of increase. Delete in. insert at before about.  
L332. Move the in front of erosion. Change was to went. In to into. Change case to cloud or clouds.

L333. What aerosol increase above cloud? Aerosol decreases at many levels. Delete the.  
L334. This is true at a greater altitude range.  
L335. This is not shown in the figure. Delete last the.  
L336. Larger to higher. Of to between.  
L340. 1<sup>st</sup> the to a.  
L342. Last the to this.  
L343. Period after study. Delete and. Insert that before BB.  
L347. Add ed to reach.  
L348. Period after layer. Insert This is.  
L349. Reduced to lower. Increased to higher.  
L350. Semicolon to comma. Insert which is. Increase to higher. Delete in. insert concentrations above than after aerosol. Delete between. The to this. Delete and.  
L351. Delete above the layer. N50 is apparently not shown in the graph! I do not see these numbers.  
L354. Delete sized. Delete 1<sup>st</sup> nm. Insert diameter after nm.  
L355. Insert comma which after CDNC. Down to about to as small as.  
L356. Reduced to lower.  
L357. Insert below cloud after of. And to with. Above cloud CCN does not show this.  
L358. Delete case of a. delete in.  
L358-9. Move LWC in front of variations.  
L359. Delete the. Suggests to suggest. Looks higher than 49.  
L361. The to These.  
L363. I do not see this in the figure.  
L365. Pre to below.  
L365-7. It is problematic to get valid aerosol measurements of any kind in the narrow layer between these clouds.  
L366. 44?  
L367. 52?, seems higher than 34. Seem higher than 66. Seems higher than 35.  
L369. For the lower cloud layer yes, but not so sure about the other two.  
L372. Delete 2<sup>nd</sup> July.  
L373. Delete and July.  
L377. Looks much higher in Fig. 4a.  
L378. Apparently below cloud is to the right? 16:45 to 17:09 and beyond? This needs to be stated. N100 appears to be 2. 0.6% ammonium sulfate is 40 nm diameter. 100  $\mu$ m ammonium sulfate is 0.1%.  
L385. Explain these 7 samples. This is not obvious from the figure.  
L389. Where is N100 this low? To the right and left sides of Fig. 4b N100 is 50 or more! Lower values are seen within cloud. All measurements where altitude is shown seem to be within cloud and thus invalid for aerosol measurements.  
L390-1. Delete due to instrument problems.  
L391-2. These are not the numbers that appear on Fig. 4b.  
L400. Delete from. East to easterly. Delete to west.  
L404. The to This.  
L414. The to These.  
L418. The to these.  
L427. The to these.

- L467. The to these.
- L533. Insert S after %.
- L572. Reach above to exceed.
- L578. Insert that before 1<sup>st</sup> the.

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