

## ***Interactive comment on “Automated rain rate estimates using the Ka-band ARM Zenith Radar (KAZR)” by A. Chandra et al.***

### **Anonymous Referee #2**

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#### General Comments

This study presents a new methodology to estimate precipitation rates from Ka-band vertically pointing radars. The problem studied is relevant and the approach proposed original and interesting so I think this manuscript is in principle well suited for AMT. However some clarifications are needed and also a number of corrections (many of them minor errors easy to detect) must be performed prior to considering acceptance. It looks like the manuscript was not correctly reviewed before submitting it - please make sure to do so when submitting your corrected version.

#### Specific comments

1. Page 1808, Abstract. Please introduce the term ARM when used - the abstract  
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should be self contained.

2. Page 1808, lines 9-13. The proposed... is implemented. Please check and correct the last part of the sentence.
3. Page 1809. Mather and Voyles 2012: is it 2013? Otherwise not found in ref section.
4. Page 1809, line 3. extreme rare -> extremely rare
5. Page 1809, line 18. Moran et al: not found in ref section
6. Page 1809, line 18. Kollias et al 2007a: not found in ref section. 2007?
7. Page 1810, line 8. Typo: ka -> Ka
8. Page 1810. As mentioned above, Mather and Voyles 2012: is it 2013? Otherwise not found in ref section.
9. Page 1810, last parag. The change of acronym KAZR instead of MMCR is rather odd and confusing as they refer to different instruments. Please look for an alternative way of introducing this.
10. Page 1811, line 13. Keeler et al: not found in ref section.
11. Page 1811, line 21. Feng et al 2013: not found in ref section. 2014? Please check.
12. Page 1811, line 25. Typo: offers -> offer (radars is plural)
13. Page 1812, line 4. precipitation. (KAZR -> precipitation. KAZR [remove "("])
14. Page 1812, line 9. Suggest: non-significant (non-hydrometeors) -> non-significant (non-hydrometeors) echoes
15. Page 1812, line 16 (if I understand correctly, please check and correct otherwise) episodes are seen -> episodes as seen
16. Page 1812, line 22. Typo: a automated -> an automated

17. Page 1813, 2nd sentence. Please rewrite (missing verb).
18. Page 1813, after Eq.1. Ar and Ac are the attenuation by rain and cloud: not the opposite, aren't they? Please check.
19. Page 1813, last line. typo: show -> shown
20. Page 1814, please add a "." after Eq. 2.
21. Page 1814, line 21. factor -> factor being [Check meaning]
22. Page 1814, line 21. Matrosov et al 2004: not found in ref section.
23. Page 1815, line 6. Fig 6a quoted before Fig 5 - check and reorder fig if necessary.
24. Page 1815, lines 7-9. Please check and rewrite text.
25. Page 1818, line 16. When giving the correlation coefficient, please also give the number of samples (either in the text, or in the figure, or figure caption).
26. Page 1819, line 3. Geerts 2004: not found. Perhaps Geerts and Dawei?
27. Page 1819, line 7. Steiner -> Steiner et al? Otherwise not found in ref section.
28. Page 1819, line 15. Typo: method -> methods
29. Page 1819, line 26. Typo: comparing -> compared
30. Page 1821, ref section. Deng et al under review: I suggest not to quote a manuscript under review.
31. Page 1821, Feng et al 2014: check year cited in text (is it 2013 or 2014?). Moreover typo before DOI (double ":").
32. Page 1821, Kollias et al 2002: not quoted in text.
33. Page 1822, Lhermitte 1990: not quoted in text.
34. Page 1822. Mather & Voyles: check year (in text is cited 2014 but here is 2013?).

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35. Page 1822, Steiner et al: not quoted in text (instead Steiner alone).
36. Page 1823. Zhang 2013: not quoted in text.
37. Page 1824. Suggest: & sensitivity -> sensitivity
38. Page 1826, Fig. 2 and others . In each panel, I suggest to write the axis labels in the usual way, i.e. variable [units] - without ", ". For example Height [km], KAZR Z [dBZ], Time [h], etc.
39. Page 1826, fig. 2 and elsewhere: the abbreviation of hour is h not hr [in rainfall rate units].
40. Page 1827, fig 3. Suggest to include in fig caption the meaning of Nw and mu (which should be given as a Greek symbol, as in the text, to avoid possible confusions).
41. Page 1828, fig 4. I suggest to remove shadowing of text in the flowchart to improve readability. The connecting lines and arrows also should be improved.
42. Page 183, fig 6. The two panels should have the same axis limits to allow comparing them more easily.

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