

Interactive comment on “A 6-year global cloud climatology from the Atmospheric InfraRed Sounder AIRS and a statistical analysis in synergy with CALIPSO and CloudSat” by C. J. Stubenrauch et al.

Anonymous Referee #1

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[a4paper,10pt]article

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1 General Comments

An interesting and good paper to be further referenced to. The following suggestions mostly regard the wording. The first section contains comments about the content, C3075

and the next section contains technicalities. I have highlighted sentences or parts of sentences (in red) that are a bit colloquial, incorrect, or where the sentences need to be clarified. I have provided suggestions (in green) which could replace the marked sentences.

2 Specific comments

- Page: 8259, last paragraph: I would've preferred to see these interesting statistics in a table.
- Page: 8262, paragraph 2: Can I really see the winter storm tracks and jet streams separately in Fig6? I can also see the summer storm tracks. Maybe one could just say 'mid-latitude storm tracks'? The oceanic low level clouds are off the west coasts of the continents as mentioned, but they are even more prominent further west into the oceans. Could something more be said about this?
- Page 8266, line 13–17: An interesting finding that Cirrus is closer related to thin Cirrus in the tropics, but tends to be closer to thicker clouds for increasing latitudes. This is probably linked to a different cloud formation process. What processes do you have in mind. This statement could be elaborated.
- Page 8269, line 14: 'correspond possibly to'. Firstly, I'd change the order, but also the word 'possibly' is unnecessarily weak. Rossow et. al 2007 states that unorganized convective cells rarely penetrate the atmosphere, so I'd write 'probably correspond to' or 'likely correspond to'
- Page 8270, line 17–18: This isn't mentioned earlier and it doesn't seem necessary in the conclusion.

- Page 8271, line 13–16. By 'exhibits a strong underestimation of cloud pressure' do you mean that there is a strong negative bias?

3 Technical corrections

- Page 8248, line 4–8: This is a very long sentence.
- Page 8248, line 9: 'as about' to 'to about' or 'from between 66% and 74%'.
- Page 8250, line 10: 'even' (colloquial) to 'also'.
- Page 8250, line 23: ', and then' (colloquial) to ', after which'.
- Page 8251, line 20: In this sentence it appears the AMSU footprint is the 'golf ball'. I would change ', also called a "golf ball"' to ', and is called a "golf ball"'.
- Page 8252, line 7–9: I don't know if I understand this sentence. Is the vertical resolution 30m below 8km alt. and 60m above 8km alt. ?
- Page 8253, line 10: 'is capable to probe' to 'is capable of probing' and 'therefore provides also in this case' to 'therefore provides'
- Page 8257, line 1–3: 'happened to be higher' to 'was higher' and 'did only very slightly change' to 'only changed very slightly'
- Page 8257, line 22: 'slightly differ' to 'differ slightly'
- Page 8260, line 9: 'samples sparsely' to 'sparsely samples'
- Page 8260, line 23: 'have again' to 'once again have'

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- Page 8261, line 24 – Page 8262, line 2: For me, this paragraph is very confusing. Could this be rewritten in a clearer way?
- Page 8263, line 8: 'seems too high' (colloquial) to 'appears too high'.
- Page 8263, line 17: 'can even attain 20%' sounds complicated. How about 'can be as large as 20%'
- Page 8264, line 15: 'even more with' to 'and slightly more with'
- Page 8264, line 16: 'which means' to 'which indicates'
- Page 8269, line 13: 'the very geometrically thickest opaque clouds' is very complicated. I would write something like 'the opaque clouds that are the thickest geometrically'
- Page 8270, line 6: 'we check on atmospheric inversions' to 'we check for atmospheric inversions'. Although, really you are only checking for strong surface inversions, or have I misunderstood?
- Page 8270, line 10: 'one determined' to 'ones determined'
- Page 8270, line 11: 'when taking into account only clouds' to 'when only taking clouds into account'
- Page 8270, line 27: 'clouds, in agreement also with earlier observations' to 'clouds, which is agreement with earlier observations'
- Page 8270, line 28–29: 'In summary, the fraction of detected Cirrus depends on the instrument sensitivity:'. I thought much more was going to be summarized when the sentence started with 'In summary'. I think you can write 'As the fraction of detected Cirrus depends on instrument sensitivity,'

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- Page 8271, line 3: 'lowlevel' to 'low-level'
- Page 8271, line 22: 'we could also show' to 'we also showed'
- Page 8272, line 14: See the comment for page 8269, line14 in the content section of the review.
- Page 8272, line 16: 'as has been shown' to 'as shown'