Atmos. Meas. Tech. Discuss., 3, C464–C473, 2010
www.atmos-meas-tech-discuss.net/3/C464/2010/

Atmospheric Measurement Techniques Discussions

Interactive comment on "Collocating satellite-based radar and radiometer measurements – methodology and usage examples" *by* G. Holl et al.

G. Holl et al.

gerrit.holl@ltu.se

Received and published: 20 May 2010

Reviewer comment:

The authors study collocations between the MHSD aboard NOAA-18 and the CPR aboard the CloudSat. On the basis of the collocations, the authors (1) have compared the NOAA NESDIS MSPPS MHS IWP products to the CloudSat CPR IWP product, (2) have investigated the relationship between IWP and brightness temperature of MHS channel 5 (190 GHz), (3) have developed a new IWP product using the collocations to train an Artificial

Neural Network method. Most important, the collocations described in the article are available for public use, which is of great interest for the community of the microwave remote sensing of clouds. The technique is right and the presentation is clear. In my opinion, the manuscript should be published after a minor reversion.

Answer:

We thank the reviewer for the comments. In the supplement, we show the current manuscript along with a new figure and the differences with the manuscript as published in AMTD.

1 Specific comments

Reviewer comment:

1. onboard should be on-board or aboard, please go through the whole manuscript.

Answer:

We have changed all occurences to "on-board".

Reviewer comment:

2. Page 822, line 5. The CloudSat.

Answer:

Done.

Reviewer comment:

3. Page 825, line 1-2, the full name of NOAA should appear early.

Answer:

Added the full name of NOAA at page 823, line 12.

Reviewer comment:

4. Page 826, line 9, MetOp-A.

Answer:

We have added the following text:

(a satellite operated by the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT))

Reviewer comment:

5. Page 826, line 19. AAPP.

Answer:

We have added an explanation of this acronym.

Reviewer comment:

6. Page 827, line 12. Check this sentence.

Answer:

We have changed this sentence to:

However, the time between the measurements can be much larger than the duration of a measurement.

Reviewer comment:

7. Page 828, paragraph 4-5. There is reduplicated information.

Answer:

We have rewritten this part after suggestions by the other peer reviewer.

Reviewer comment:

8. Page 830, line 20. A MHS pixel.

Answer:

The rules regarding “a” or “an” are governed by phonetic rules rather than by spelling convention. Since MHS is pronounced in English as *em aitch ess* and *em* starts with a vowel, the correct article to use is “an”.

Reviewer comment:

9. Page 830, line 23-24. So we confirm that. . .

Answer:

We prefer to write “we are certain” as opposed to “we confirm”.

Reviewer comment:

10. Page 831, line 1. Divide . . . into. . .

Answer:

Done.

Reviewer comment:

11. Page 831, line 24. Give a little bit information on the powerful workstation.

Answer:

We have added the following text:

(Intel Xeon Dual Quadcore 3.20 Gigahertz, 16 Gigabyte Random Access Memory (RAM))

Reviewer comment:

12. Page 832, line 13. LTAN was already defined before.

Answer:

We have removed the repeated definition.

Reviewer comment:

13. Page 834, line 16. Reduces the reliability of the . . .

Answer:

A strong, localised cloud does not reduce the reliability of the CPR pixels. The CPR pixels do not know anything about the MHS pixel. What it reduces is whether the CPR pixels are representative for the area observed by the MHS. We have kept the text as it was.

Reviewer comment:

14. Page 835, line 21. Threshold.

Answer:

We have changed “threshold” to “detection limit”.

Reviewer comment:

15. Page 837, paragraph 3. Give some information on the CloudSat auxiliary data.

Answer:

We have added the following text:

(ECMWF-AUX). ECMWF-AUX contains ECMWF state variable data interpolated to each CPR bin.

Reviewer comment:

16. Page 838, line 17-18. The simulated BTs are slightly higher than the observed ones. Can you give some explanations?

Answer:

After the subsequent line, we have added the following text:

This might contribute to the observed differences.

Reviewer comment:

17. Page 839, line 20. Over ocean.

Answer:

Replaced “the ocean” by “pixels over ocean”.

Reviewer comment:

18. Page 840, paragraph 6. In page 839, the ANN training is fixed over the ocean within 20 degrees of the equator. But, here measurements within 30 degrees of the equator are used.

Answer:

True. We have also applied the retrieval over land and ocean even though only oceanic points were used for the training. The purpose of this map is to show we can potentially derive a product, not to present production-ready results.

Reviewer comment:

19. Page 843, line 1. Thin clouds are not visible by MHS channels 3-5. The authors mentioned this fact several time. It is better to specify what kind of thin clouds, such as IWP less than 100 g/mËĘ2?

Answer:

This is mentioned at page 838, line 14.

2 Other changes since the first manuscript

Apart from the changes suggested by both peer reviewers (see also our other Author Response), we have made the following changes:

- Page 826, line 11: removed “stored in the ATOVS data format”
- Page 830, line 5: added “The procedure described above is not the fastest possible (for example, point (d) could be optimised further) but with this algorithm, the bulk of the time running the code searching for collocations was spent on downloading files from a local server and decompressing them.”
- Page 832, line 14: added “considered in this study”
- Page 837, line 14: expanded acronym ECMWF
- Page 846, line 1: fixed reference to Austin paper (published 2009, not 2008)
- Page 854, Fig. 4: corrected error, graph had only 30 days whereas January has 31

Please also note the supplement to this comment:
http://www.atmos-meas-tech-discuss.net/3/C464/2010/amtd-3-C464-2010-supplement.pdf

Interactive comment on Atmos. Meas. Tech. Discuss., 3, 821, 2010.