

Interactive comment on “Cross-comparison of cloud liquid water path derived from observations by two space-borne and one ground-based instrument in Northern Europe” by Vladimir S. Kostsov et al.

Anonymous Referee #3

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Cross-comparison of cloud liquid water path derived from observations by two space-borne and one ground-based instrument in Northern Europe

Kostsov et al., 2019

Major Scientific Contribution

This manuscript compares cloud liquid water path (LWP) from two satellite-based instruments, SEVIRI and AVHRR with measurements by a ground-based radiometer, RPG-HATPRO, located in St. Petersburg, Russia. The study is concerned with two is-

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sues: 1.) the different spatial resolutions of the satellite- and ground-based instruments and, 2.) the land-sea LWP gradient. A large terrain and a small one surrounding St. Petersburg were selected for the study. The ground-based data from RPG-HATPRO were averaged on 5-, 10-, 20- and 60-minute intervals (in order to find the optimal interval for best agreement), and the data were separated for cold and dry (CD) season and warm and humid (WH) season. It is found that the bias of the SEVIRI data relative the ground-based data is practically zero, while the AVHRR data show appreciable difference from the ground-based data, especially during the CD season, which is attributed by the authors to the coarse resolution of land-sea and snow/ice mask used by the AVHRR algorithm. It is also found that SEVIRI and AVHRR data are equally sensitive to the cloud field inhomogeneity.

Technical Comments

Page 9: Could you call the s in Eq. (2) just “RMS”, and s_0 in Eq. (3) “standard deviation”?

Page 16, Line 483: “filed” should be field?

Page 19: Table 1. Could you also add the mean of LWP from RPG-HATPRO data and the number of data points (N)?

Past tense is used in some places. Use present tense if possible.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2019-225, 2019.

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