

The reply to the anonymous referee #3 (RC1)

We are thankful to the referee for the comments. We appreciate all the comments; we took them into account while preparing the revised version of the manuscript.

Below, the actual comments of the referee are given in **bold courier font and blue colour**. The text added to the revised version of the manuscript is marked by **red colour**.

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 issues: 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.

We appreciate that the referee highlighted the major points and results of our study.

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

We agree with this comment and changed the text before Eq. (2) and also the Table 1 caption accordingly:

“The number of synchronised HATPRO-SEVIRI-AVHRR measurements was 63 during the WH season, and 53 during the CD season. The main statistical characteristics relevant to the agreement of the data are given in Tables 1 and 2. The bias b , the RMS s and the standard deviation s_0 were calculated as follows:”

“Table 1. Characteristics of the data agreement: correlation coefficient r_c , bias b (satellite data minus ground-based data and SEVIRI data minus AVHRR data), and RMS s obtained for the WH season (standard deviation s_0 is given in brackets).”

We also made the appropriate change of terms throughout the entire text.

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

Corrected.

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

The number of data points has been indicated just in the beginning of Section 4: “The number of synchronised HATPRO-SEVIRI-AVHRR measurements was 63 during the WH season, and 53 during the CD season.” Following the advice of the referee, we indicated the number of data points also in table captions and added the mean LWP from HATPRO data:

“Table 1. Characteristics of the data agreement: correlation coefficient r_c , bias b (satellite data minus ground-based data and SEVIRI data minus AVHRR data), and RMS s obtained for the WH season (standard deviation s_0 is given in brackets). Total number of data points N is 63, the mean LWP values for HATPRO data sets are in the range 0.021-0.023 kg m⁻².”

“Table 2. The same as Table 1 but for the CD season. Total number of data points N is 53, the mean LWP values for HATPRO data sets are in the range 0.022-0.023 kg m⁻².”

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

We have changed past tense to present tense in several places and we hope that this issue can be also addressed with the aid of a copy editor if the article is accepted for publication.