Atmos. Meas. Tech. Discuss., 3, C1205–C1207, 2010
www.atmos-meas-tech-discuss.net/3/C1205/2010/

Atmospheric Measurement Techniques Discussions

Interactive comment on "A performance assessment of the World Wide Lightning Location Network (WWLLN) via comparison with the Canadian Lightning Detection Network (CLDN)" *by* D. Abreu et al.

D. Abreu et al.

strong@atmosp.physics.utoronto.ca

Received and published: 20 August 2010

Response to Referee 2, Colin Price

We thank the referee for his helpful comments. In the following we present the referee's original comments in italics and our responses in plain text.

This paper is well written, clear, concise, and suitable for publication in AMT. The paper deals with the validation of the WWLLN global lightning network against the Canadian

lightning network (regarded as the ground truth). The authors have done a nice job in comparing the two data sets, pointing out the differences in the networks, while showing the agreement between this study and previous studies using WWLLN data.

I have on[ly] a few minor comments:

1) At the end of section 2.1 (Figure 1) the "configuration" of stations used in this study is shown. Later it is pointed out that also the NLDN stations in the US are used, and hence this is a little confusing. Perhaps Figure 3 should be shown only, or the US sensors should be added to Figure 1.

We have modified Figure 1 to include all of the NLDN stations. Correspondingly, the text describing the NLDN has been moved from the first paragraph in Section 3 to the last paragraph in Section 2.1. This text is as follows:

"A comparable local lightning detection network exists in the United States of America and is called the National Lightning Detection Network (NLDN). Together, these two networks comprise the North American Lightning Detection Network (NALDN). The performance and properties of the NLDN are described in detail by Cummins et al. (1998a, 1998b) and Cummins and Murphy (2009). Figure 1 shows the configuration of the CLDN during the acquisition of the data used in this work, along with the locations of NLDN sensors."

The caption for Figure 1 has also been revised to:

"Figure 1: Locations of the CLDN and NLDN sensors operational during acquisition of the data used in this work."

2) Section 3, P1868, line 1: Having a mean +CG value of 14.2 kA is very low. Normally +CG are much higher ∼40kA than the -CG flashes. Here your +CG mean value is less than the -CG value. Any explanation as to why this is?

The mean positive and negative peak currents given in this sentence are for all strokes detected by the CLDN, both cloud-to-ground and cloud, not just CG strokes. Similar

results were obtained by Jacobson et al. (2006) with an even greater difference in current magnitude between positive and negative strokes (see entry in Table 2, formerly Table 1). We note that the mean peak currents obtained for the shared events (also given in Table 2), which are biased toward CG strokes due to the high peak current threshold of the WWLLN, do have larger magnitudes, with the +CG value (59.2 kA) larger than the –CG value (-46.7 kA), consistent with the referee's point.

To clarify this point, we have added the text in brackets to this sentence:

"The mean positive peak current of these CLDN-detected strokes (including both cloud-to-ground and cloud strokes) was 14.2 kA and the mean negative peak current was -16.6 kA."

Interactive comment on Atmos. Meas. Tech. Discuss., 3, 1861, 2010.