

LIDAR Accuracy Assessment Report—Durham County

Durham County, Cape Fear Basin

The preliminary checkpoint spreadsheets were received from NCGS on June 11, 2002. Two spreadsheets were included which compared the independent QA/QC survey checkpoints with the interpolated LIDAR "Z" value as provided by the contractors. The spreadsheet summaries included:

1. All the checkpoints with the RMSE calculation for combined land cover
2. 95% of the checkpoints with the RMSE calculation (5% of points having the largest error removed)

All data was reviewed and further analyzed to assess the quality of the data. The review process examined the statistics for the combined land cover and the trends for each specific land cover type. The following graphs and figures illustrate the data quality as per the RMSE criteria.

Table 1 summarizes the RMSE using:

- 100% of the checkpoints
- 95% of the checkpoints
- Checkpoints categorized by land cover type

Table 1. RMSE by Land Class				
%	RMSE (cm)	# of Points	Land Class	RMSE Criteria (cm)
100	36.8	24	All	
95	21.1	23	All	25
16	11.3	4	Grass	
16	17.5	4	Weeds/Crop	
13	28.5	3	Scrub	
33	24.3	8	Forest	
16	18.5	4	Built-up	

The LIDAR data for Durham County, Cape Fear Basin meets the specification as per the RMSE criteria of 25 cm.

All figures represent the data with the 95% data set. Based on the limited amount of checkpoints, the data is of good quality.

Figure 1 illustrates the RMSE by specific land cover type.

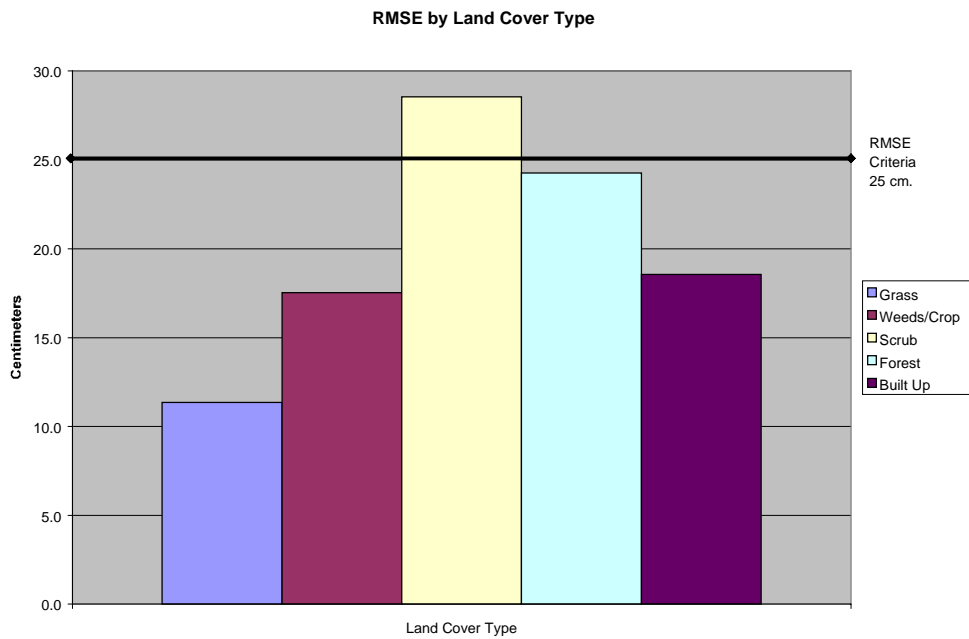


Figure 1

Figure 2 illustrates the magnitude of the differences between the checkpoints and LIDAR data by specific land cover type and sorted from lowest to highest.

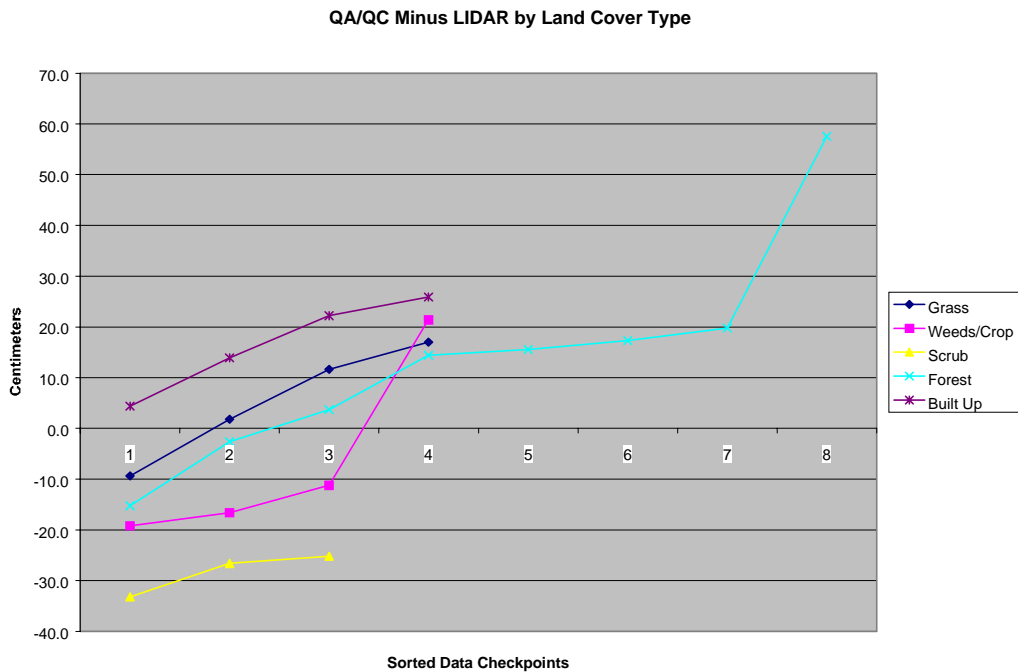


Figure 2

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Table 2 illustrates the Delta between the QA/QC survey checkpoints and that of the interpolated LIDAR.

Table 2. Elevation Delta					
Delta (cm)	Land Cover				
-9.4	Grass	21.4	Weeds/Crop	17.3	Forest
1.8	Grass	-33.2	Scrub	19.8	Forest
11.6	Grass	-26.6	Scrub	57.6	Forest
17.0	Grass	-25.2	Scrub	4.4	Built-up
-19.2	Weeds/Crop	-15.3	Forest	13.9	Built-up
-16.6	Weeds/Crop	-2.6	Forest	22.2	Built-up
-11.2	Weeds/Crop	3.7	Forest	25.9	Built-up
		14.4	Forest		
		15.5	Forest		

Table 3 illustrates the overall statistics for the checkpoint data.

Table 3. Overall Descriptive Statistics								
	RMSE (cm)	Mean (cm)	Median (cm)	Skew (cm)	Std Dev (cm)	# of Points	Min (cm)	Max (cm)
Total	21.1	3.8	4.4	0.3	21.3	23	-33.2	57.6
Grass	11.3	5.2	6.7	-0.6	11.6	4	-9.4	17.0
Weeds/Crop	17.5	-6.4	-13.9	1.8	18.8	4	-19.2	21.4
Scrub	28.5	-28.3	-26.6	-1.5	4.3	3	-33.2	-25.2
Forest	24.3	13.8	15.0	1.1	21.3	8	-15.3	57.6
Built Up	18.5	16.6	18.1	-0.7	9.6	4	4.4	25.9

Figure 3 illustrates a histogram of the associated delta errors between the data checkpoints and the interpolated TIN values.

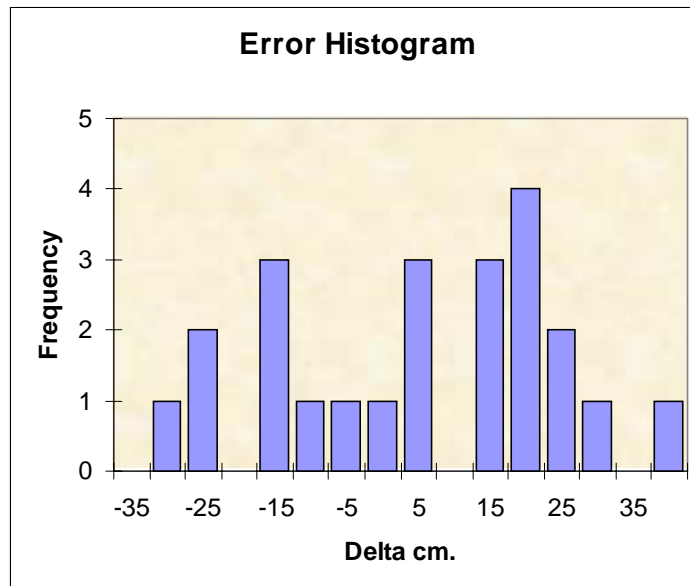


Figure 3