

LIDAR Accuracy Assessment Report—Nash County

Nash County, Neuse Basin

The preliminary checkpoint spreadsheets were received from NCGS on November 15, 2001. 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	23.0	27	All	
95	22.2	26	All	25
15	23.1	4	Grass	
15	20.6	4	Weeds/Crop	
11	33.4	3	Scrub	
33	23.7	9	Forest	
22	9.5	6	Built-up	

The LIDAR data for Nash County, Neuse Basin meets the specification as per the RMSE criteria of 25 cm.

All figures represent the data with the 95% data set. The data is of adequate quality based on the limited data set of 26 checkpoints. Only land cover "scrub" is slightly high but when average with the other land cover types, passes the RMSE criteria.

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Figure 1 illustrates the RMSE by specific land cover type.

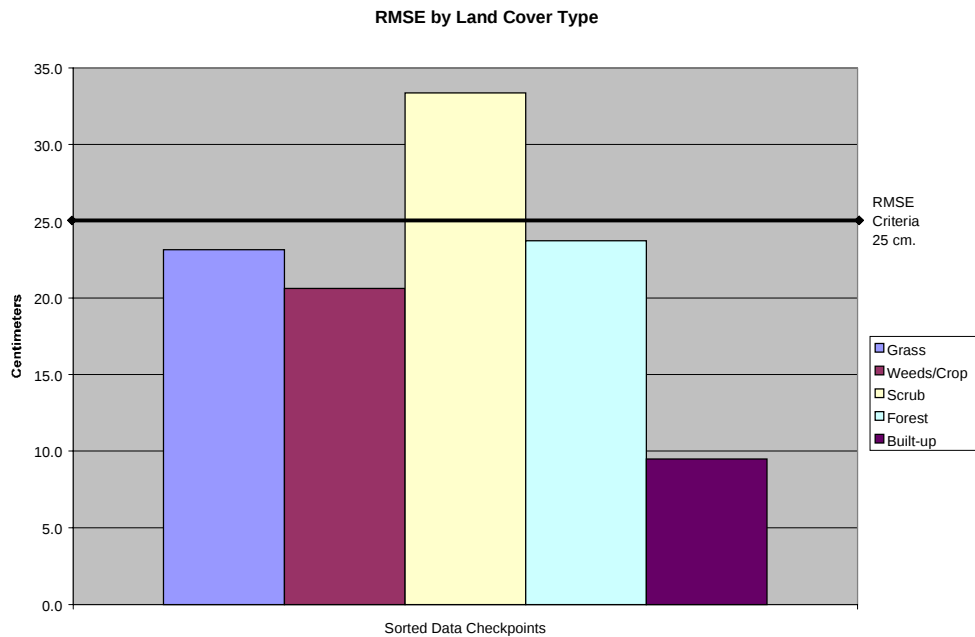


Figure 1

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.

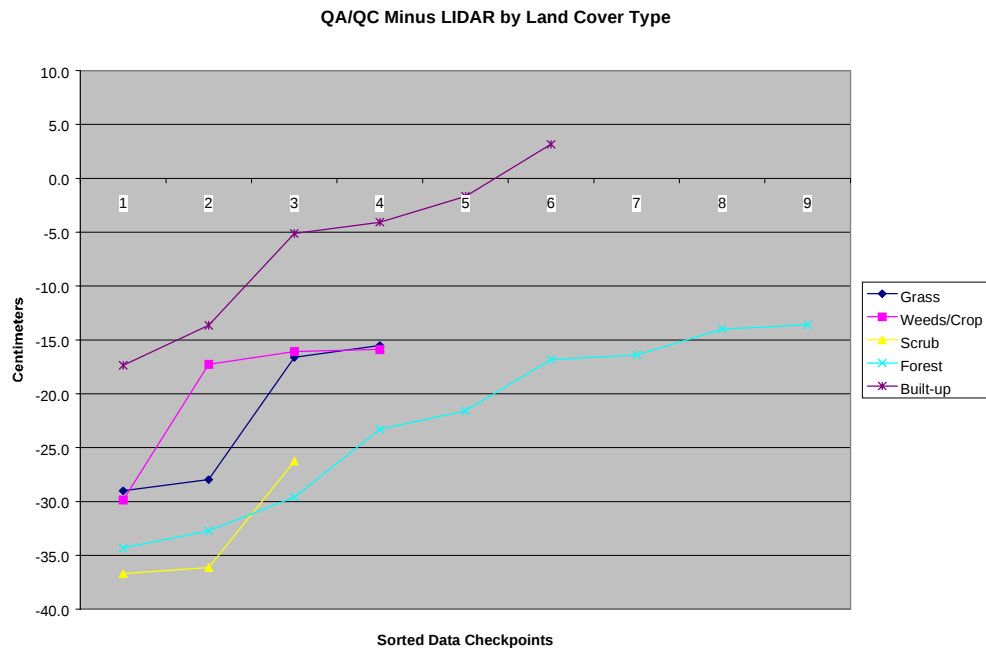


Figure 2

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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				
-29.0	Grass	-36.7	Scrub	-14.0	Forest
-28.0	Grass	-36.1	Scrub	-13.6	Forest
-16.6	Grass	-26.2	Scrub	-17.4	Built-up
-15.5	Grass	-34.3	Forest	-13.6	Built-up
-29.9	Weed/Crop	-32.7	Forest	-5.1	Built-up
-17.3	Weed/Crop	-29.6	Forest	-4.1	Built-up
-16.1	Weed/Crop	-23.3	Forest	-1.7	Built-up
-15.9	Weed/Crop	-21.6	Forest	3.2	Built-up
		-16.8	Forest		
		-16.4	Forest		

Table 3 illustrates the overall statistics for the checkpoint data.

Table 3. Overall Descriptive Statistics								
	RMSE (cm)	Mean (cm)	Median (cm)	Skew	Std Dev (cm)	# of Points	Min (cm)	Max (cm)
Total	22.2	-19.5	-17.0	0.2	10.7	26	-36.7	3.2
Grass	23.1	-22.3	-22.3	0.0	7.2	4.0	-29.0	-15.5
Weeds/Crop	20.6	-19.8	-16.7	-2.0	6.7	4.0	-29.9	-15.9
Scrub	33.4	-33.0	-36.1	1.7	5.9	3.0	-36.7	-26.2
Forest	23.7	-22.5	-21.6	-0.4	8.0	9.0	-34.3	-13.6
Built-up	9.5	-6.4	-4.6	-0.4	7.7	6.0	-17.4	3.2

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

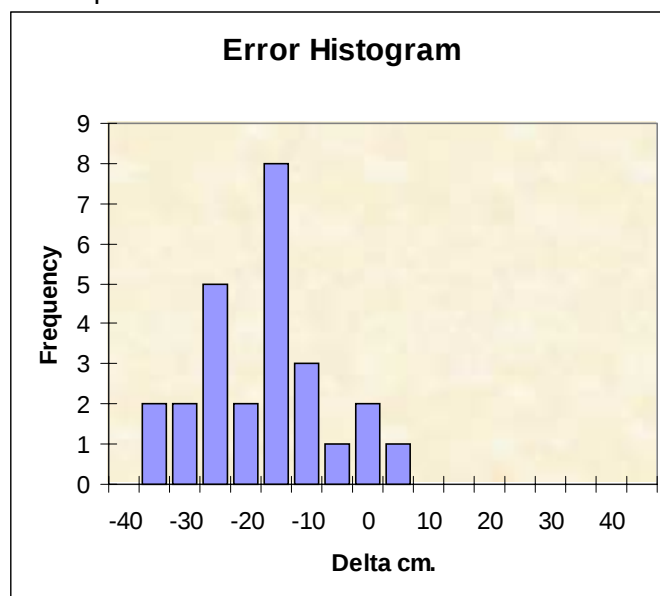


Figure 3