

LIDAR Accuracy Assessment Report—Vance County

Vance County Tar-Pamlico Portion

The preliminary checkpoint spreadsheets were received from NCGS on September 26, 2001. Two spreadsheets were included for each county, which compared the independent QAQC 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	21.3	48	All	
95	17.9	46	All	25
17	14.6	8	Grass	
17	18.7	8	Weeds/Crop	
12	23.5	6	Scrub	
33	19.8	16	Forest	
17	9.0	8	Built-up	

The LIDAR data for Vance, Tar-Pamlico 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 good quality for all land cover types although scrub is slightly high but within specifications.

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Figure 1 illustrates the RMSE by specific land cover type.

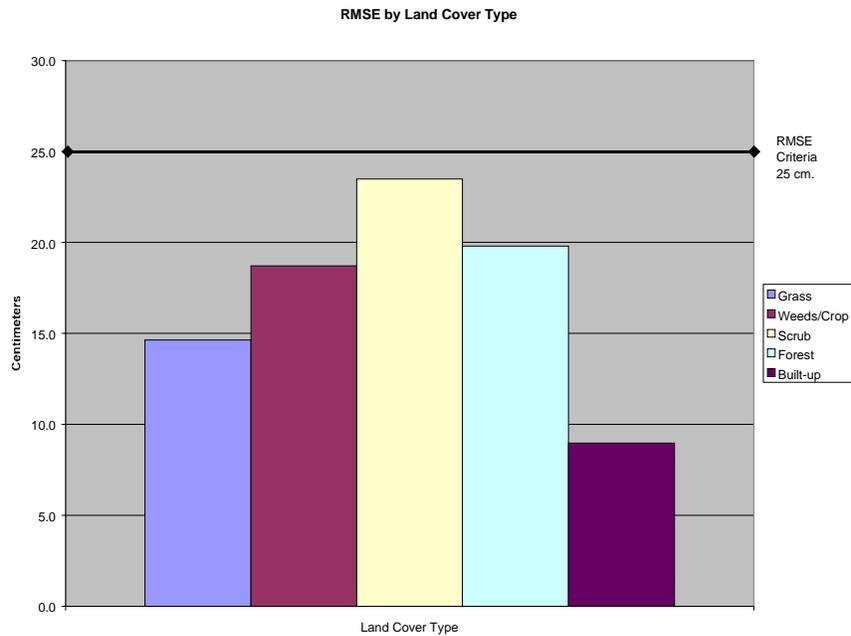


Figure 1

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.

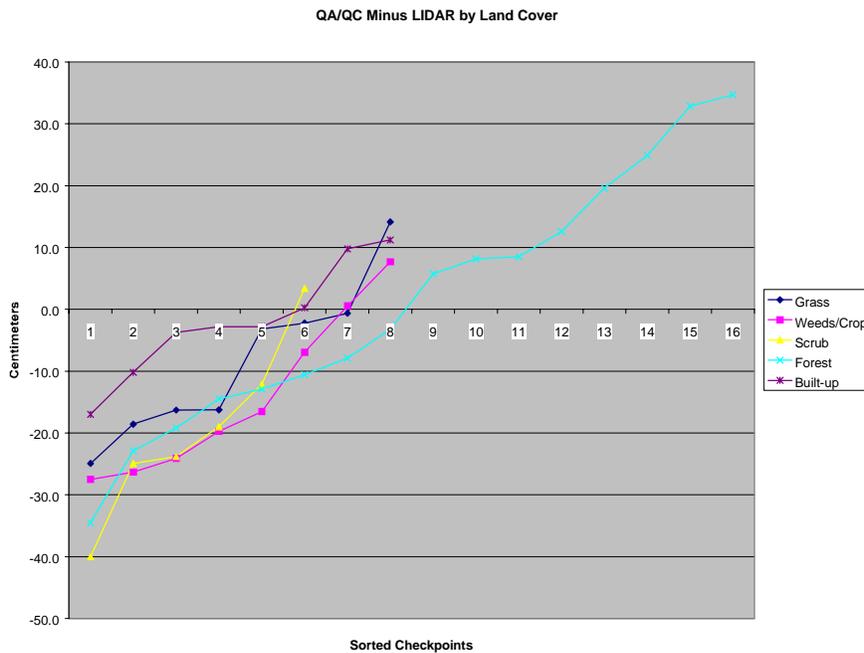


Figure 2

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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				
-24.9	Grass	0.6	Weeds/Crop	5.7	Forest
-18.6	Grass	7.7	Weeds/Crop	8.2	Forest
-16.3	Grass	-40.0	Scrub	8.5	Forest
-16.3	Grass	-24.9	Scrub	12.6	Forest
-3.2	Grass	-23.8	Scrub	19.6	Forest
-2.2	Grass	-19.0	Scrub	24.9	Forest
-0.6	Grass	-12.1	Scrub	32.9	Forest
14.2	Grass	3.4	Scrub	34.7	Forest
-27.5	Weeds/Crop	-34.5	Forest	-17.0	Built-up
-26.3	Weeds/Crop	-22.9	Forest	-10.2	Built-up
-24.1	Weeds/Crop	-19.2	Forest	-3.7	Built-up
-19.8	Weeds/Crop	-14.5	Forest	-2.8	Built-up
-16.5	Weeds/Crop	-12.9	Forest	-2.8	Built-up
-6.9	Weeds/Crop	-10.6	Forest	0.2	Built-up
		-7.9	Forest	9.8	Built-up
		-3.2	Forest	11.2	Built-up

Table 3 illustrates the overall statistics for the checkpoint data.

Table 3. Overall Statistics								
	RMSE (cm)	Mean (cm)	Median (cm)	Skew	Std Dev (cm)	# of Points	Min (cm)	Max (cm)
Total	17.9	-6.3	-7.4	0.45	16.9	46	-40.0	34.7
Grass	14.6	-8.5	-9.7	0.56	12.7	8	-24.9	14.2
Weeds/Crop	18.7	-14.1	-18.1	0.71	13.1	8	-27.5	7.7
Scrub	23.5	-19.4	-21.4	0.32	14.5	6	-40.0	3.4
Forest	19.8	1.3	1.3	0.10	20.4	16	-34.5	34.7
Built-up	9.0	-1.9	-2.8	-0.03	9.4	8	-17.0	11.2

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

