

LIDAR Accuracy Assessment Report—Martin County, Tar-Pamlico Portion

Martin County, Tar-Pamlico County

The preliminary checkpoint spreadsheets were received from NCGS on July 30, 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	15.5	25	All	
95	14.4	24	All	25
16	7.5	4	Grass	
16	13.1	4	Weeds/Crop	
16	20.9	4	Scrub	
32	14.4	8	Forest	
16	12.5	4	Built-up	

The LIDAR data for Martin County 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 based on the limited data set of 25 checkpoints. Land Cover type "Scrub" is slightly high in comparison to the other land cover types but is within specifications.

Figure 1 illustrates the RMSE by specific land cover type.

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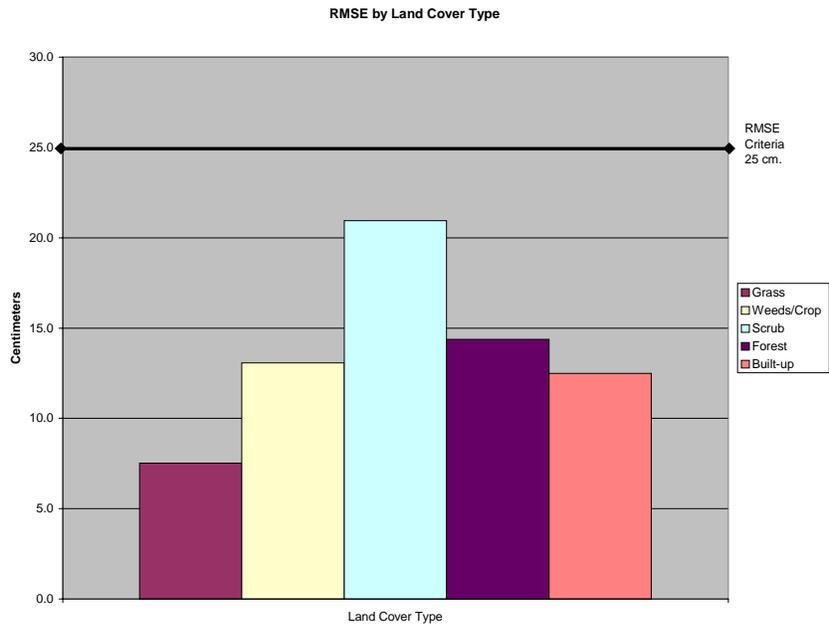


Figure 1

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

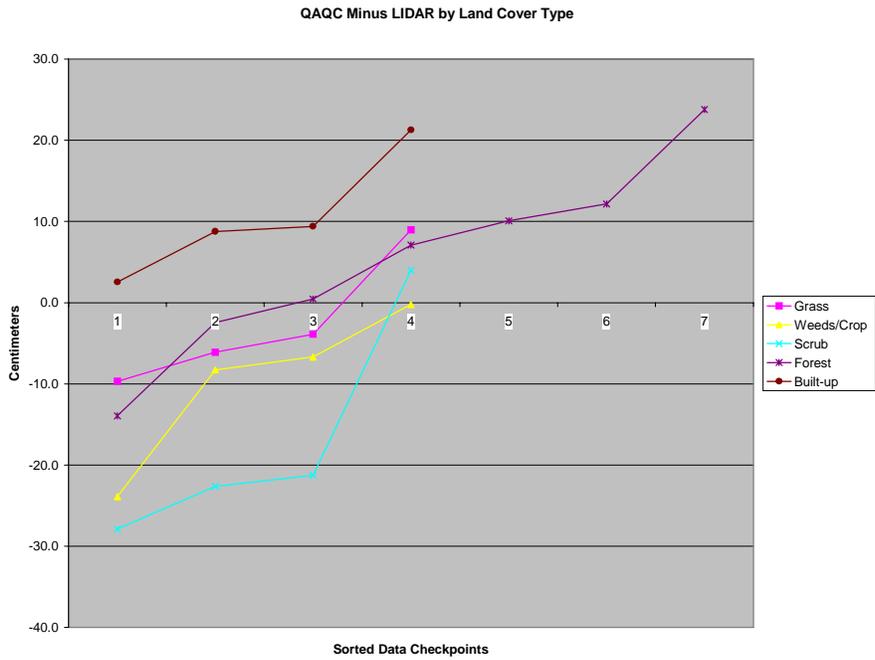


Figure 2

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Table 2 illustrates the Delta between the QAQC survey checkpoints and that of the interpolated LIDAR.

Table 2. Elevation Delta					
Delta (cm)	Land Cover				
-9.7	Grass	-0.2	Weeds/Crop	7.1	Forest
-6.1	Grass	-27.9	Scrub	10.1	Forest
-3.9	Grass	-22.6	Scrub	12.2	Forest
9.0	Grass	-21.2	Scrub	23.8	Forest
-23.9	Weeds/Crop	4.0	Scrub	2.5	Built-up
-8.3	Weeds/Crop	-24.3	Forest	8.8	Built-up
-6.7	Weeds/Crop	-13.9	Forest	9.4	Built-up
		-2.4	Forest	21.3	Built-up
		0.5	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	14.4	-2.6	-1.3	-0.1	14.4	24	-27.9	23.8
Grass	7.5	-2.7	-5.0	1.5	8.1	4	-9.7	9.0
Weeds/Crop	13.1	-9.8	-7.5	-1.3	10.0	4	-23.9	-0.2
Scrub	20.9	-16.9	-21.9	1.8	14.2	4	-27.9	4.0
Forest	14.4	1.6	3.8	-0.4	15.3	8	-24.3	23.8
Built-up	12.5	10.5	9.1	1.0	7.8	4	2.5	21.3