

LIDAR Accuracy Assessment Report—Chowan County

Chowan County, Pasquotank Basin

The preliminary checkpoint spreadsheets were received from NCGS on May 30, 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	11.9	44	All	
95	10.9	42	All	20
18	5.8	8	Grass	
29	8.2	13	Weeds/Crop	
14	15.0	6	Scrub	
29	12.2	13	Forest	
5	16.8	2	Built-up	

The LIDAR data for Chowan County, Pasquotank Basin meets the specification as per the RMSE criteria of 20 cm.

All figures represent the data with the 95% data set. The data is of good quality.

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Figure 1 illustrates the RMSE by specific land cover type.

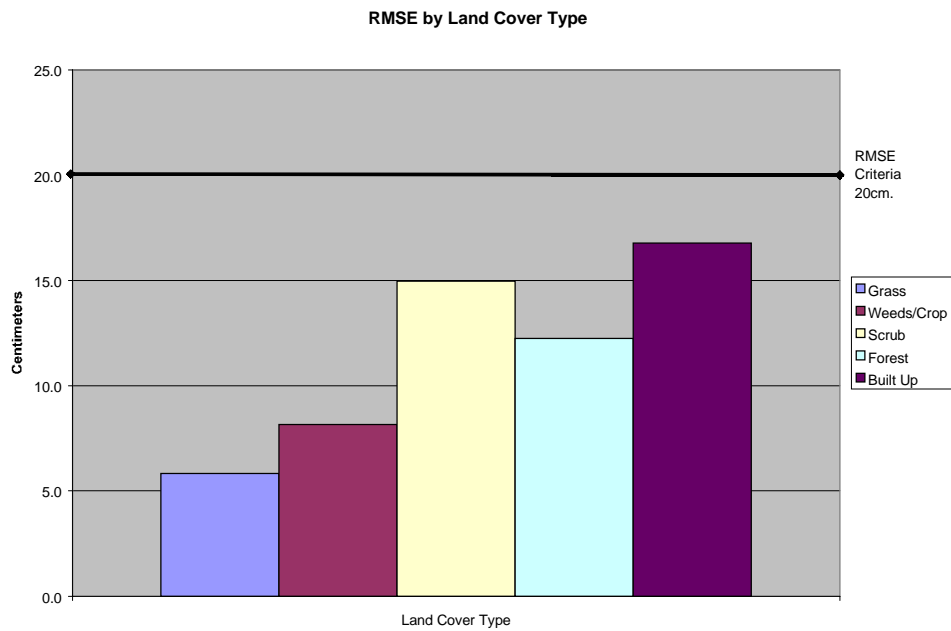


Figure 1

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.

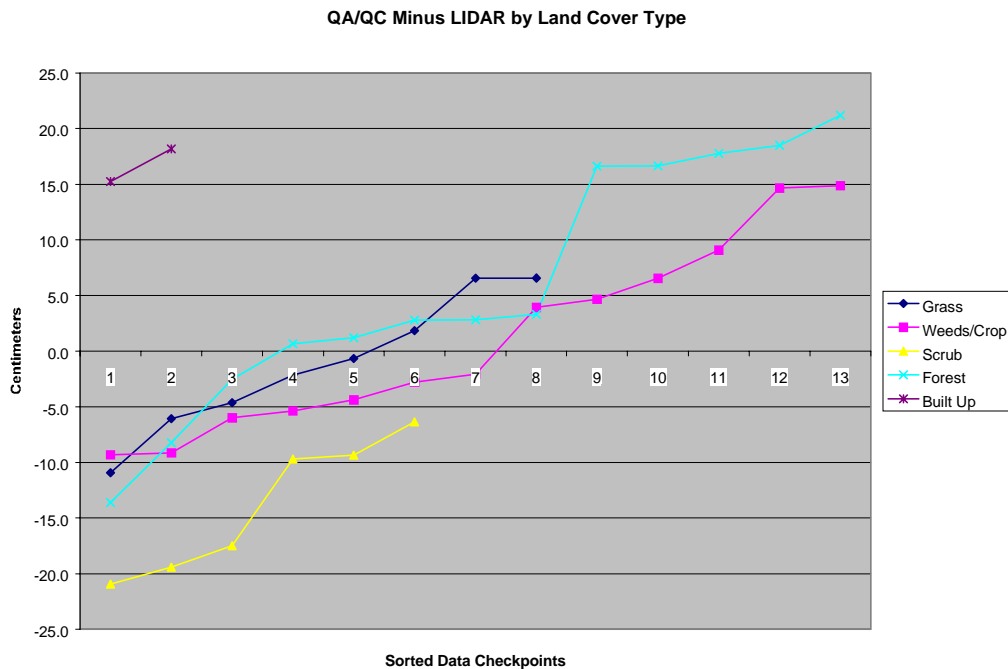


Figure 2

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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				
-10.9	Grass	-2.8	Weeds/Crop		
-6.1	Grass	-2.1	Weeds/Crop		
-4.6	Grass	3.9	Weeds/Crop		
-2.2	Grass	4.7	Weeds/Crop		
-0.7	Grass	6.6	Weeds/Crop		
1.8	Grass	9.1	Weeds/Crop		
6.5	Grass	14.7	Weeds/Crop		
6.6	Grass	14.9	Weeds/Crop		
-9.3	Weeds/Crop	-20.9	Scrub		
-9.1	Weeds/Crop	-19.4	Scrub		
-6.0	Weeds/Crop	-17.5	Scrub		
-5.4	Weeds/Crop	-9.7	Scrub		
-4.4	Weeds/Crop	-9.3	Scrub		
		-6.4	Scrub		
		-13.6	Forest	-8.2	Forest
				-2.5	Forest
				0.6	Forest
				1.2	Forest
				2.8	Forest
				2.8	Forest
				3.3	Forest
				16.6	Forest
				16.6	Forest
				17.8	Forest
				18.5	Forest
				21.2	Forest
				15.2	Built-up
				18.2	Built-up

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	10.9	0.8	0.0	0.1	11.0	42	-20.9	21.2
Grass	5.8	-1.2	-1.4	-0.1	6.1	8	-10.9	6.6
Weeds/Crop	8.2	1.1	-2.1	0.4	8.4	13	-9.3	14.9
Scrub	15.0	-13.9	-13.6	0.0	6.1	6	-20.9	-6.4
Forest	12.2	5.9	2.8	-0.1	11.1	13	-13.6	21.2
Built Up	16.8	16.7	16.7	NA	2.1	2	15.2	18.2

NA- Not applicable due to only two checkpoints

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

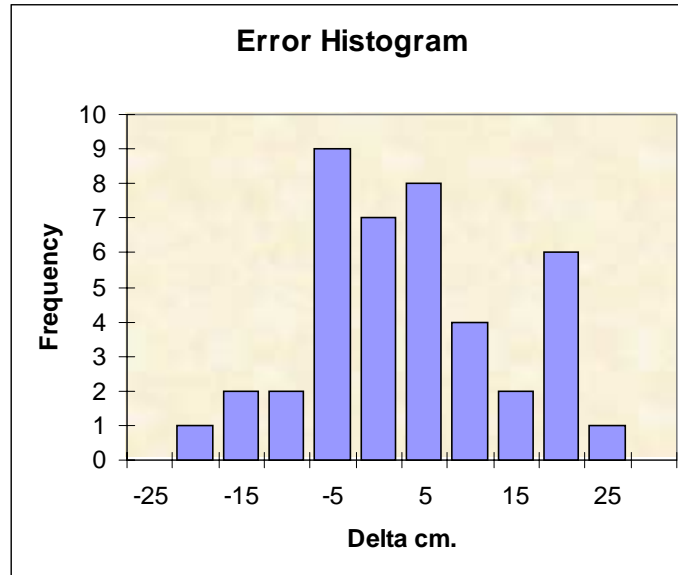


Figure 3