

LIDAR Accuracy Assessment Report—Wilson County

Wilson County

The preliminary checkpoint spreadsheets were received from NCGS on August 16, 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	25	All	
95	19.3	24	All	25
20	19.8	5	Grass	
16	23.7	4	Weeds/Crop	
12	32.1	3	Scrub	
36	13.3	9	Forest	
12	4.3	3	Built-up	

The LIDAR data for Wilson 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 number of checkpoints. Land class type “Scrub” is higher than average but when factored into the over all RMSE calculation, the mean is acceptable. Due to the small number of data checkpoints in some land cover types, the descriptive statistics in table 3 may not truly reflect their intended purpose. For example in the land cover type “Built-up” the median is greater than the mean which will cause the skew value to be high even though two of the values are very close to zero.

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Figure 1 illustrates the RMSE by specific land cover type.

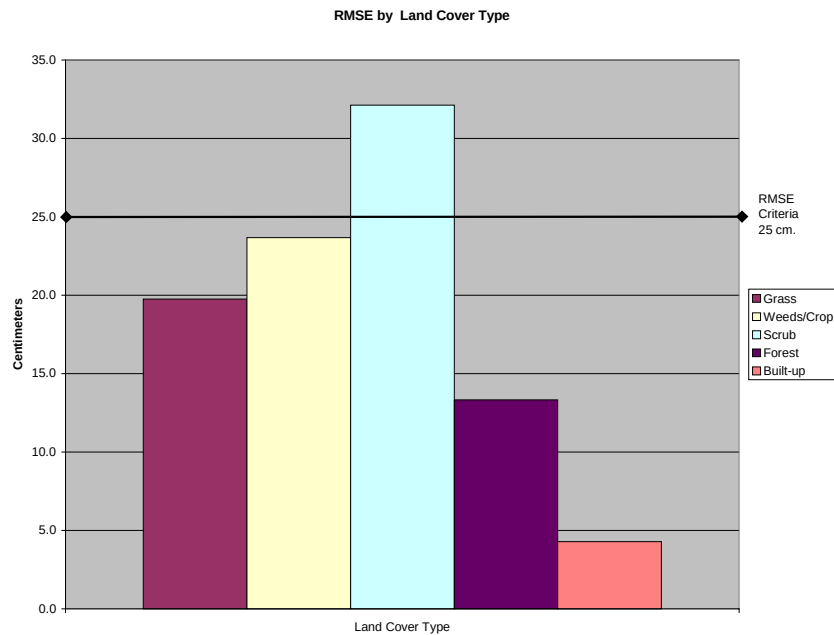


Figure 1

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

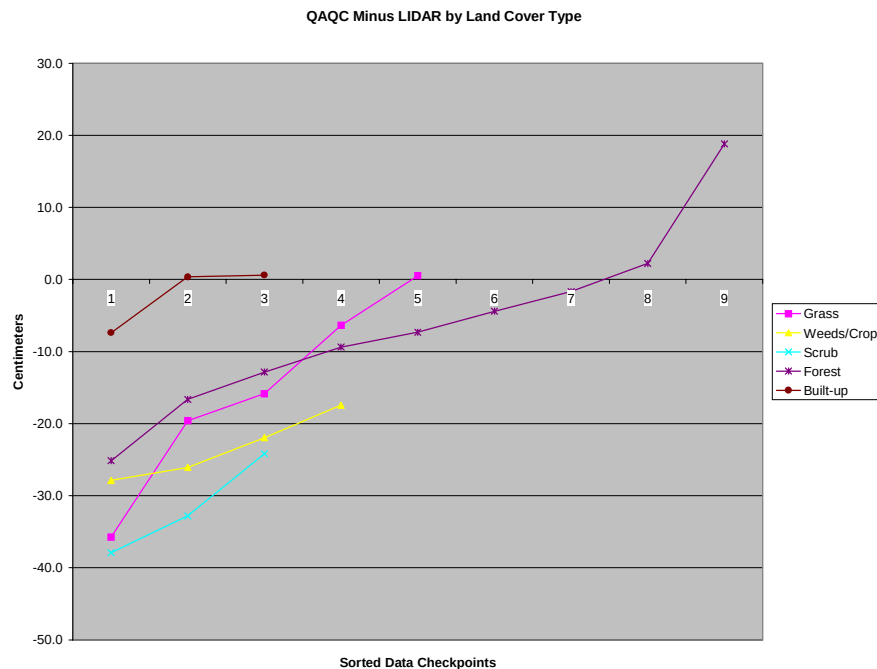


Figure 2

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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
-35.7	Grass
-19.6	Grass
-15.8	Grass
-6.3	Grass
0.5	Grass
-27.9	Weeds/Crop
-26.1	Weeds/Crop
-21.9	Weeds/Crop
-17.4	Weeds/Crop
-37.9	Scrub
-32.8	Scrub
-24.2	Scrub
-25.1	Forest
-16.6	Forest
-12.9	Forest
-9.4	Forest
-7.3	Forest
-4.4	Forest
-1.7	Forest
2.2	Forest
18.8	Forest
-7.4	Built-up
0.3	Built-up
0.6	Built-up

Table 3 illustrates the overall statistics for the checkpoint data.

Table 3. Overall Descriptive Statistics								
	RMSE (cm)	Average (cm)	Median (cm)	Skew	Std Dev (cm)	# of Points	Min (cm)	Max (cm)
Total	19.3	-13.7	-14.3	0.2	13.9	24	-37.9	18.8
Grass	19.8	-15.4	-15.8	-0.6	13.8	5	-35.7	0.5
Weeds/Crop	23.7	-23.3	-24.0	0.6	4.6	4	-27.9	-17.4
Scrub	32.1	-31.6	-32.8	0.7	6.9	3	-37.9	-24.2
Forest	13.3	-6.3	-7.3	0.7	12.5	9	-25.1	18.8
Built-up	4.3	-2.1	0.3	-1.7	4.5	3	-7.4	0.6