B.4 Digital Elevation Data Vertical Accuracy Classes

Table B.5 provides vertical accuracy examples and other quality criteria for 10 common Vertical Accuracy Classes. Table B.6 compares the 10 Vertical Accuracy Classes with contour intervals from legacy ASPRS 1990 and NMAS 1947 Standards. Table B.7 provides 10 Vertical Accuracy Classes with the recommended lidar point density suitable for each of them.

Table B.5 Vertical Accuracy/Quality Examples for Digital Elevation Data

Vertical Accuracy Class	Absolute Accuracy		Data Internal Precision (where applicable)		
	NVA $RMSE_V$ (cm)	VVA $RMSE_V$ (cm)	Within-Swath Smooth Surface Precision Max Diff (cm)	Swath-to-Swath Non-Vegetated RMS_{DZ} (cm)	Swath-to-Swath Non-Vegetated Max Diff (cm)
1-cm	≤ 1.0	As found	≤ 0.6	≤ 0.8	≤ 1.6
2.5-cm	≤ 2.5	As found	≤ 1.5	≤ 2.0	≤ 4.0
5-cm	≤ 5.0	As found	≤ 3.0	≤ 4.0	≤ 8.0
10-cm	≤ 10.0	As found	≤ 6.0	≤ 8.0	≤ 16.0
15-cm	≤ 15.0	As found	≤ 9.0	≤ 12.0	≤ 24.0
20-cm	≤ 20.0	As found	≤ 12.0	≤ 16.0	≤ 32.0
33.3-cm	≤ 33.3	As found	≤ 20.0	≤ 26.7	≤ 53.3
66.7-cm	≤ 66.7	As found	≤ 40.0	≤ 53.3	≤ 106.7
100-cm	≤ 100.0	As found	≤ 60.0	≤ 80.0	≤ 160.0
333.3-cm	≤ 333.3	As found	≤ 200.0	≤ 266.7	≤ 533.3

Table B.6 Vertical Accuracy of the ASPRS Positional Accuracy Standards for Digital Geospatial Data, Edition 2, Version 2 (2024) Compared to Legacy Standards

Vertical Accuracy Class	NVA RMSE$_V$ (cm)	Equivalent Class 1 Contour Interval per ASPRS 1990 (cm)	Equivalent Class 2 Contour Interval per ASPRS 1990 (cm)	Equivalent Contour Interval per NMAS (cm)
1-cm	1.0	3.0	1.5	3.29
2.5-cm	2.5	7.5	3.8	8.22
5-cm	5.0	15.0	7.5	16.45
10-cm	10.0	30.0	15.0	32.90
15-cm	15.0	45.0	22.5	49.35
20-cm	20.0	60.0	30.0	65.80
33.3-cm	33.3	99.9	50.0	109.55
66.7-cm	66.7	200.1	100.1	219.43
100-cm	100.0	300.0	150.0	328.98
333.3-cm	333.3	999.9	500.0	1096.49