

LIDAR

Light Detection and Range

Introduction:

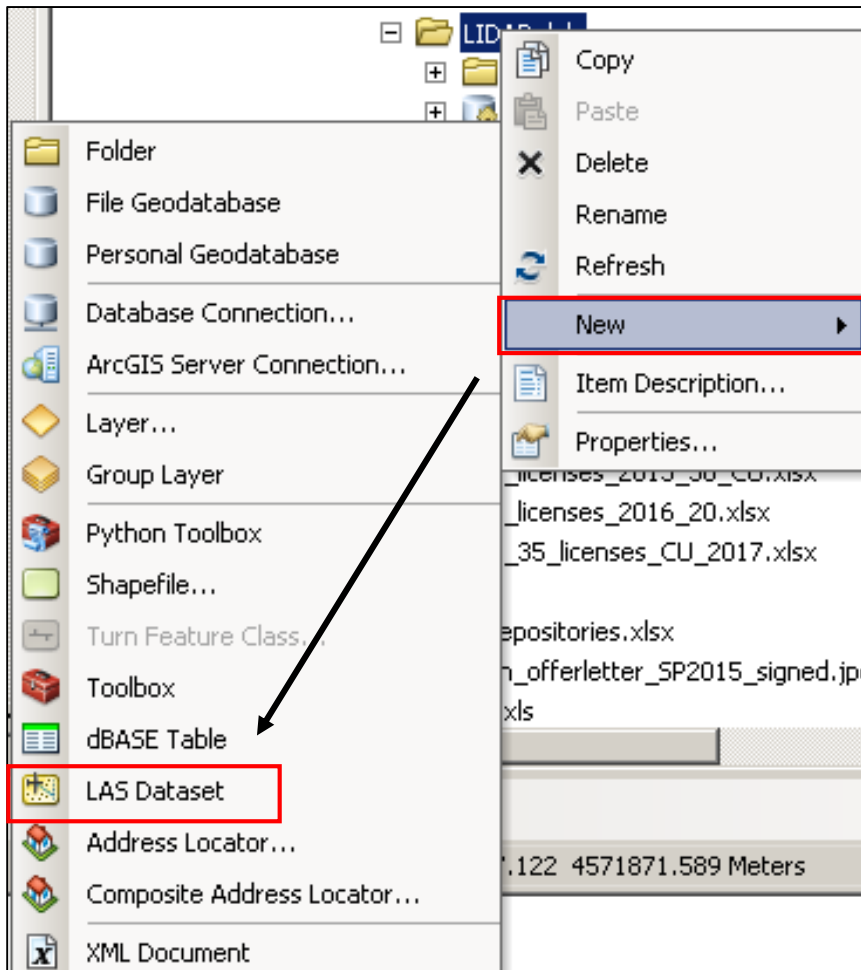
<https://www.youtube.com/watch?v=EYbhNSUUnIdU>

Basic Introduction to LIDAR data and technique:

<https://coast.noaa.gov/digitalcoast/training/intro-lidar.html>

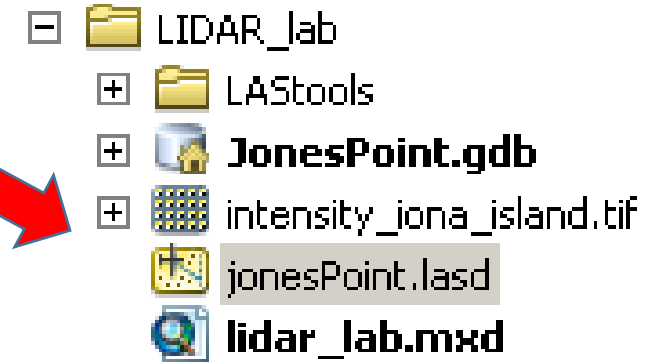
LIDAR data organization in ArcGIS

In ArcCatalog:



LAS Dataset (.lasd) in ArcGIS:

- stores reference to one or more LAS files on a disk;
- an industry-standard binary format for storing airborne lidar data
- allows to examine LAS files in their native format



LASD statistics

(right-click on newly created LSAD file and choose Properties → Statistics tab)

Statistics shows various parameters of LIDAR data, helps to determine data quality, conduct assessment and understand data.

The screenshot shows the 'LAS Dataset Properties' dialog box with the 'Statistics' tab selected. The 'Returns' table shows data for various return types. The 'Classification Codes' table shows data for various classification codes. The 'Classification Flags' table shows data for various flags. The 'Update' button is circled in red, and the 'Force recalculate' checkbox is unchecked. The text 'Statistics up to date.' is displayed below the 'Update' button.

Return	Point Count	%	Z Min	Z Max
First	1,103,191	74.56	-0.24	107.26
Second	249,460	16.86	-719.85	103.50
Third	98,782	6.68	0.07	99.04
Fourth	28,226	1.91	-0.01	87.43
Last	1,102,639	74.52	-719.85	103.34
Single	853,415	57.68	-0.24	103.34
First of Many	249,776	16.88	1.59	107.26

Name	Min	Max
Return No.	1	4
Intensity	1	7140
Class Code	1	25
Scan Angle	-22	20
User Data	0	0
Point Source	428	431

Classification	Point Count	%	Z Min	Z Max	Min Int...	Max Int...	Synthe...
1 Unassigned	483,925	32.71	-0.07	107.26	1	7140	0
2 Ground	478,647	32.35	0.00	87.70	1	7140	0
7 Noise	2,038	0.14	0.14	56.59	1	110	0
9 Water	195,378	13.20	-0.04	2.28	1	4676	0
10 Reserved	2,540	0.17	0.16	2.44	1	1456	0
11 Reserved	565	0.04	-719.85	105.79	1	196	0
17 Reserved	131,872	8.91	-0.10	105.69	1	4340	0

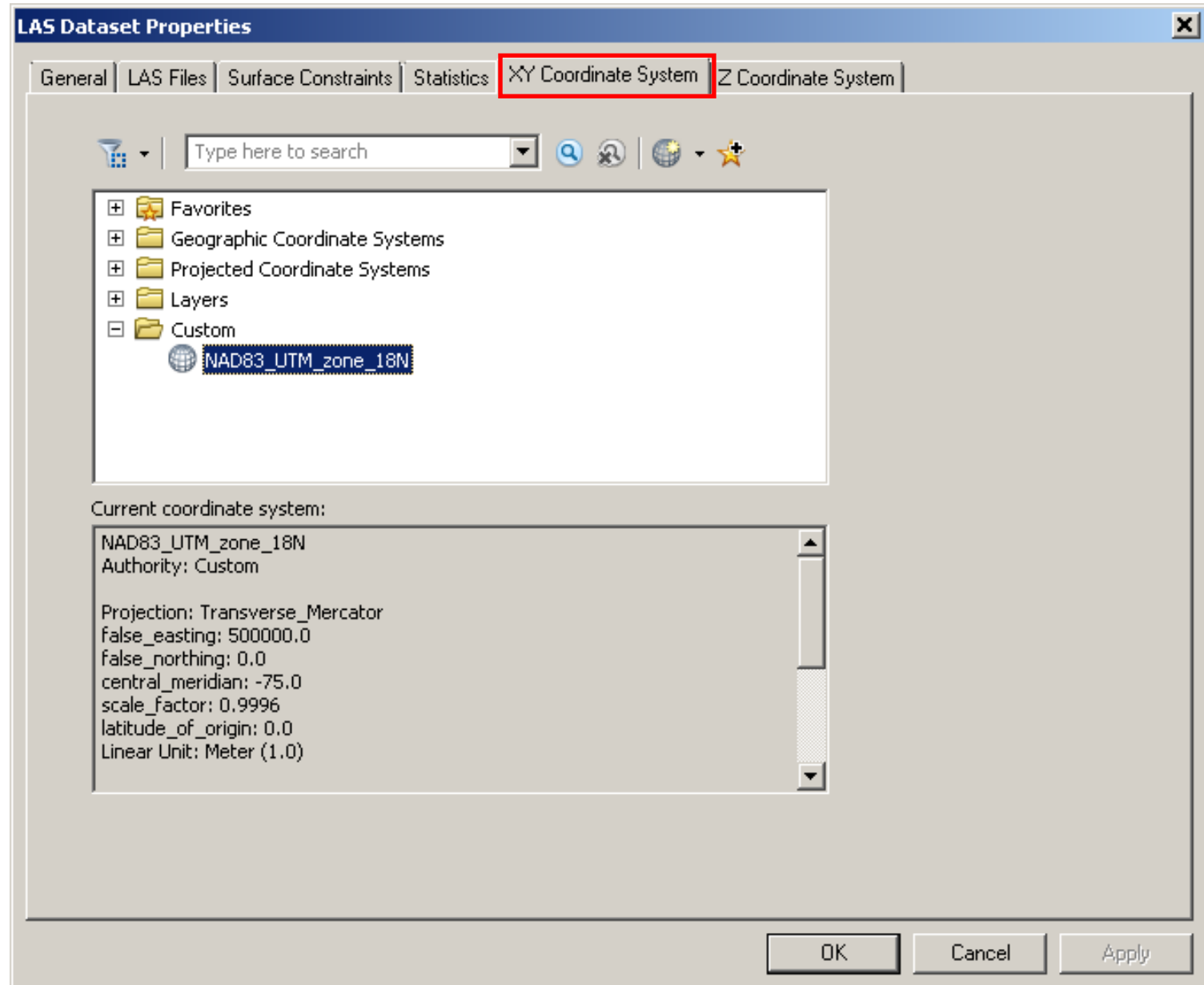
Name	Point Count	%
Model Key	0	0.00
Synthetic	0	0.00
Withheld	0	0.00

Force recalculate
Statistics up to date.

OK Cancel Apply

LASD spatial reference:

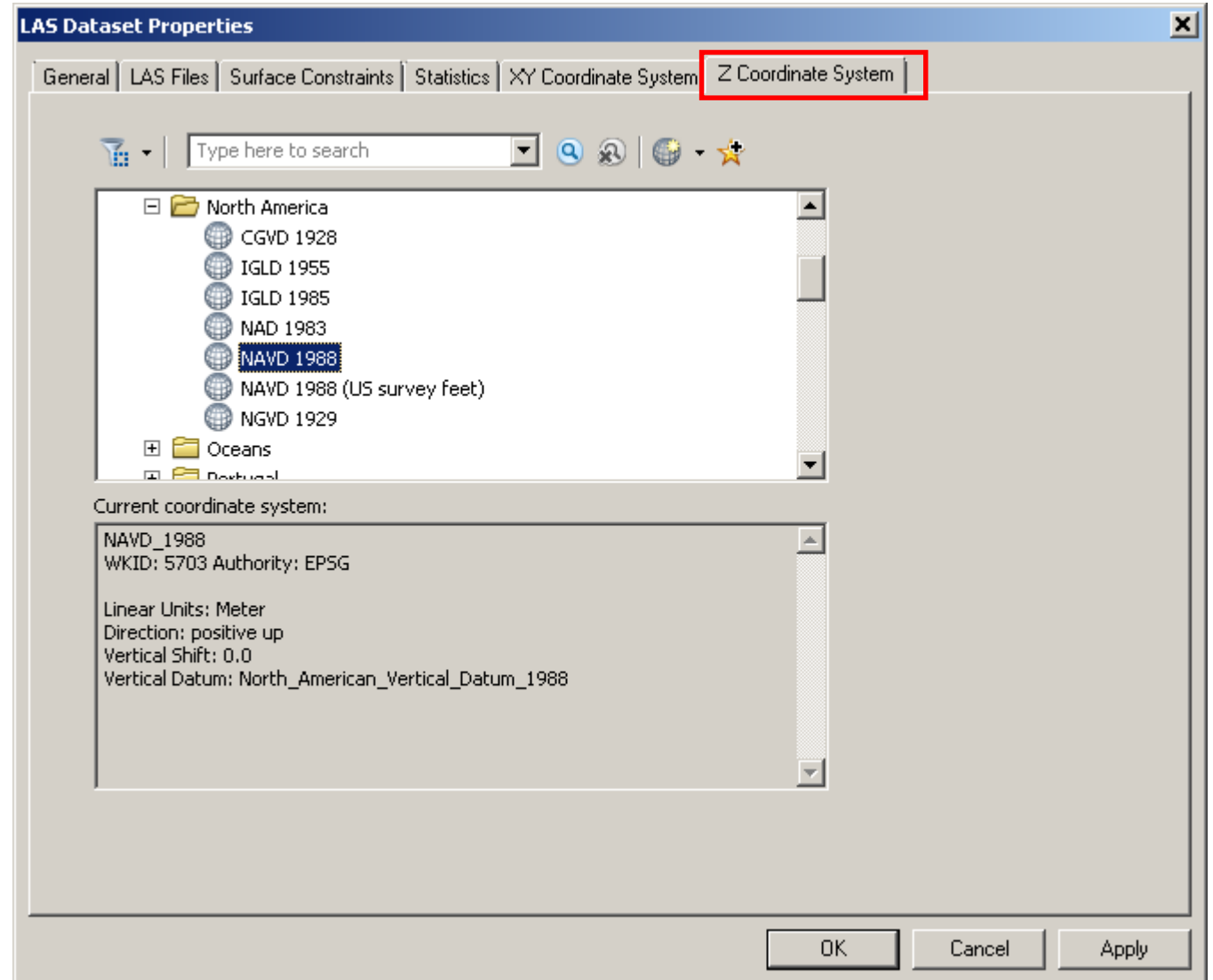
The spatial reference is based on the coordinate system of LAS files. In this case it is Projected Coordinate System, UTM, Zone 18N



LASD Z coordinate system:

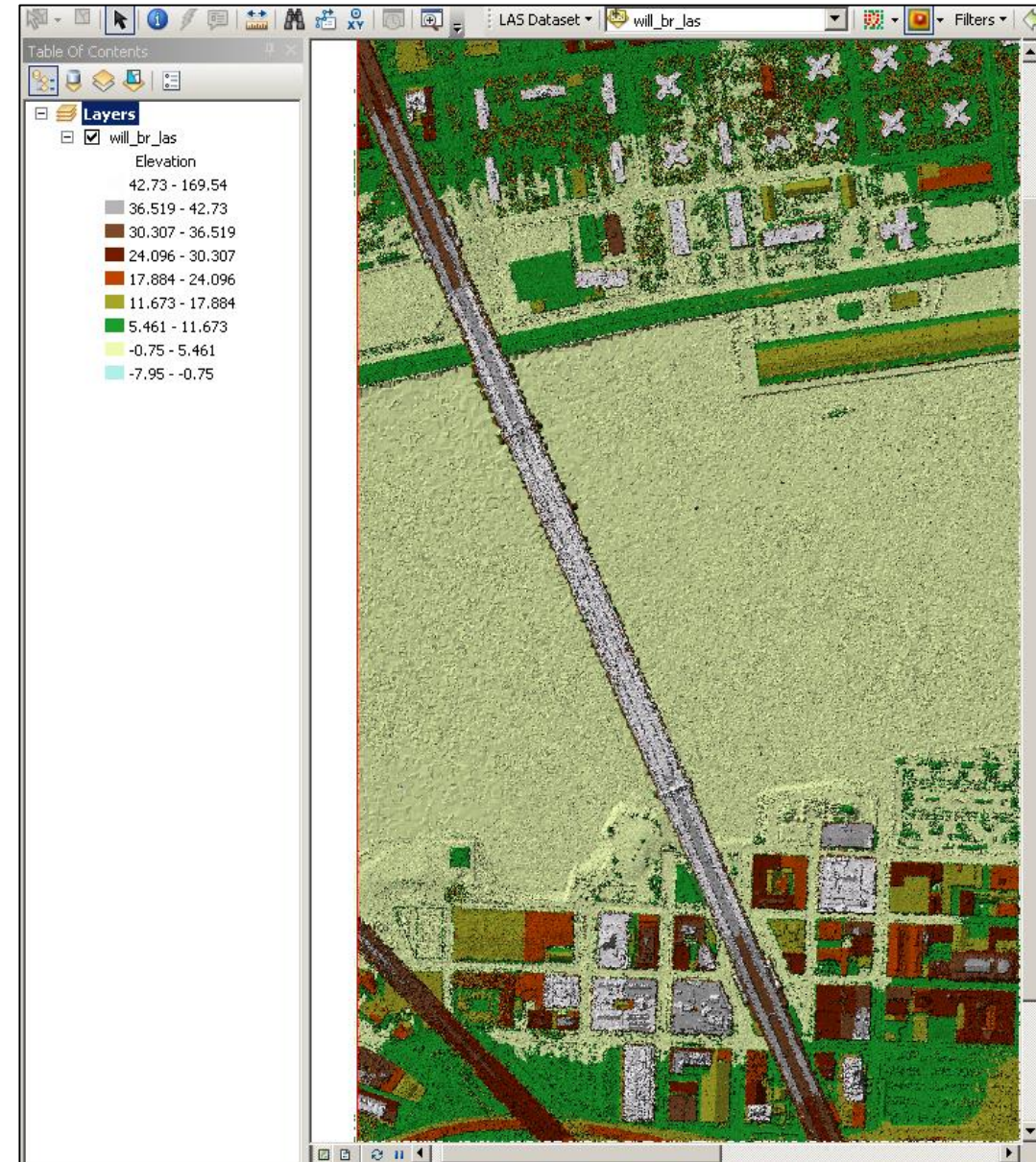
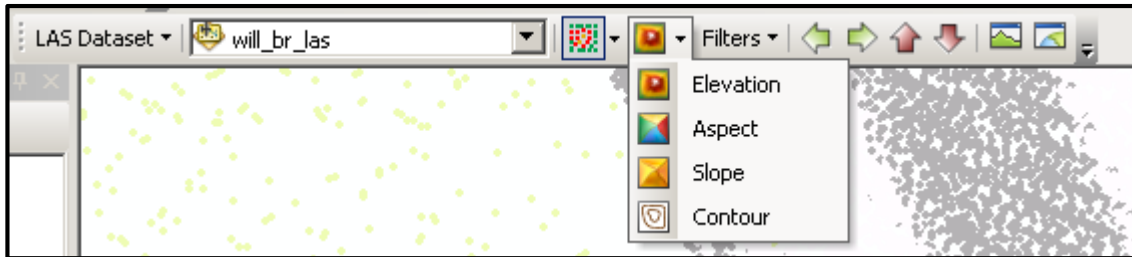
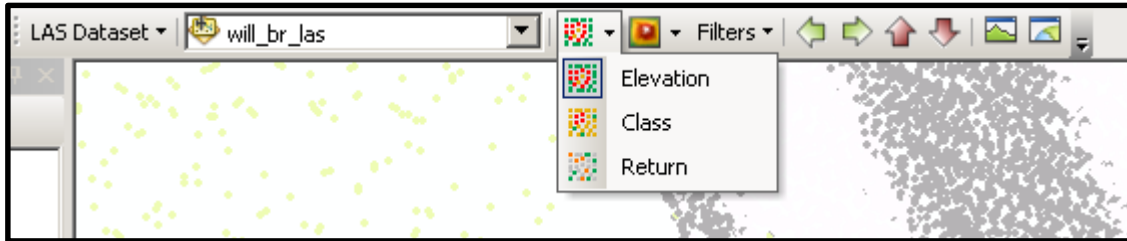
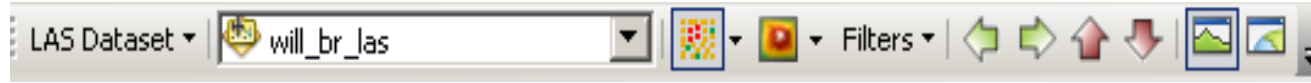
The Z coordinate system has been automatically set to **Vertical Coordinate Systems > North America > NAVD 1988**.

If it does not set up automatically from LAS files then you need to set it up. Read documentation of your LIDAR data!

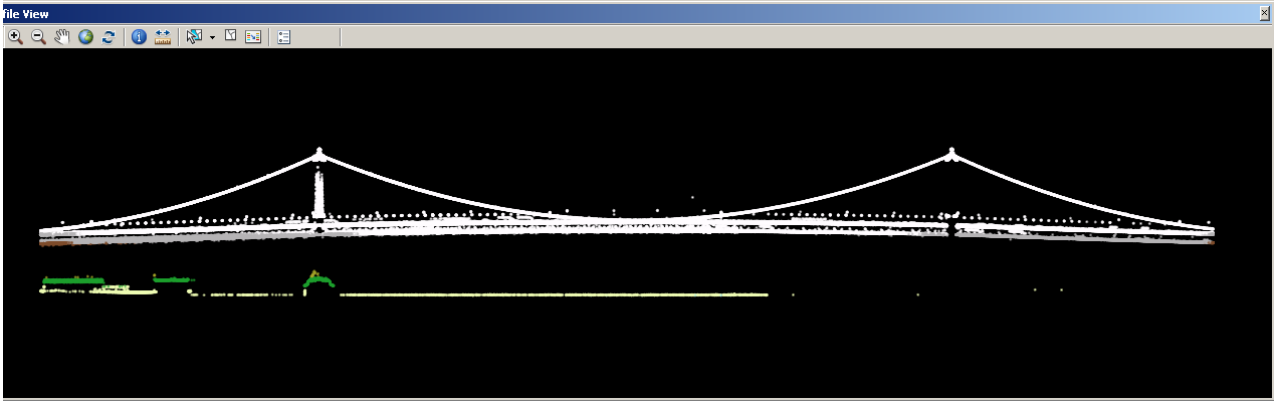
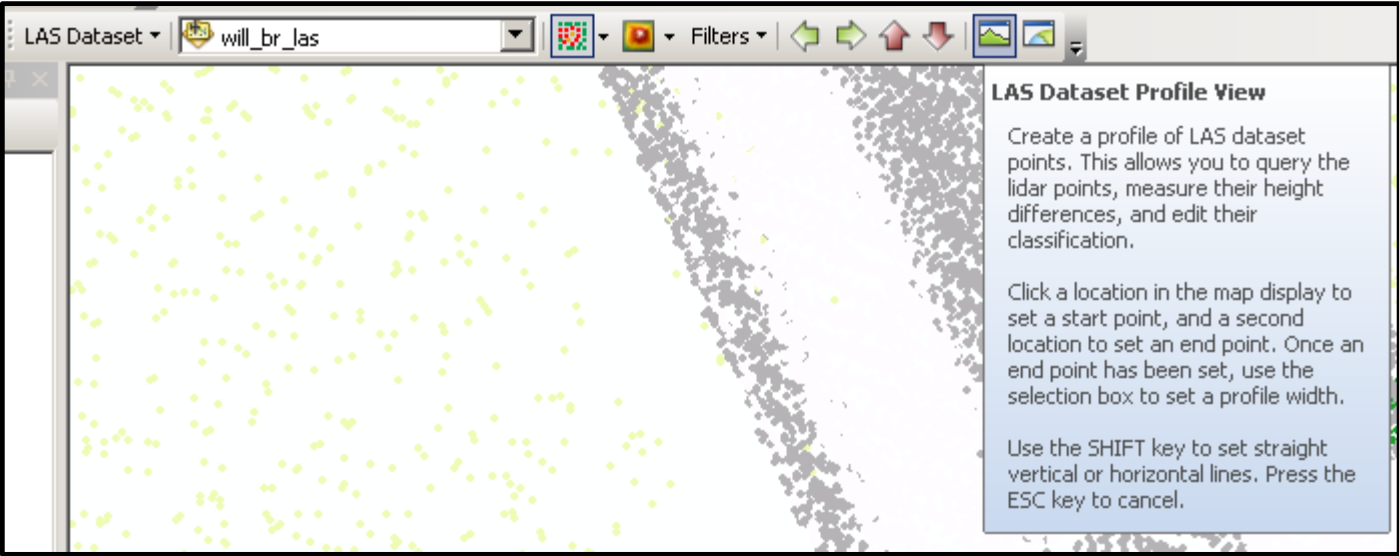


LAS Dataset Tools in ArcGIS:

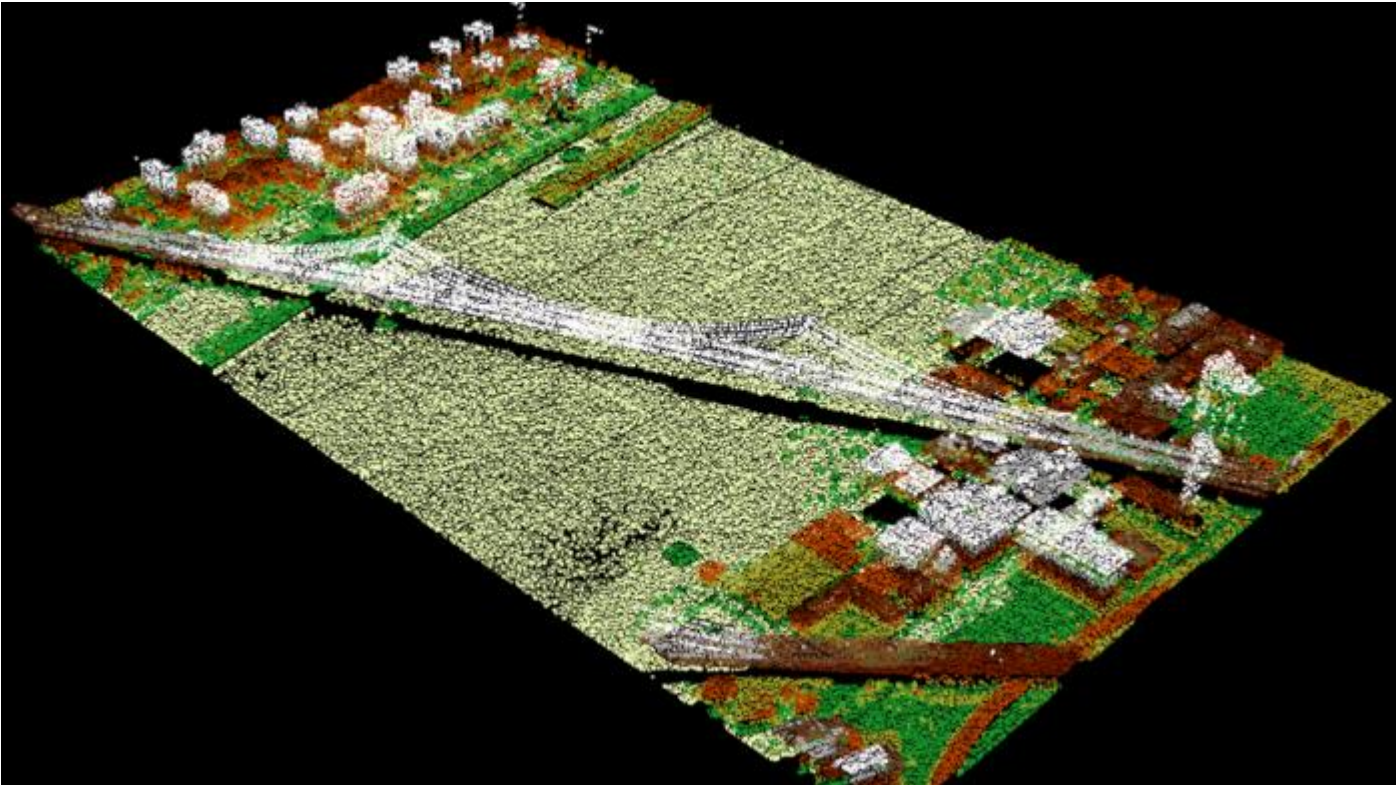
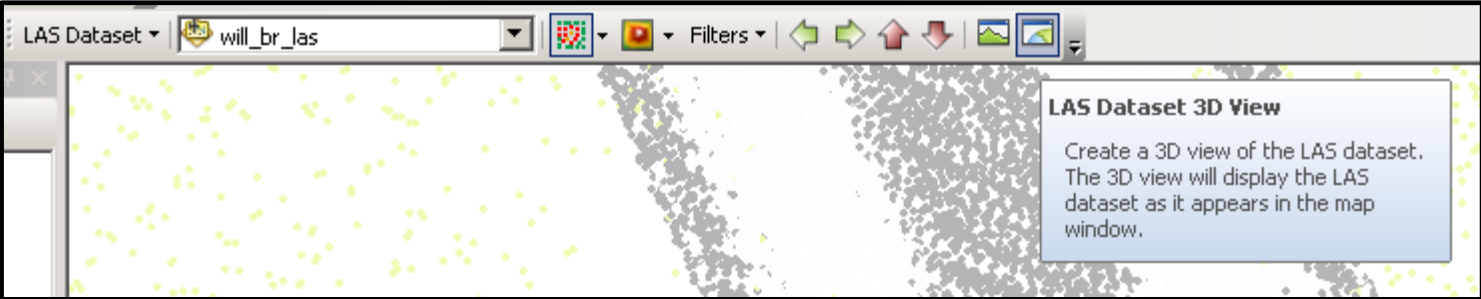
Customize → Toolbars → LAS Dataset



LAS Dataset Tools in ArcGIS:



LAS Dataset Tools in ArcGIS:



Data Conversion from LAS

ArcToolBox → 3D Analyst Tools → Conversion → From File → LAS to Multipoint

