



# Geoprocessing Sample Tools for Lidar Data Management

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# Content

- **Discuss and demonstrate 3D Sample Tools for lidar data management**
- **Implemented as custom GP tools**
- **Prototypes and utilities**
- **Often make their way into shipping product**
- **Available for download**
- **Easy to install and use**

# 3D Resource Center

The screenshot shows a web browser window displaying the ArcGIS Resources website. The address bar shows the URL <http://resources.arcgis.com/en/communities/3d/>. The page header includes the ArcGIS Resources logo, navigation links for ArcGIS Online, Sign In, and English, and the Esri logo. A blue navigation bar contains links for Home, Communities, Help, Blog, Forums, and Videos, along with a search box labeled "Search 3D". The main content area is titled "3D GIS" and features a "Communities" section. A featured article titled "Lidar support in ArcGIS" is displayed, accompanied by a 3D visualization of a river valley with green terrain. To the right, a "Quick Links" sidebar lists various resources, including "What's new", "3D Analyst Help", "Getting started with 3D GIS", "Other links", and "Related communities".

http://resources.arcgis.com/en/communities/3d/

ArcGIS Resources

ArcGIS Online Sign In English

esri

Home Communities Help Blog Forums Videos Search 3D

## 3D GIS

Communities

### Lidar support in ArcGIS

ArcGIS supports lidar data in the LAS file format and has implemented the LAS dataset specifically to support this format. The LAS dataset allows you to manage, display, and edit your LAS files. LAS data can also be added to and managed in a mosaic dataset.

[Read more](#)

### Quick Links

#### What's new

- ArcGIS Pro
- ArcGIS Pro and 3D Analyst

#### 3D Analyst Help

- 10.3 | 10.2 | 10.1 | 10.0

#### Getting started with 3D GIS

- What is 3D Analyst?
- Working with ArcGlobe and ArcScene

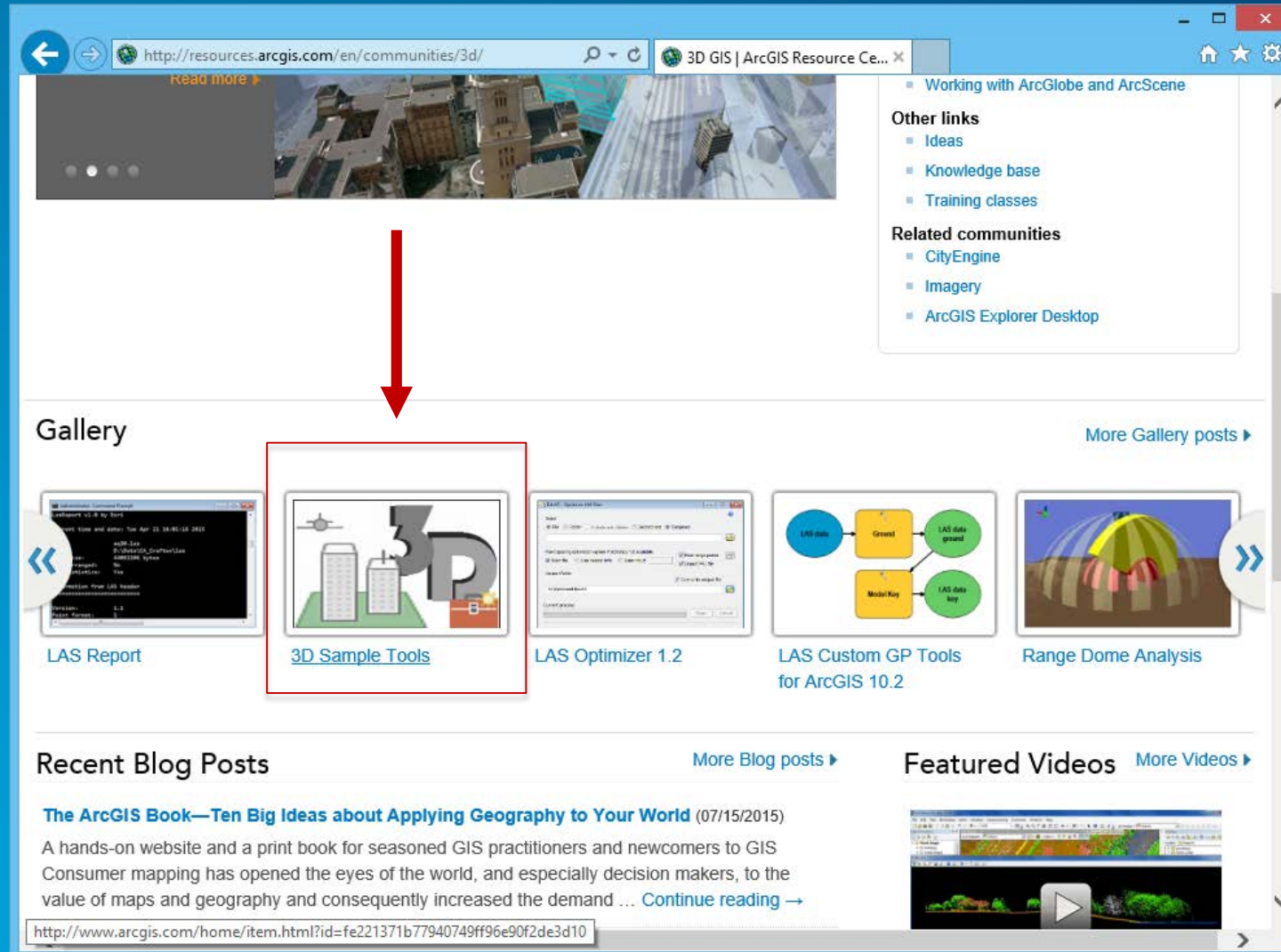
#### Other links

- Ideas
- Knowledge base
- Training classes

#### Related communities

- CityEngine
- Imagery
- ArcGIS Explorer Desktop

# Access Samples Through Gallery



The screenshot shows a web browser window at <http://resources.arcgis.com/en/communities/3d/>. The page features a navigation menu on the right with sections for "Other links" (Ideas, Knowledge base, Training classes) and "Related communities" (CityEngine, Imagery, ArcGIS Explorer Desktop). Below the menu is a "Gallery" section with a "More Gallery posts" link. The gallery contains five items: "LAS Report", "3D Sample Tools" (highlighted with a red box and a red arrow pointing from the top image), "LAS Optimizer 1.2", "LAS Custom GP Tools for ArcGIS 10.2", and "Range Dome Analysis". Below the gallery are sections for "Recent Blog Posts" and "Featured Videos". The "Recent Blog Posts" section features a post titled "The ArcGIS Book—Ten Big Ideas about Applying Geography to Your World" (07/15/2015) with a "Continue reading" link. The "Featured Videos" section shows a video player with a play button.

Gallery

More Gallery posts ▶

LAS Report

3D Sample Tools

LAS Optimizer 1.2

LAS Custom GP Tools for ArcGIS 10.2

Range Dome Analysis

Recent Blog Posts

More Blog posts ▶

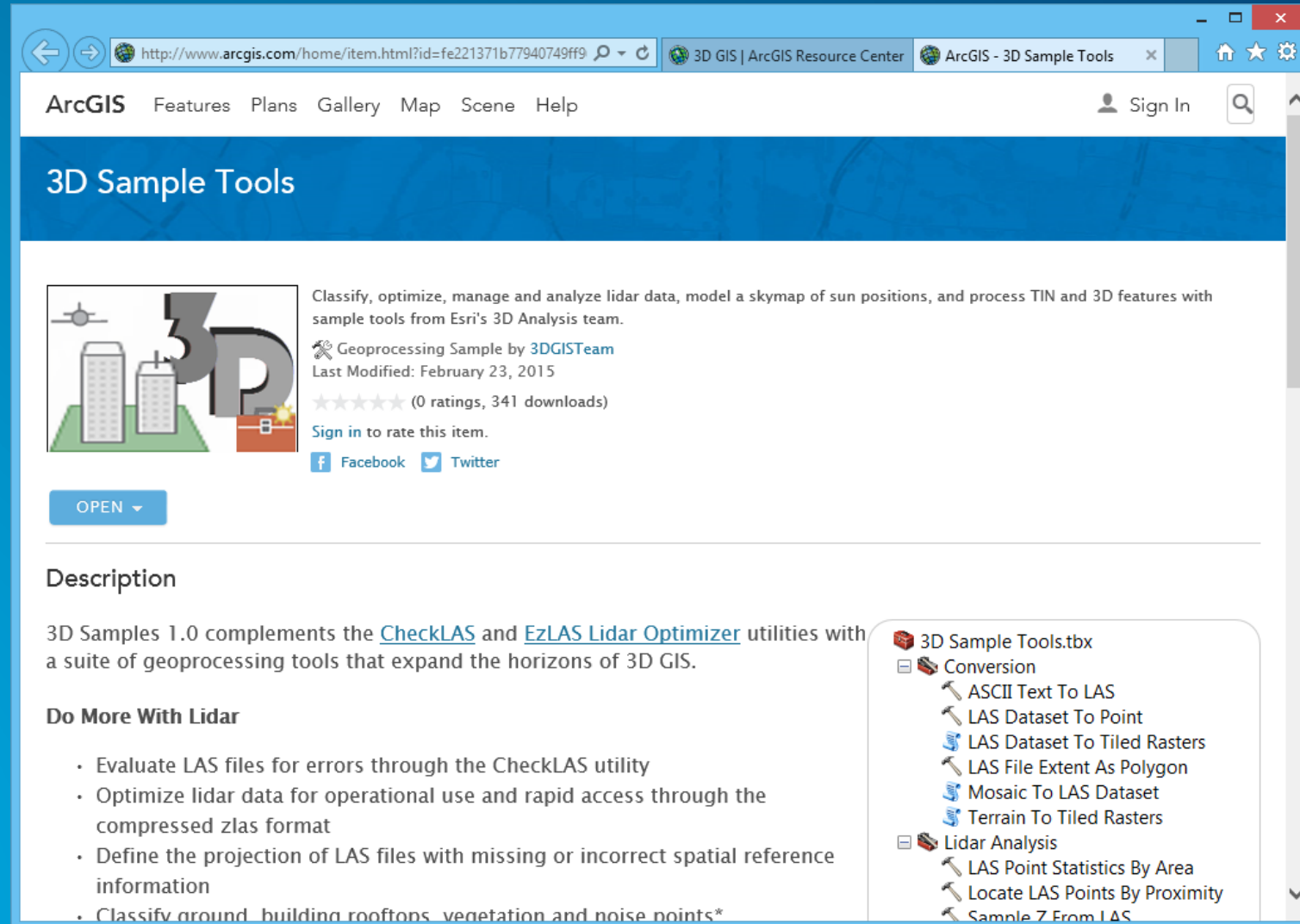
Featured Videos

More Videos ▶

**The ArcGIS Book—Ten Big Ideas about Applying Geography to Your World** (07/15/2015)  
A hands-on website and a print book for seasoned GIS practitioners and newcomers to GIS Consumer mapping has opened the eyes of the world, and especially decision makers, to the value of maps and geography and consequently increased the demand ... [Continue reading →](#)

<http://www.arcgis.com/home/item.html?id=fe221371b77940749ff96e90f2de3d10>


# 3D Sample Tools – for lidar and more



<http://www.arcgis.com/home/item.html?id=fe221371b77940749ff9> 3D GIS | ArcGIS Resource Center ArcGIS - 3D Sample Tools

ArcGIS Features Plans Gallery Map Scene Help Sign In

## 3D Sample Tools

 Classify, optimize, manage and analyze lidar data, model a skymap of sun positions, and process TIN and 3D features with sample tools from Esri's 3D Analysis team.

Geoprocessing Sample by [3DGISTeam](#)  
Last Modified: February 23, 2015

★★★★★ (0 ratings, 341 downloads)

Sign in to rate this item.

Facebook Twitter

OPEN ▾

### Description

3D Samples 1.0 complements the [CheckLAS](#) and [EzLAS Lidar Optimizer](#) utilities with a suite of geoprocessing tools that expand the horizons of 3D GIS.

### Do More With Lidar

- Evaluate LAS files for errors through the CheckLAS utility
- Optimize lidar data for operational use and rapid access through the compressed zlas format
- Define the projection of LAS files with missing or incorrect spatial reference information
- Classify around building rooftops, vegetation and noise points\*

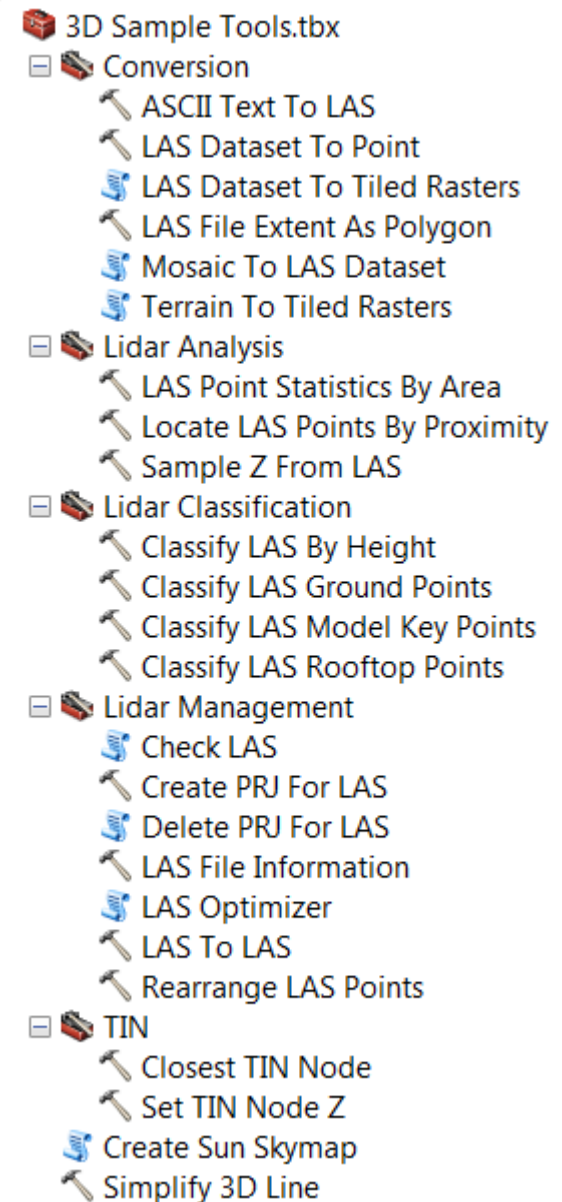
3D Sample Tools.tbx

- Conversion
  - ASCII Text To LAS
  - LAS Dataset To Point
  - LAS Dataset To Tiled Rasters
  - LAS File Extent As Polygon
  - Mosaic To LAS Dataset
  - Terrain To Tiled Rasters
- Lidar Analysis
  - LAS Point Statistics By Area
  - Locate LAS Points By Proximity
  - Sample Z From LAS



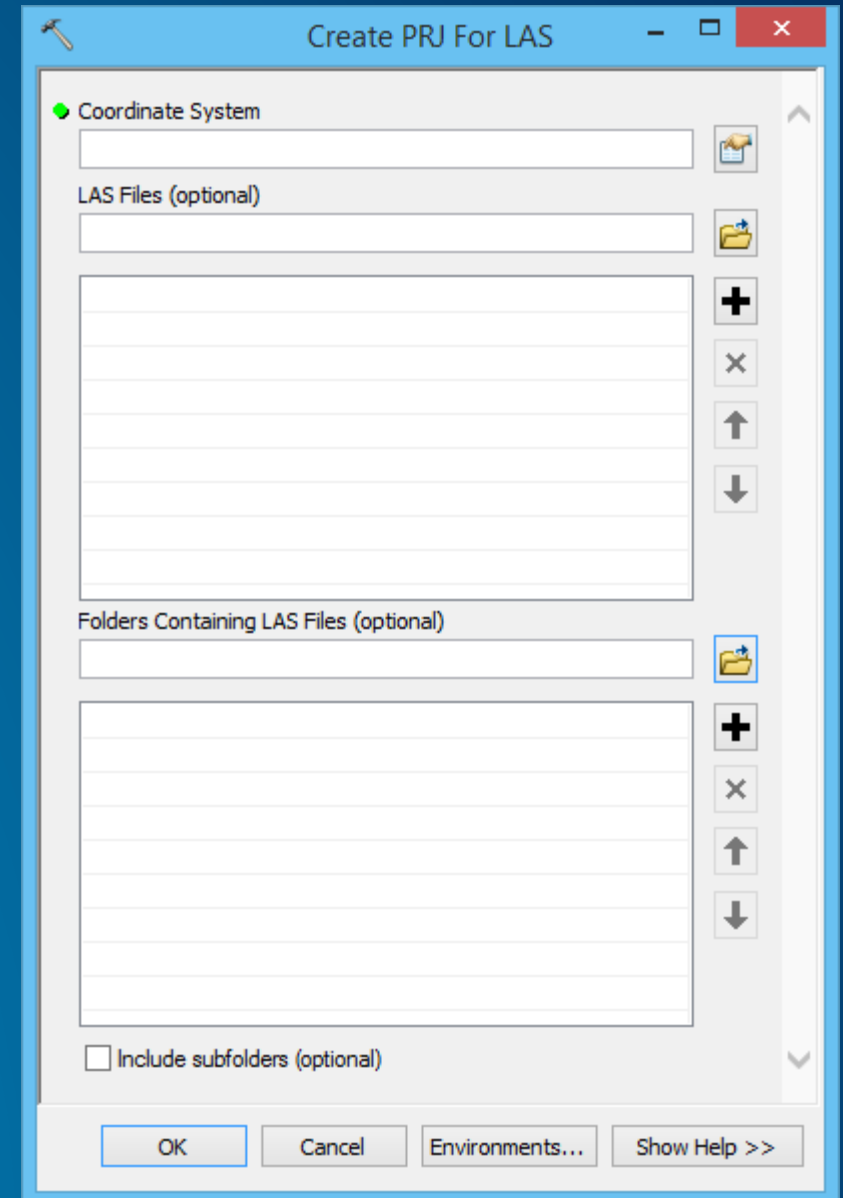
# 3D Sample Tools

- Conversion
- Analysis
- Classification
- Management



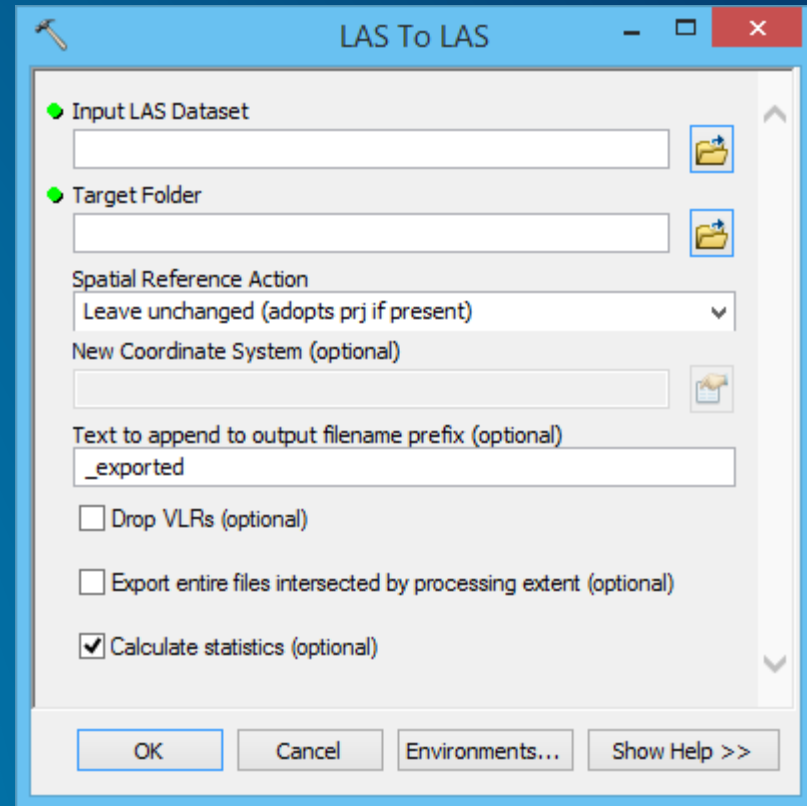
# Create PRJ For LAS

- Add or override spatial reference for LAS files
- Creates sidecar PRJ
- Similar to shapefile or image
- Easily create multiple PRJ for folder full of LAS



# LAS To LAS

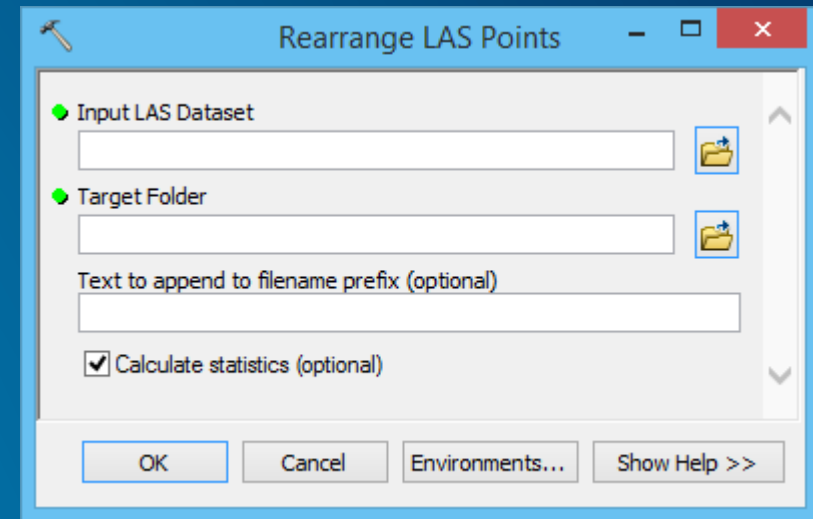
- Copy files (subset)
- Clip extent
- Filter based on class code or return
- Define projection
- Project



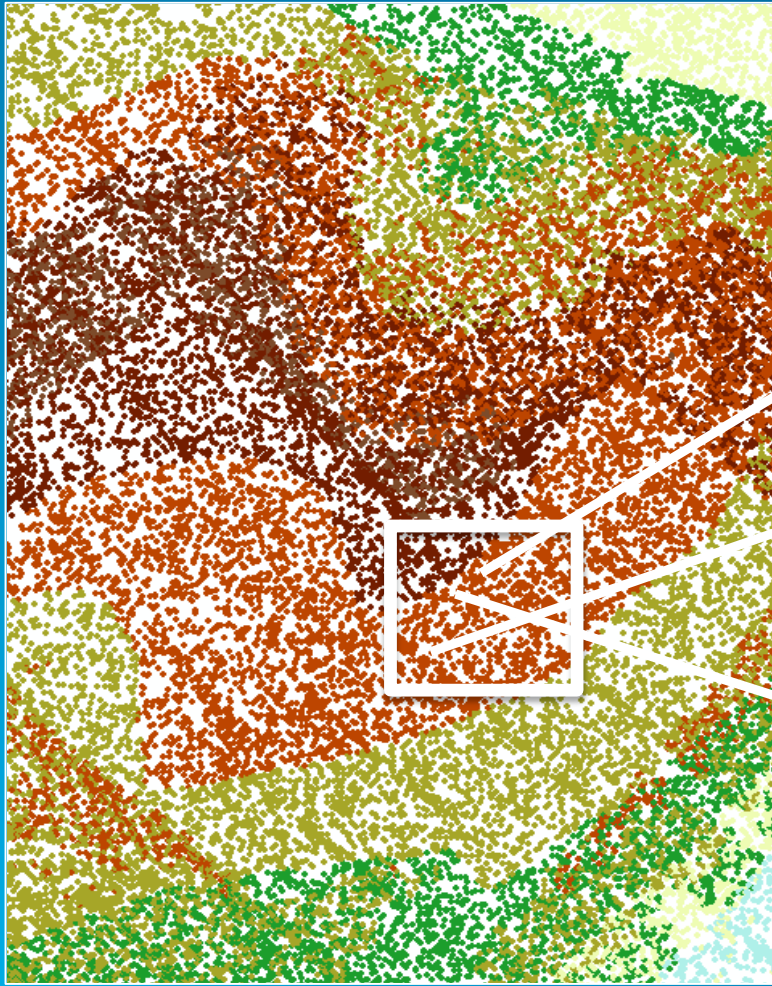


# Rearrange LAS Points

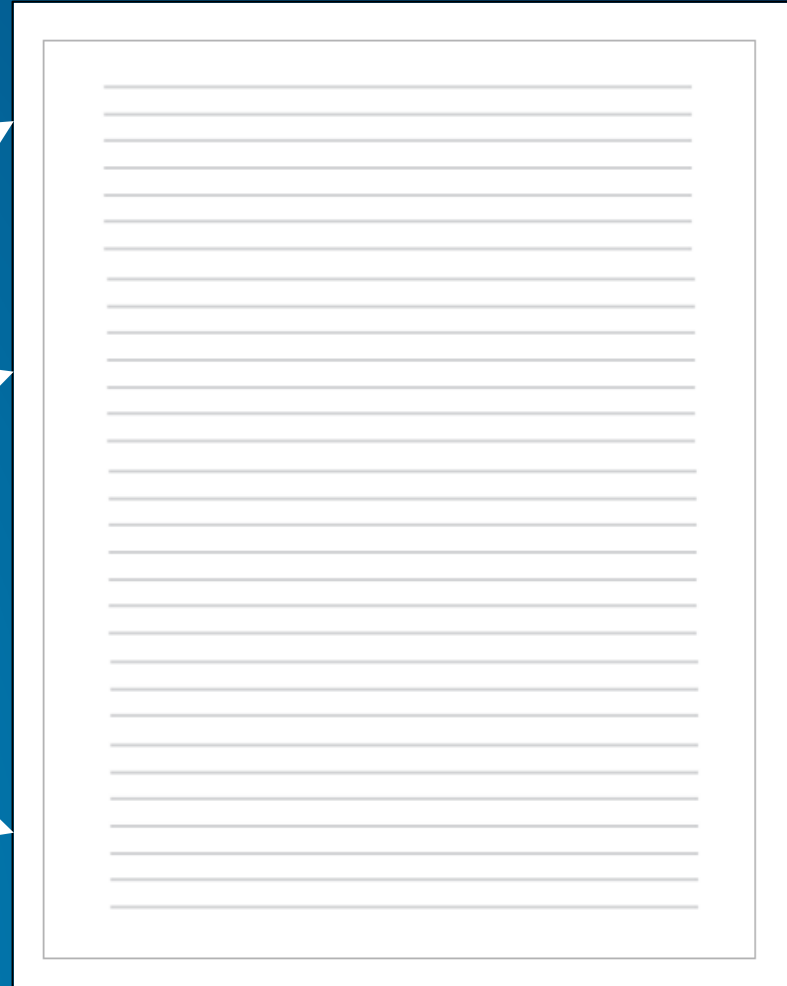
- Physical reordering of point records
- Based on spatial clustering
- Improves spatial query efficiency
- Especially on larger files (100MB +)



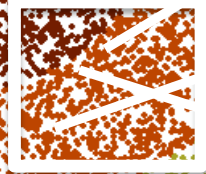
# Rearranging Point Records



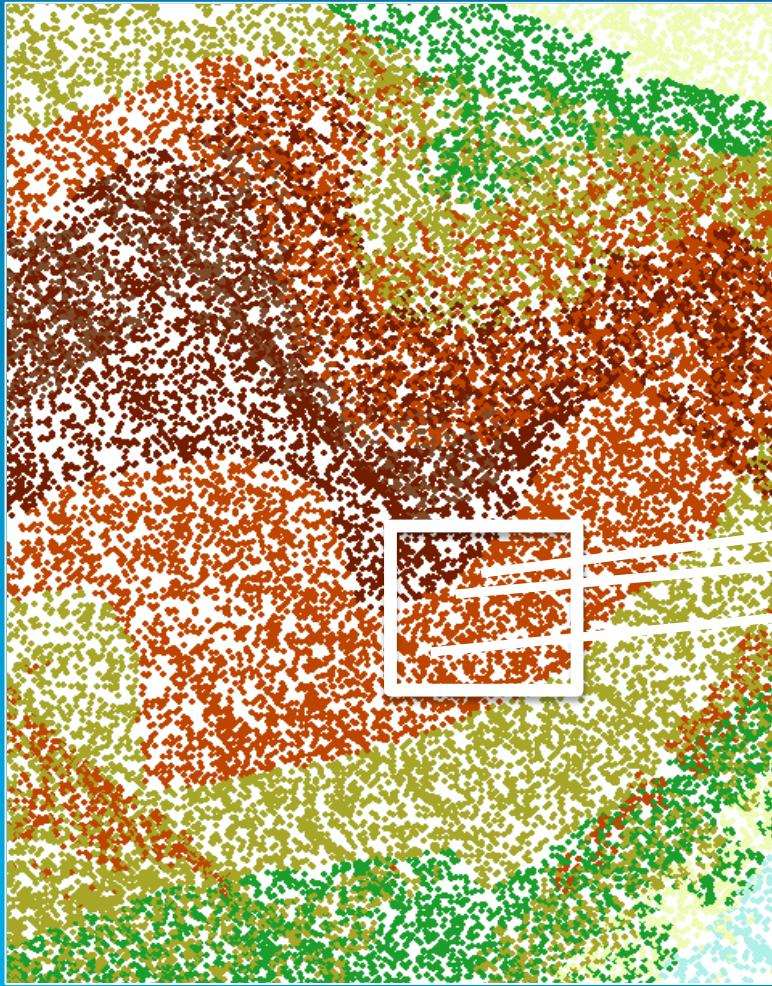
Spatial distribution of points



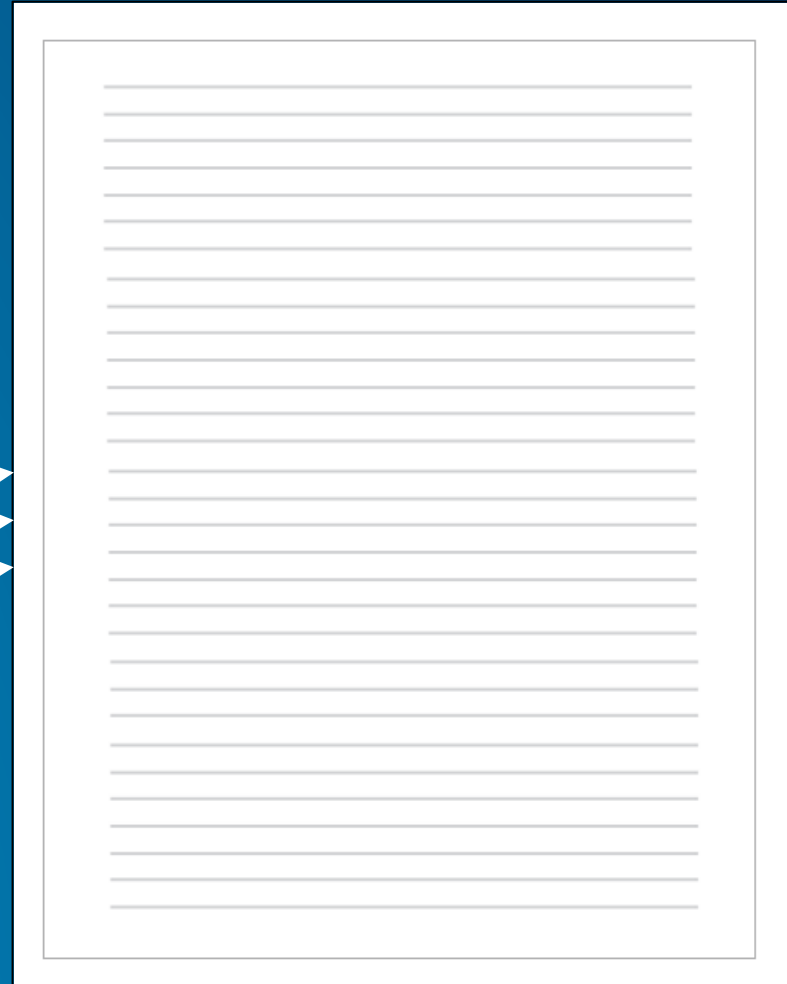
Physical location in file



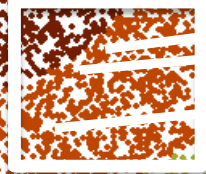
# Rearranging Point Records



Spatial distribution of points

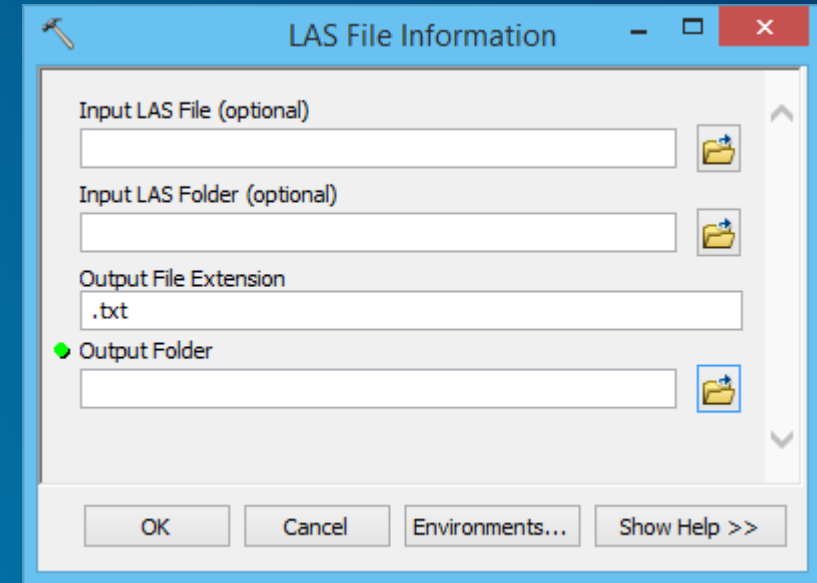


Physical location in file



# LAS File Info

- LAS file version, point format
- Num points
- XYZ extent
- Spatial reference
- Returns
- Class codes
- Etc.
- Written to text file next to LAS



## Updates in Pro and other ArcGIS Apps

- **Create PRJ For LAS is option on Create LAS Dataset tool**
- **LAS To LAS is available as Extract LAS**
  - Enhanced to support irregular clip boundary polygon
- **Rearrange LAS is option on Extract LAS tool**
- **Classify LAS By Height, Locate LAS By Proximity, LAS Point Statistics By Area added to Pro 1.0 and ArcGIS 10.3.1**
- **Ground classification coming in Pro 1.2 and ArcGIS 10.4**



**Thank You!**

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Understanding our world.