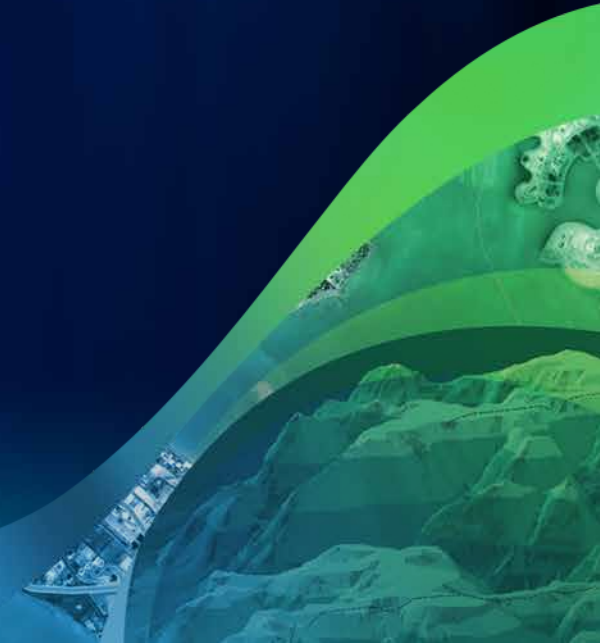




ArcGIS 10.1 Lidar Workshop

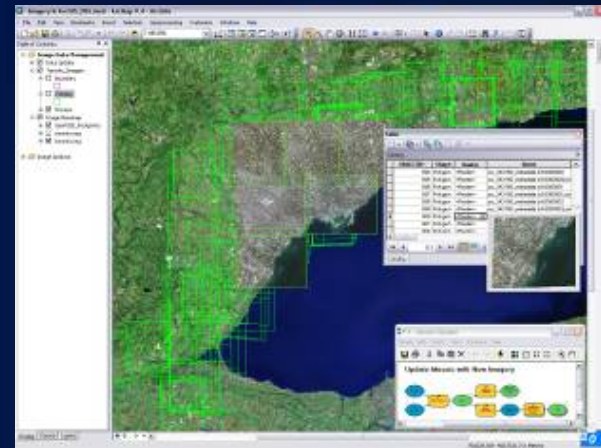
Lidar and the Mosaic Dataset

Presentation 4



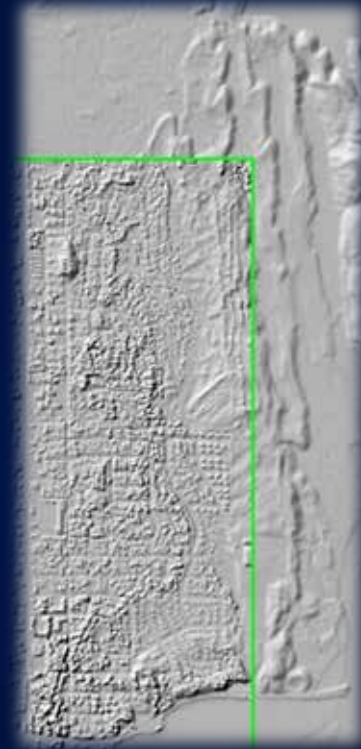
What is the Mosaic Dataset?

- A geodatabase data model used to catalog, process, visualize and share your collections of imagery and lidar data
- Support for **NEW at 10.1**
 - LAS files
 - LAS datasets
 - Terrain datasets
- Indirect data management
- Unlimited size*
- Provides dynamic rasterization, mosaicking, and on-the-fly processing



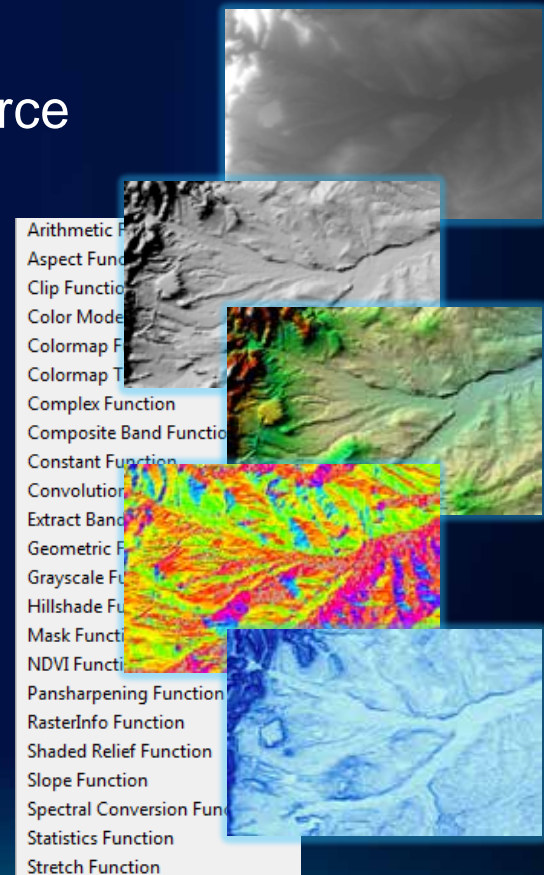
Dynamic Mosaicking and Rasterization

- Display multi-resolution data together
- Mosaicking rules
 - Control the order of display
 - By attribute
 - Closest to center
 - Ensure best data is always displayed
 - Can be controlled by user
- Queries
 - Refine selection of data



On-The-Fly Processing

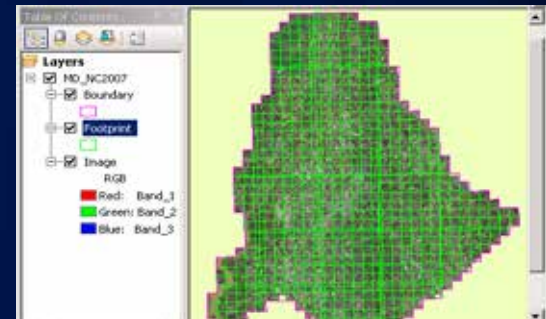
- Data is processed as it is accessed
- Create multiple products from one source
- Processing for elevation
 - Hillshade
 - Shaded Relief
 - Aspect
 - Slope
 - Convolution Filters
- Define processing functions
 - On each item
 - On entire collection



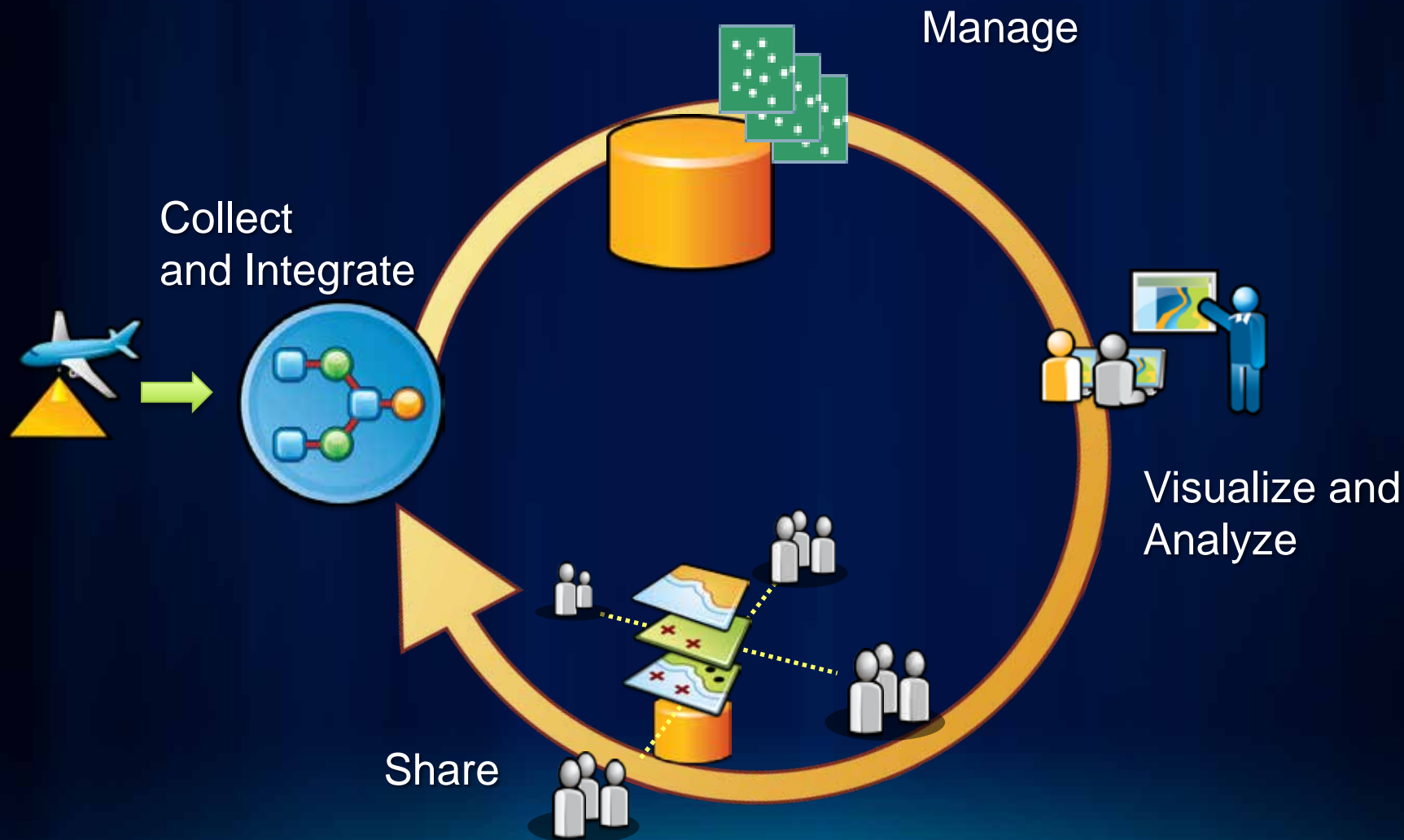
Using a Mosaic Dataset

- As a catalog
 - Selection/query
 - Add selected images to map
 - View data and metadata
 - Time aware
- As an image
 - Seamless display
 - Export a raster dataset
 - Perform pixel-based analysis
 - Use as an input to geoprocessing tool

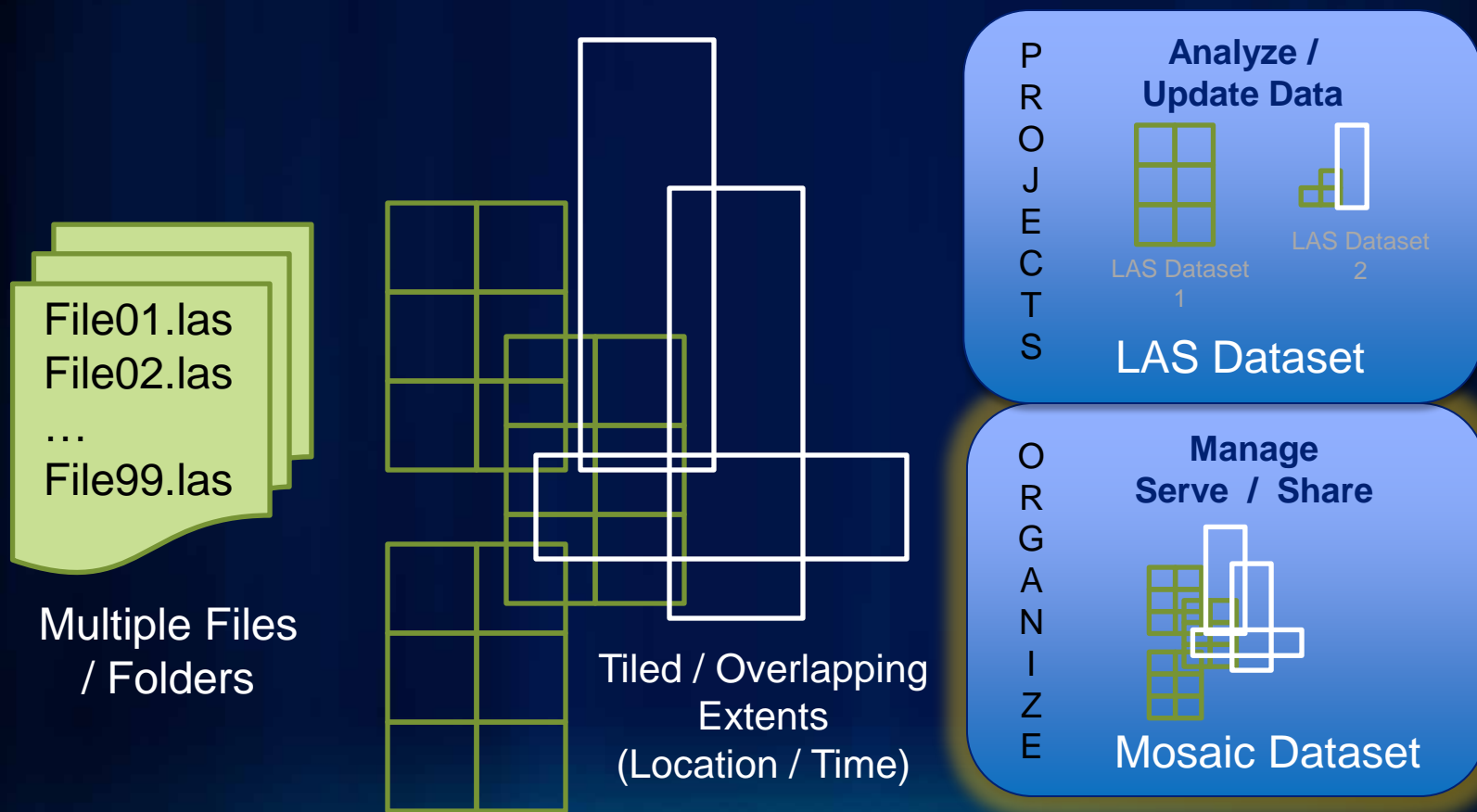
OBJ	Raster	Name	Min	Max	Low	HighPS	Category
1	<Raster>	op2008_59515_N	0	6	1	2	Primary
2	<Raster>	op2008_59516_N	0	6	1	2	Primary
3	<Raster>	op2008_59517_N					
4	<Raster>	op2008_59518_N					
5	<Raster>	op2008_59519_N					



The Lidar Workflow in ArcGIS



Overview of LAS Support in ArcGIS 10.1



Benefits of Managing with the Mosaic Dataset

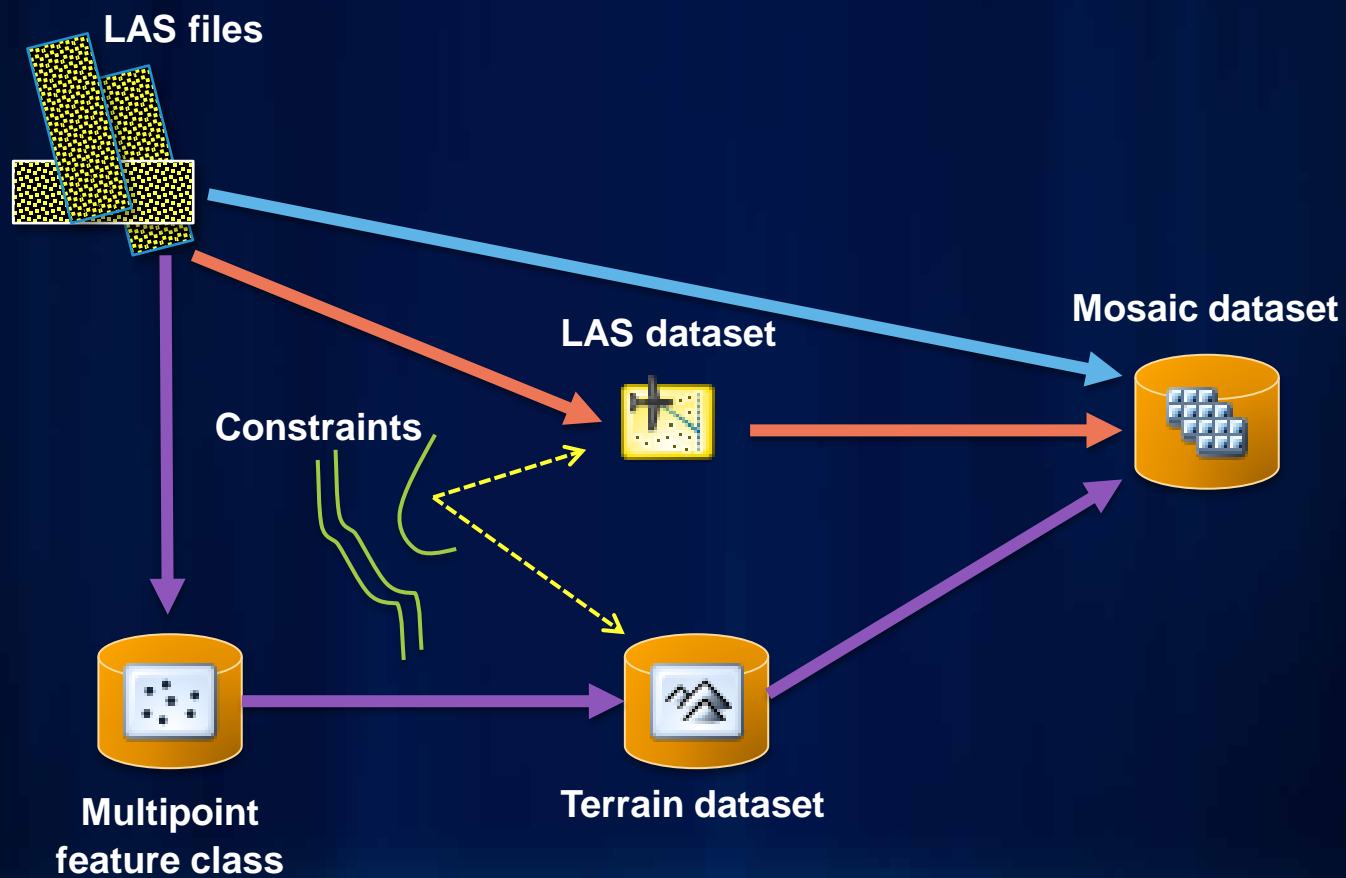
- Store multiple collections and projects
- Store variety of elevation data
 - Topographic or bathymetric
 - Point or raster
- Unlimited size
- Provide access to all data
 - As raster
 - As source data
 - Share internally and online

Building a Mosaic Dataset

- Store in a geodatabase
 - Build with geoprocessing tools
 - Automation with models or Python
- Simple workflow
 1. Create mosaic dataset
 2. Add imagery
 3. Optionally, edit properties and functions
- Can interactively edit and view in ArcMap
 - All layers are displayed
 - Edit and add fields in table window

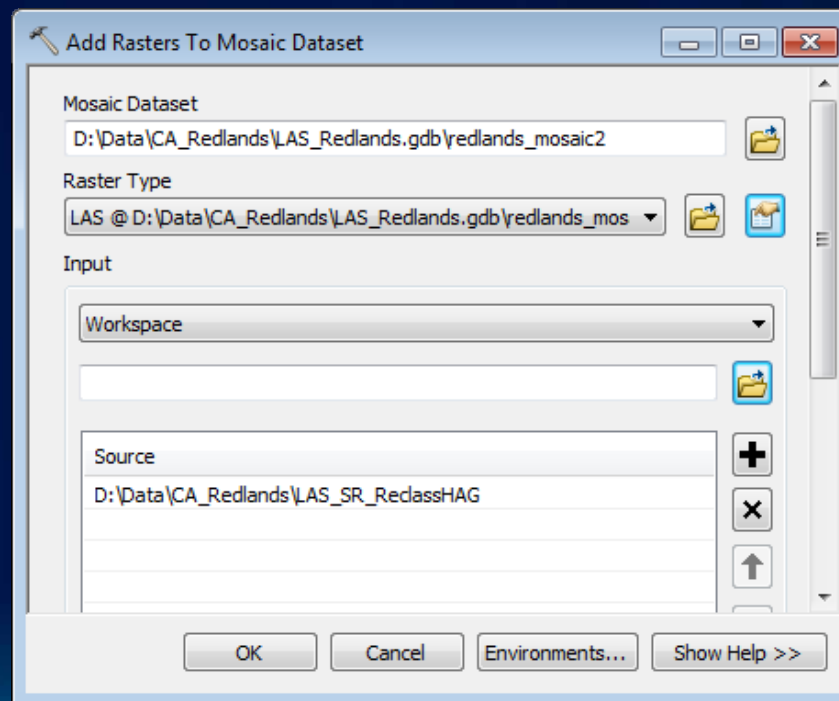


Adding Lidar to a Mosaic Dataset



Mosaic Dataset – Adding Lidar

- Lidar sources treated as raster type
 - LAS
 - LAS Dataset
 - Terrain Dataset



LAS Type Properties

Raster Type Properties

General Properties LAS Functions

Input Properties

Return types: Any First Second Third Fourth ...

Data type: Las Data Z

Class types: Any 0. Never Classified 1. Unclassified 2. Ground 3. Low Vegetation 4. Medium Vegetation 5. High Vegetation 6. Building 7. Noise Low Point

Output Properties

Pixel size (Required): 10

Binning

Cell aggregation type: Maximum

Void filling: None

Maximum width (blank or 0 - no limit):

Triangulation

Z factor: 1

Cache folder: D:\Data\CA_Redlands\LAS_Redlands.C

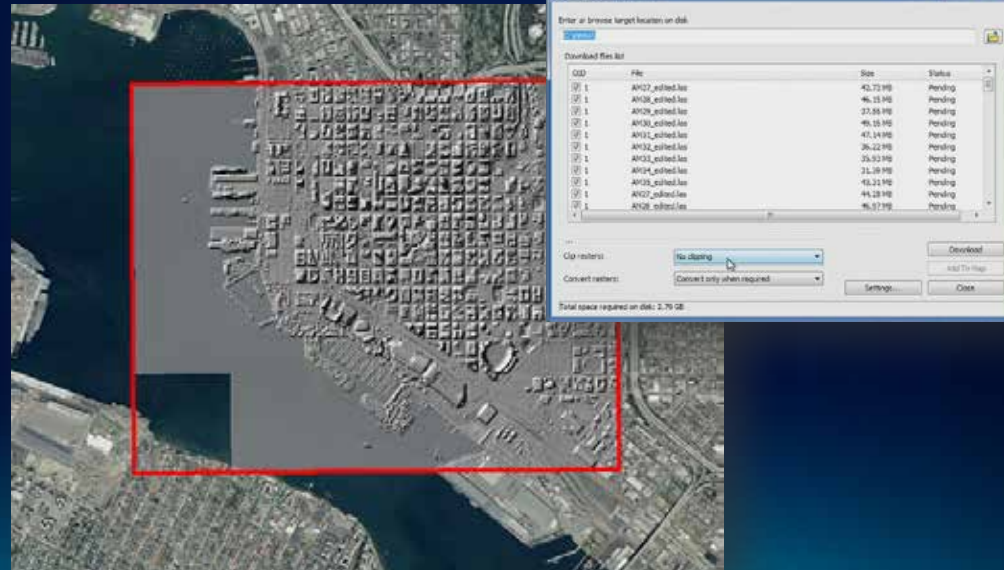
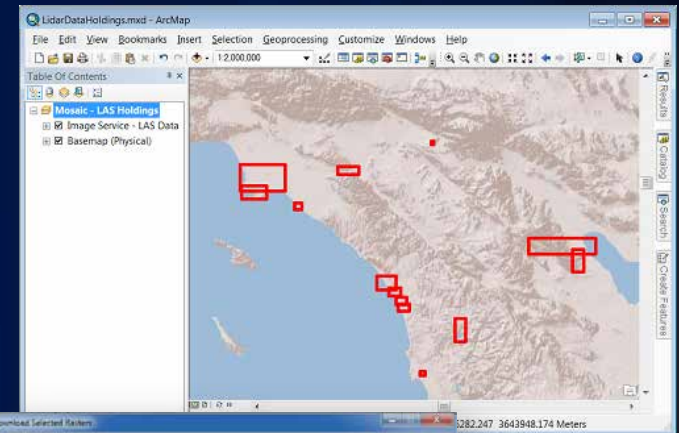
Number of cached surfaces: 10

Treat each folder as a dataset

OK Cancel Apply

Sharing Lidar Data

- Share as image services
- Easy to
 - Access
 - Discover
 - Download



Sharing as an Image Service

- Similar functionality as local mosaic dataset
- Access as a catalog
 - Select/download selected images
 - Time aware
- Access seamless mosaic
- REST
- WCS/WMS

Elevation Service – Download

The screenshot shows the ArcMap interface with the 'Download Selected Rasters' dialog box open. The dialog box displays a list of files to be downloaded, including their IDs, file names, sizes, and current status. A context menu is also visible over the 'Elevation Service' layer in the Table of Contents, with the 'Data' option selected, which has opened a sub-menu where 'Download Selected Rasters...' is highlighted.

Download Selected Rasters

Enter or browse target location on disk:
D:\Download_Data\

Download files list:

OID	File	Size	Status
<input checked="" type="checkbox"/> 1	22761770.las	499.08 KB/499...	Done
<input checked="" type="checkbox"/> 2	22781770.las	7.01 MB/7.01 MB	Done
<input checked="" type="checkbox"/> 3	22801770.las	16.34 MB	Downloading...
<input checked="" type="checkbox"/> 4	22801772.las	3.02 MB	Pending
<input checked="" type="checkbox"/> 5	22821770.las	29.44 MB	Pending
<input checked="" type="checkbox"/> 6	22821772.las	15.34 MB	Pending
<input checked="" type="checkbox"/> 7	22821774.las	56.53 KB	Pending
<input checked="" type="checkbox"/> 8	22841772.las	25.52 MB	Pending
<input checked="" type="checkbox"/> 9	22841774.las	1.72 MB	Pending

Clip rasters: No clipping
Convert rasters: Convert only when required

Total space required on disk: 98.89 MB

Download Selected Rasters
Opens the Download Selected Rasters window. This dialog allows you to download the selected items of the dataset.

2278156.905 1770568.299 Feet

Create LAS Dataset from Mosaic Dataset

- Download the toolset from ArcGIS Online
- Input: Mosaic dataset layer
- Output: LAS dataset
- Uses all or a selection
- Can link to source LAS files or create a local copy



LAS Dataset Tools

A collection of geoprocessing tools designed for the LAS Dataset. Geoprocessing Sample by 3DGISTeam (last modified: January 6, 2013) [View Details](#) (0 ratings, 13 downloads)

Sign In to rate this item.

Facebook Twitter

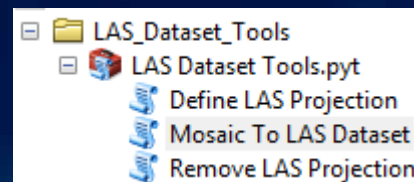
Open ▾

Description

This sample contains a Python toolbox (*.pyt) that features the following geoprocessing tools:

- **Define LAS Projection:** Defines the coordinate system for one or more LAS files in an auxiliary *.prj file that resides alongside the LAS file and shares its name. The LAS file is not modified, and any internally stored spatial reference information is preserved, but the LAS dataset will recognize the projection information in the PRJ file before that found in the LAS header.
- **Remove LAS Projection:** Removes the auxiliary *.prj file associated with one or more LAS files.
- **Mosaic to LAS Dataset:** Creates a LAS dataset using LAS files referenced by a mosaic dataset. If a mosaic layer is provided, its selections will be honored. This tool is useful in cases where the mosaic dataset provides a repository of LAS files, and only a subset of those files are needed for further analysis.

For any questions, please contact kduri@esri.com.



Exercise

In this exercise, you will:

- Create a mosaic dataset and add lidar data
- View as:
 - Bare earth
 - With surface features
 - As a color shaded relief
- Interact with analysis tool and create surface difference
- Query and download