

## ArcGIS Pro: Working with Lidar Data

ArcGIS Pro 2.9.3

Welcome to the Essential GIS Task Sheet Series. This series supplements the Iowa State University Extension and Outreach Geospatial Technology Training Program's workshops and short courses by providing quick and easy instructions for performing a variety of mapping, data science, analysis and data visualization tasks.

For this tutorial you will be processing lidar (light detection and ranging) data from an area near Ledges State Park in Boone, Iowa. Lidar is a remote sensing technique similar to radar, however lidar uses light waves instead of sound waves to create more accurate and detailed measurements. You will be downloading several LAS lidar files and using ArcGIS Pro tools to convert them into a single raster image. To learn how to source your own Iowa lidar data, we suggest reading the task sheet *Downloading Iowa Lidar Data* - [GISTP 0016](#).

### 1. Getting Started

- To download the data used in this task sheet, navigate to: <https://go.iastate.edu/91K6IM>
- When the download is complete, you will need to unzip the folder in order to access the files in ArcGIS Pro.
- Open ArcGIS Pro. Create a new project by clicking **Map** under the **New** column in the start page.
- Next, click the **Insert** tab on the ribbon and select **Add Folder**. Choose the folder **GISTP0013** from step **1b** in the dialog window that opens and press **OK**.

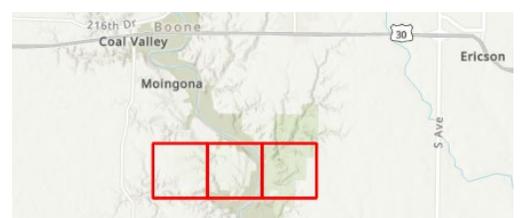
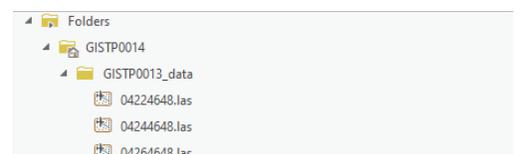
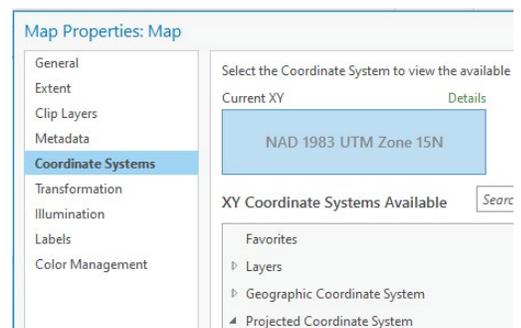
#### Project Templates

##### Blank Templates



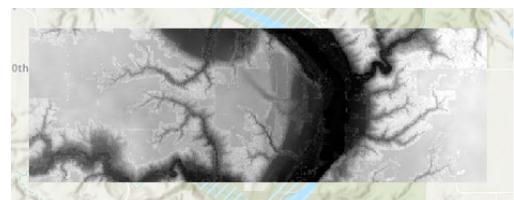
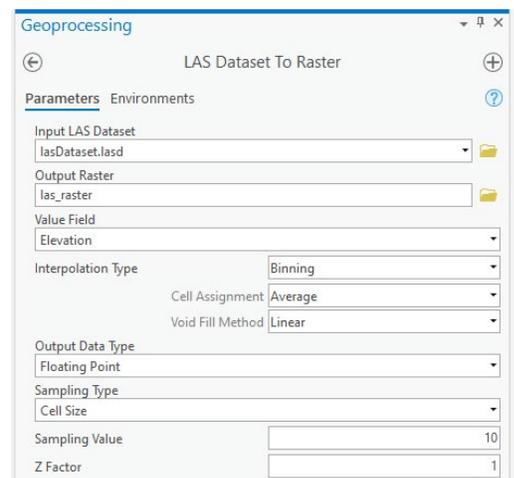
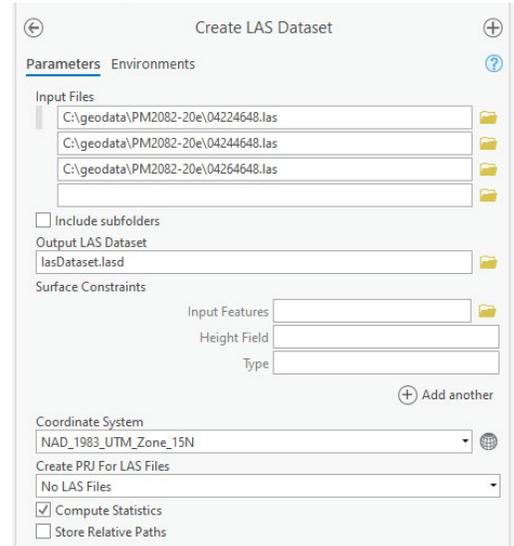
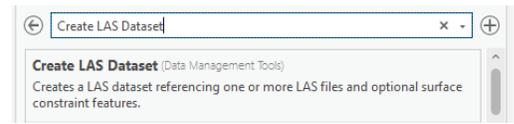
### 2. Setting Coordinate System and Adding LAS Files

- Right-click on **Map** in the **Contents** pane and select **Properties**.
- In the **Map Properties** window, select the **Coordinate Systems** tab. Inside the **XY Coordinate Systems Available** box, expand **Projected Coordinate System** -> **UTM** -> **NAD 1983** and select **NAD 1983 UTM Zone 15N**. Click **OK** to close the properties window. *Note: The LAS files from GeoTREE do not have a default coordinate system and will not appear in their proper location without this step.*
- In your **Catalog** pane, expand the folder you added in step **1d** and drag the three LAS files (**04224648.las**, **04244648.las**, & **04264648.las**) onto the map.
- Once the files are added to the map you will see three red boxes. These outlines represent the area covered by our LAS files – Ledges State Park south of Boone, Iowa.



### 3. Creating LAS Dataset and Raster Image

- Select the **Analysis** tab in your ribbon and click on **Tools**. In the **Geoprocessing** pane search box type **Create LAS Dataset** and select the top result.
- In the **Create LAS Dataset** tool, set **Input Files** as the three **LAS files** you unzipped earlier. Set **Output LAS Dataset** as **lasDataset.lasd** and **Coordinate System** to **Current Map**. Leave the remaining settings at their default values and click **Run**.
- A new object, **lasDataset**, is added to your **Contents** pane. It has grouped the three tiles together and if you zoom in very close, you can see the points which make up the lidar point cloud.
- In the **Geoprocessing** pane, search for and open the **LAS Dataset to Raster** tool. Set **Input LAS Dataset** as **lasDataset.lasd** and set **Output Raster** as **las\_raster**. Leave the remaining options as their default setting and click **Run**.
- The file **las\_raster** is added to your **Contents** and a black and white raster image representing elevation appears on top of the red tiles.
- This project and raster image will be used in the followup task sheet *ArcGIS Pro: Hillshade, Slope, and Contour - GISTP 0014*.



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