Section 2

Video: Getting started with imagery data in ArcGIS Pro

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Time	Caption
0:00	♪ [music] ♪
0:08	I'll go over a quick tour of the basic raster models
0:12	and in general how to get started with using imagery in ArcGIS Pro.
0:16	ArcGIS supports an extensive list of raster formats,
0:20	and for many formats, we don't just bring in the pixels
0:23	but also the metadata that's associated with the imagery.
0:27	All kinds of different platforms and sensors are supported,
0:30	including aerial imagery, imagery from satellites and drones,
0:34	and terrestrial imagery, as well as different modalities
0:37	of imagery--everything from multispectral data, lidar video,
0:41	360 inspection imagery, scientific data, and so on.
0:46	Esri also offers content in the form of web-enabled services.
0:51	The content includes the latest release of analysis-ready
0:54	Sentinel-2 and Landsat 8 data.
0:57	This data includes over 5 petabytes of surface-reflectance imagery
1:01	that you can access over the internet.
1:03	Also, Esri partners often share their content
1:07	through services to make it accessible.
1:09	Now, let's look at the three key data models--raster datasets,
1:14	raster products, and mosaic datasets.
1:18	Previously, you learned how pixels capture
1:20	the world through different raster bands.
1:23	The imagery is typically displayed as a three-band image.

1:26	You can arrange the bands,
1:30	or you could perform image analysis
1:33	using geoprocessing tools or raster functions.
1:37	Raster functions are operations that apply processing directly to
1:41	the pixels of imagery and raster datasets.
1:45	Out of the box, you have access to more than 150 raster functions.
1:51	You can apply the function, specify your parameters,
2:02	and, like in this case, you can get an on-the-fly
2:05	NDVI representation of your data.
2:08	Now, because calculations are only applied to the pixels that are visible
2:12	on your screen and no intermediate datasets are created,
2:16	processes can be applied and visualized quickly.
2:21	So, we talked about raster datasets and applying
2:23	image-processing algorithms through raster functions.
2:26	Next, let's talk about raster products.
2:29	Often, data providers, they provide satellite scenes as separate datasets,
2:34	which require modification before they can be used in the map.
2:38	Some may need to be merged, orthorectified, pan-sharpened,
2:41	enhanced, and so on to create a usable product.
2:45	In ArcGIS, we have the concept of a raster product.
2:48	We essentially use metadata that's provided by data vendors
2:52	and construct a product for visualization
2:54	with raster functions applied behind the scenes.
2:58	Here's an example of a Worldview scene comprising around 30 images.
3:03	Now, this would typically take us hours to get to a usable state.
3:09	Using raster functions and raster products, we can drag this layer
3:14	into ArcGIS Pro, and all the processing will automatically
3:18	be applied to the imagery on the fly.

3:29	Occasionally, we need to work with collections
3:31	of raster datasets or raster products.
3:35	These datasets can be managed in a single data model,
3:38	which is referred to as a mosaic dataset.
3:44	And here's a mosaic dataset containing several rasters.
3:47	The mosaic dataset does not alter the original input raster.
3:51	It merely points to the images on disk.
3:54	You have access to the individual raster footprints, pixels, and metadata.
4:00	The imagery is dynamically mosaicked, and it's processed on the fly.
4:07	The mosaic dataset can be web-enabled,
4:09	served out as an image service.
4:12	These mosaic datasets can display large groups
4:14	of imagery data as a single layer.
4:17	Displaying the entire area at one time is only the beginning
4:21	of the uses of mosaic datasets.
4:23	This is only one example for a few files.
4:27	Now, here's an example of a mosaic dataset
4:30	that's served out as an image service.
4:32	This is the Landsat data that's served out as an image service containing
4:37	approximately 2 million scenes and 2 petabytes' worth of data.
4:46	Again, on-the-fly processing and dynamic mosaicking.
5:00	In this region, we've sorted the imagery
5:02	such that you get to see the most latest imagery.
5:05	We're going to continue exploring these topics during this MOOC.
5:08	As you can see, ArcGIS Pro can use imagery in various ways,
5:12	from file-based rasters from many different sources,
5:15	as well as published image services.