

# Using Imagery and Raster Data in ArcGIS

Imagery and raster data comes from various formats and services. This session teaches you how to use ArcGIS to integrate imagery and raster data into your projects. The properties of raster data including pyramids, compression, color map, resampling, as well as best method to use them will be covered. The session will also introduce the new Image Analysis window and the new mosaic dataset, which together provide a streamlined environment for managing, enhancing, and processing imagery.

<http://video.esri.com/watch/76/using-imagery-and-raster-data-in-arcgis>

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## Video Transcription

**00:01** My name is Simon Woo. I'm here with my colleague Robert Berger, who will be showing you all the demos.

**00:06** And today we will be presenting Using Imagery in Raster Data in ArcGIS.

**00:13** So what exactly do we mean by using imagery in raster data?

**00:16** Here's our, the outline of our presentation.

**00:20** If you see something that's not on here that you were expecting, we understand your time is very valuable...

**00:26** ...and if there's another session you thought that you might want to attend, feel free to get up...

**00:31** ...and attend something that would be more along the lines of what you were looking for.

**00:37** So the presentation will start out with a simple, different varieties and types of raster data that you might add to ArcGIS...

**00:46** ...and some of the raster properties that are fairly important for knowing how to use the rasters and what might be wrong with your raster.

**00:55** Then we'll go into displaying and rendering your imagery, followed by displaying a mosaic dataset.

**01:01** A mosaic dataset is one of our new features in ArcGIS 10. It's a new raster data model available.

**01:10** And then we'll talk about processing and new imagery.

**01:15** And finally we'll go over a summary of what's new in ArcGIS.

**01:19** Throughout the presentation, we'll go over whatever may be new in ArcGIS whenever that particular topic comes up...

**01:26** ...but we'll summarize it again later at the end and include other things that may not have

made it into any of our other slides.

**01:33** And we'll end off with any questions and comments you may have.

**01:36** We do try and ask that you hold your questions and comments until the end.

**01:42** We have a lot of content to cover, and there's a good chance that...

**01:45** ...one of Robert's demos or one of my later slides may answer one of your questions.

**01:49** If not, we'll definitely set aside some time for your questions, comments.

**01:54** We're also downstairs in the Geodatabase Island area, and we're right beside the Imagery Island area, as well.

**02:04** So just to make sure, did everyone get a feedback sheet. If...and if you did, make sure you have the right title on it...

**02:09** ...title being Using Imagery in Raster Data.

**02:12** If not, everyone go ask that student assistant for a new sheet.

**02:24** Okay. So let's start out and just look at a bunch of different types of rasters that you might be adding to ArcGIS.

**02:33** A lot of people like using elevations and hillshades, aerial imagery, satellite imagery, scan maps, and pictures and graphics...

**02:47** ...and a lot more as well.

**02:51** And then when you add these varieties of imagery into ArcGIS, traditionally people use files on disc or a geodatabase.

**03:01** With files on disc, we're talking about everything from a GRID, a TIFF, an IMG, BMPs, so on and so forth...

**03:08** ...basically, any of the 65-plus file formats that ArcGIS can read.

**03:15** And then there's the geodatabase, there's... in which you could add in raster datasets, mosaic datasets, and raster catalogs.

**03:25** So what is this mosaic dataset thing that we've added to ArcGIS 10?

**03:30** Well, we don't want to go into too much detail about that since it's mainly a managing issue.

**03:34** We'll just simply say that it's, it's a lot like the raster catalog in the way it's stored.

**03:40** It's a table. Each of the rows stores a raster dataset. Nothing new, nothing too new there.

**03:48** But we've added in a lot of new capabilities, which were lacking in the raster catalog...

**03:55** ...and we've added in the ability to grab the metadata and load them into the attribute fields whenever they're available.

**04:04** So other than the fact that there's a...

**04:07** ...catalog behind the scenes, we tried to make it more like a user experience of a raster dataset...

**04:16** ...and other areas that you would add raster data from.

**04:20** Hopefully a lot of you are already using these. If not, try to look for these in the future.

**04:25** ArcGIS Online has most of these on the plenary. There's a lot of basemaps available...

**04:30** ...out there that you can add in and start out with already having some content before you even start your project.

**04:37** If you have access to any ArcGIS servers, you can add in map services, image services...

**04:44** ...WCS and WMS services, as well...

**04:47** ...and these are all through the Add Data dialog, as well.

**04:52** So we'll go in and actually just go and show you using raster imagery.

**05:00** Oh, and...so...Wrong one? Sorry.

**05:04** And just a side note, all our demos here today...

**05:08** ...when we're using the imagery aspect of it, we're only using an ArcView license level.

**05:13** Some of the editing that Robert does on feature classes does require ArcEditor...

**05:19** ...but all the raster functionality in this particular presentation only uses an ArcView license or higher.

**05:26** Greetings, everyone. Can you hear me alright? No? All right.

**05:32** Is this better? No? All right. I'll try to speak down a little.

**05:45** All right. So as Simon said, I'll be giving you the demos today...

**05:50** ...and for the demos, we find ourselves in Portland, Oregon.

**05:54** And I've just started working there, and I've already played around with some of the feature data that's available, as you can see...

**06:02** ...but now I want to investigate the raster imagery that we have.

**06:06** So one of the first things that you've... I'm sure you've seen before at 10 now...

**06:10** ...it becomes very easy if I just need a background picture to add data from online.

**06:16** For example, I can search for Bing or other online ArcGIS Online services.

**06:20** I simply click the Add button to add that imagery into ArcMap.

**06:25** And so I also have other data that I want to look at, and so for one thing...

**06:31** ...I see somebody has downloaded some Landsat 5 data freely available online.

**06:37** And I can...and I see here that my imagery comes in seven different datasets, and I can simply...

**06:45** ...drag and drop the dataset into ArcMap, and I can see that my data shows up as black and white...

**06:51** ...which is not really what I would expect from Landsat data, but we'll get to that in a little bit.

**06:57** In addition, I also have some QuickBird data, four different scenes of QuickBird.

**07:03** And you can see there's a certain folder structure and...with it, where I can just add my data and then...

**07:12** ...zoom to my layer, and here I can see that this dataset shows up in color.

**07:21** In addition, we have some tiled data. You can see I have a lot of different datasets here.

**07:29** And here, too, I can simply drag and drop it into ArcMap, have ArcMap take care of the transformation on the fly for me.

**07:37** I can zoom to the layer, and I can see this dataset too shows up in color.

**07:43** And so it's really kind of easy to use my imagery that way. I just drag and drop it in.

**07:48** Now we also have some net elevation data. I can drag and drop that into ArcMap, again, zoom to my layer...

**07:57** ...and here I see that my elevation data shows up in grayscale, but even worse, it just shows up as gray.

**08:04** And a lot of questions that we get is, well, why is that?

**08:06** If I use the Identify tool, I can see that I actually have valid pixel values...

**08:12** ...but my dataset doesn't show up; I can't really see any of the values.

**08:17** Simon, can you tell us a little bit of why that is?

**08:20** Sure, Robert.

**08:29** So as Robert showed you there, we have what we call the Raster Properties dialog...

**08:34** ...and the dialog is a very good spot to obtain a lot of information about your raster dataset.

**08:42** We've ...divided this up into five sections.

**08:45** We have the data source, which basically just tells us what type of file it is and where it's located.

**08:51** We have the raster information, which tells us a lot of information about our actual pixels.

**08:56** There's a lot of valuable information in here, everything ranging from the number of open

columns...

**09:01** ...the number of bands, the cell size, and so on and so forth.

**09:05** Next we have the extent, which tells us the top, the bottom, the left, and the right...

**09:10** ...minimum bounding extents of the raster dataset, followed by the spatial reference...

**09:16** ...which gives us the coordinate system information, such as the projection, the date of the units, and so on.

**09:23** And lastly, we have the statistics.

**09:27** Let's go into detail about four of these properties here. We'll talk about No Data, color maps, pyramids and statistics.

**09:35** Let's start off with pyramids. Pyramids are used to speed up the display of your raster datasets.

**09:43** What we do is we create multiple resolution dataset layers from the original raster dataset...

**09:50** ...and these are at varying resolutions.

**09:54** And when we zoom in to our raster dataset then, we first zoom in to the most appropriate pre-created layer...

**10:02** ...and then we'll resample our data from there, so it's a lot like caching...

**10:06** ...except caching is only set to specific scales, whereas we will then resample it back to the exact scale that we were requesting.

**10:16** So just as whenever we create anything, we have to add additional storage onto our disc space.

**10:25** But it's not that large, it's not that much extra information we have to add.

**10:31** Usually, it's less than 10 percent of your disc space.

**10:35** And we also have the ability to compress our data now at ArcGIS 10.

**10:39** This is a new feature we've added.

**10:41** And if you compress your pyramids with JPEG compression, your pyramids will be very, very small.

**10:48** Now I mention the word "resampling" a couple times.

**10:51** When we create pyramids and then you do any analysis back on your data, don't worry.

**10:57** We do not use your pyramids to do any analysis. We'll always go back to the raw pixel data values.

**11:07** Next let's talk about statistics.

**11:10** Statistics are used to better display your raster dataset...

**11:15** ...and they can be used for things such as contrast stretching, classifying data, and color correction.

**11:22** I believe this is the problem that Robert was having.

**11:26** We have this image on the left side there, which shows up mainly dark and very difficult to see.

**11:33** Well, the image on your right there has statistics calculated and in addition is using a contrast stretch...

**11:41** ...so we can better see the differentiation between the pixel values.

**11:45** And when we calculate statistics, what we're doing ...

**11:48** ...is we calculate the minimum, the maximum, the mean and standard deviation for each band so that...

**11:54** ... we can then use our different contrast stretches to properly stretch our data.

**12:01** No data is used to tag pixels or cells that have unknown information or no information available.

**12:10** A lot of times, people use the value of 0 and "no data" synonymously.

**12:16** They are not always the same.

**12:19** Zero is a valid pixel value, but "no data" simply means we don't know what's there.

**12:26** Now the confusion usually comes about because traditionally when we've stored our No Data value in a file system...

**12:32** ...we had to use a pixel placeholder value to store a No Data.

**12:37** So for instance, grids tend to use negative 9999 and a lot of other formats tend to use 0.

**12:45** And this is when 0 and No Data became one and the same, even though they're not.

**12:50** Well, when we store data in ArcSDE or a file geodatabase, we store a No Data value as a bit mask.

**12:57** So hopefully we get rid of this notion that 0 is equal to no data, because they are not.

**13:04** Now, there's a lot of uses for No Data. One of the uses is that No Data does not play into your statistics calculation.

**13:14** So we see here, I highlighted in pink, those are all my values of no data.

**13:20** If I've tagged them properly as No Data and I calculate my statistics, it ignores all those values.

**13:26** If I had those background values tagged as 0, then it would highly skew my statistics results...

**13:34** ...and my image would probably be a lot darker.

**13:38** Color maps are used to constantly open and display your raster dataset with the same colors every time you open them up...

**13:45** ...in ArcGIS or any other program that can recognize color map files.

**13:51** Color maps store what a lot of people call a pseudo color table.

**13:56** And the way this works is, each unique value is associated with a red, green, and blue value.

**14:03** So in my example here, a value of 1 is equal to 255 red, 255 green, and 0 blue, which is also known as the color yellow.

**14:15** And this is done for each of my values.

**14:18** So that way when I open up my raster dataset next time, it'll show up with these colors.

**14:24** New at ArcGIS 10, you're now able to create a custom CLR file.

**14:29** A CLR file is an external color map file for some formats.

**14:34** And what with that, we can create our CLR file using the unique values renderer...

**14:40** ...so this is existing UI but we've added additional functionality on there.

**14:46** And then we can persist our CLR file using the Add Color Map tool.

**14:51** Once again, we took an existing tool, but we've extended it.

**14:57** So let's go ahead and look at some raster dataset properties.

**15:01** Once again, just keep in mind that we are using... Did I do it the wrong way again?

**15:06** Once again, keep in mind, we are only using an ArcView license level.

**15:10** All right, so Simon told us a little bit about the dataset properties, so let's look at them.

**15:16** I can simply right-click on my data and to Properties.

**15:18** And here I can see a lot of information about my data, such as the number of bands, the size...

**15:26** ...the pixel type and pixel depth, if I have permits and color maps, if it's compressed.

**15:31** I can see my spatial extent, my spatial reference.

**15:34** And I note here that I do not have any statistics calculated for it.

**15:38** So how do I do this?

**15:39** I can either click here to build statistics or right-click here and calculate statistics.

**15:47** Both will bring up the same geoprocessing dialog. I'll just accept the defaults.

**15:52** It calculates now at 10 the statistics in the background.

**15:57** And now I can start seeing my data the way that it's meant to be with this proper stretch.

**16:04** So Simon, how else can I display and render this data in ArcGIS 10?

**16:13** Thanks, Robert. So as Robert mentioned, the next section, we'll be talking about displaying raster data.

**16:19** And when we talk about displaying raster data, we usually talk about rendering and renderers.

**16:26** As well, in this section we'll talk about the Image Analyst window.

**16:31** The Image Analyst window is one of those new dockable tool...tool windows in ArcGIS 10 that we've added in...

**16:41** ...and we'll go over that. It's a really cool window.

**16:43** Hopefully a lot of you will end up using it.

**16:47** So let's start off with the stretched renderer.

**16:49** The stretched renderer is often used for satellite imagery, elevation and aerial imagery, and it's used by default...

**16:57** ...whenever you bring in a raster dataset that has a single band and more than 25 unique values.

**17:06** And the way this renderer works is it takes all your values, for instance, in my particular case...

**17:13** ...I have pixel values from 0 to 255...

**17:17** ...and it stretches it along your color ramp that you choose, and my color ramp is black to white.

**17:23** So therefore, a value of 0 will be displayed as white...sorry, as black.

**17:28** A value of 255 will be displayed as white...

**17:32** ...and all the values in between will be stretched along the color ramp.

**17:38** Well, they can be stretched along the color ramp evenly, or we can use what we call contrast stretches...

**17:45** ...in order to skew the histogram a little bit.

**17:49** And when we skew the histogram, for instance, on the left side of your screen, we see a raster dataset...

**17:57** ...and it's simply just displayed with a regular no-stretch, no-contrast stretch.

**18:04** So it doesn't look too bad; you can see what's...you can see that you've got a main road down the middle and...

**18:10** ...lot of green spaces and a lot of buildings.

**18:13** Well, if we apply a contrast stretch and we stretch out our values slightly differently based on some mathematical algorithms...

**18:22** ...we get the image on your right, and you can see that it's a lot brighter.

**18:25** You can see a little bit more, in terms of definition, you can see that there's probably...

**18:33** ...what looks like a football field in the bottom right there, and so on and so forth. So we see a lot more detail.

**18:39** So contrast stretches just help you display your raster dataset so you can see a lot more detail.

**18:49** Along with the stretch renderer, we've added in a couple new functionalities... at ArcGIS 10.

**18:53** We've added the percent clip stretch, so this is one of those contrast stretches I was referring to.

**19:00** And we've added in advanced labeling, as well.

**19:03** We'll start with percent clip.

**19:05** The way percent clip works is you specify a lower and an upper percentage of data to clip off.

**19:13** So let's say, for instance, I want to clip off the bottom 2 percent of my data and the top 5 percent of my data.

**19:19** So we basically get rid of our outliers on the edges of our histogram.

**19:25** And then we start our scale of 0 to 255, a little bit of a more narrow histogram.

**19:34** And therefore, like I said, we just get rid of all the values on the edges of our curve.

**19:40** That probably wouldn't have made too much of a difference, but now that we're stretching our data out in a smaller scale...

**19:46** ...we now have a lot more detail that we can see.

**19:51** As well, we have advanced labeling.

**19:53** This was something that the cartographers were looking for for many releases now.

**19:58** So instead of simply having our stretch renderer with a top...a minimum value and a maximum value...

**20:05** ...we've added the ability to add in different class breaks along the color rim.

**20:12** So therefore we can see that a value of yellow is very close to 2,317.

**20:19** So you have a little bit more idea of what the values of your various colors mean.

**20:27** Next, we'll talk about the RGB renderer, or the red, green, blue composite renderer.

**20:32** This is often used for satellite and aerial imagery, and this is the default renderer...

**20:39** ...whenever you have a raster dataset with more than three bands.

**20:43** And the way this works is, each bands captures a part of the electromagnetic spectrum...

**20:49** ...and then we display each of these bands with a red, a green, and a blue color.

**20:54** You put them all together and you end up with your color composite.

**21:01** We have the unique values renderer.

**21:03** This is often used for land-use maps and scanned maps.

**21:07** This is the default renderer whenever you have a raster dataset with a single band but fewer than 25 unique values.

**21:16** This is also a renderer you can use on any single-band raster dataset if you so choose to.

**21:23** The way the unique values renderer works is, by default...

**21:28** ...it takes all of your values and then it displays it with a color from the color ramp.

**21:34** And by default, it's just a random color ramp.

**21:37** But you can go ahead and change all of these values if you wish.

**21:42** So this is sort of what the unique values renderer dialog looks like, and you can see at the bottom there...

**21:49** ...we have a new button there, a new button drop-down called Color Map.

**21:54** And this is where we would import and export in a color ramp, or sorry, color map.

**22:03** Speaking of color maps, the color map renderer, as we've talked about earlier, uses a preset color, color ramp table...

**22:13** ...to show your raster dataset with the prechosen colors each and every time you load it into ArcGIS.

**22:19** Color maps are often used for land-use and soils maps so that they can be displayed consistently.

**22:26** And lastly, we have the...the classified renderer.

**22:29** The classified renderer is used to group ranges of pixel values into a single color...

**22:36** ...and into...many classes.

**22:40** For instance, we have here values from 0 to 500 being displayed with a light yellow...

**22:46** ...501 to 900 displayed with a light orange, and so on and so forth.

**22:51** And this, there's various uses for this.

**22:53** A lot of people like to group their elevation layers together or their elevations together...

**22:58** ...so instead of seeing a wide range of color ramps, you can choose different step intervals to show your data with.

**23:07** And this is never a default renderer but you can use it for any single-band raster dataset that you may have available.

**23:15** And lastly, let's talk about the Image Analysis window.

**23:19** The Image Analysis window has been added to ArcGIS 10.

**23:24** It's, it's basically a window that contains a lot of display and processing features that you could access with a...

**23:32** ...single click, so most of the functionality is already existed in ArcGIS 9.3.1 and previous...

**23:41** ...but with this window, instead of having to dig into the...UI, most of these are available right there...

**23:50** ...and you can access them within one...

**23:52** ...one second rather than digging through the user interface and trying to search for where they are.

**23:58** In fact, there are demos this year are about about, I'd say, 30 percent shorter because we're using this window...

**24:05** ...rather than digging through the UI to go look for the particular button or function.

**24:10** And this Image Analysis window is broken up into the, as I mentioned, display and the processing.

**24:17** Within the Display tab, which is what we'll talk about here at first, and processing we'll talk about later...

**24:22** ...we have everything from the Effects toolbar available, everything from brightness, contrast, transparency...

**24:29** ...we have a lot of the symbology tools, such as Gamma, the various contrast stretches and DRA...

**24:36** ...which is dynamic range adjustment. We also have the ability to choose your resampling method.

**24:42** And this is also where you accelerate your raster.

**24:45** This was shown in the plenary how you make your imagery scroll faster, which we'll talk about slightly more in today's demo...

**24:52** ...which Robert will be giving right now.

**24:58** Thank you, Simon.

**25:00** So, I've calculated statistics on my elevation data, so let's see how else I can visualize this data.

**25:07** In the table of contents, I can simply change the color ramp by left-clicking on it and choosing a different color ramp.

**25:15** But I can also go to the layer properties and the Symbology tab, and here we see mostly what we've seen in previous years.

**25:24** So I can change my stretch type very easily to minimum/maximum and other things.

**25:30** A new thing is that we have this advanced labeling option.

**25:36** I can set my number of intervals, change my color ramp, and give it a custom color.

**25:46** So this is a way for me to emphasize a specific color range and cartographically display my data quite differently, such as that.

**26:02** In addition, note here that in the table of contents, now I have elevation values corresponding to my different colors.

**26:12** So in addition to this new advanced labeling, I can also use the classify renderer.

**26:17** If I want to, say, display my data in something like low, medium, and high.

**26:25** So it becomes very easy to display my data in various ways.

**26:31** Let's see how, what else I can do.

**26:34** So I have my Landsat data here, and I have this new Image Analysis window.

**26:40** To access it, you simply go to Windows and Image Analysis Window.

**26:45** In my case, I've already docked it on top of the table of contents, and here you can see...

**26:49** ...I can easily change the contrast and brightness, I can change my stretch...

**26:57** ...and so it becomes very easy for me to interact with my data.

**27:01** Now Simon earlier alluded to color maps, and in my department, we've had somebody create a land cover classification.

**27:12** And whenever we use this data... Let me zoom in here a little bit.

**27:17** Whenever we use this data, because it has less than 25 unique values, it uses by default the unique values renderer.

**27:24** And...every time we load it, the color comes out different.

**27:27** So a workaround in the past has been to save a layer file with it, and then whenever we use the layer file...

**27:33** ...we see the colors that we would expect.

**27:36** In my case, water should be blue; bare soil should be brown; vegetation, green; and so on.

**27:42** So now at 10, we have a very easy way to persist this.

**27:46** I simply go to the layer properties, and I...we can see the unique values renderer is used.

**27:51** I can click on Color Map, Export Color Map, and then, I can simply save my color map file.

**28:02** Now that I'm done saving this file, I need to persist this to my dataset.

**28:07** To do this, I'm going to search for our color map tools.

**28:13** And we see that we have two different color map tools, Add Color Map and Delete Color Map.

**28:18** I want to add a color map. I'm going to ask the dataset that I want to add this color map to, and just quickly...

**28:27** ...I want to show that in the dataset properties, the color map is currently absent.

**28:34** I also need to add my color map file that I just saved, and I click OK.

**28:43** Now let me remove these files again, now simply add the...classification file...

**28:52** ...and now we can see that the colors are applied the way that I would expect.

**28:56** The other benefit of saving the color map file is that...

**28:59** ...I can apply the same color map to multiple datasets that have the exact same classification.

**29:06** So Simon, how else can I display and use my data?

**29:15** Well, the next thing we want to talk about is rendering your mosaic dataset.

**29:19** As we mentioned, the mosaic dataset is a new raster data model that we've added to ArcGIS 10...

**29:26** ...stored like a catalog, works like a raster dataset, kind of the best of both worlds.

**29:33** So we'll start out and talk about the way this is shown on your screen.

**29:37** When you add this in by default, you first see these green lines surrounding each of your raster datasets.

**29:45** Each of these lines are a footprint, so it's a lot like a raster catalog.

**29:49** The raster catalog also had this idea of footprints.

**29:52** And each of these footprints just has a box around the minimum boundary rectangle of your raster dataset.

**30:00** Well, otherwise, other than being stored like a catalog and having these footprints...

**30:06** ...it's a lot like a raster dataset in terms of the actual rendering of the pixels.

**30:10** We simply have our data there, and then hopefully it shows up; if not, you'll...

**30:18** ...there's other tools to help you better display your data, such as building overviews.

**30:23** While assuming that our pictures do show up properly, what we have is...

**30:29** ...we also have the idea of the level of detail within the mosaic dataset.

**30:36** What level of detail is, it's a lot like scale dependency.

**30:40** So whenever we're zoomed out at a scale such as 1 to 100,000, we can see our low-resolution imagery.

**30:50** And then we, when we zoom in...

**30:53** ...and assuming you have more than one resolution available in your mosaic dataset...

**30:57** ...and you zoom in at a scale of, say, 1 to 25,000, you can then see high-resolution imagery.

**31:06** So if we manage and create our mosaic dataset properly...

**31:13** ...we can use this to show your imagery with varying levels of scale rather than having ArcMap do that for you.

**31:20** And this way, it's stored within the mosaic dataset and therefore, every time you transfer to a new map document...

**31:28** ...this is already saved within there.

**31:30** As all...as mentioned, we have these things called overviews.

**31:33** Overviews are a lot like pyramids.

**31:35** We pre-create different layers of varying resolution, and what this allows us to do is...

**31:41** ...it allows us to view our data at any scale, and it also allows us to view our different levels of scale a lot quicker.

**31:54** Another new thing within mosaic datasets is mosaic methods.

**31:58** What mosaic methods do is, once again, it's whenever you have data that overlaps on top of each other...

**32:05** ...you have to figure out which one is going to be displayed.

**32:09** And mosaic methods help us define the display order whenever we have overlapping rasters.

**32:16** So we'll start out with one of the easier mosaic methods, which we call By Attribute, which is over here.

**32:23** And the way this works is, we take one of your attribute fields, for instance, cloud cover...

**32:30** ...and then we can display whichever raster dataset has the least amount of cloud cover.

**32:35** Of course, you'd have to assume that you're specifying that you're going from lowest to highest.

**32:40** You could also go the other way around, so it's your choice.

**32:43** So, and, with... so we'll look through the attribute fields, and whenever there's a conflict of overlap...

**32:49** ...we'll always choose the lower cloud coverage.

**32:53** So in this case, the green footprint would be the one on top, followed by the purple and then finally the yellow one.

**33:02** We also have the... most northwest, and the way this works is, we find the cell center of each of your raster footprints...

**33:14** ...and then we...whichever is closest to the northwest corner will be the one displayed on top.

**33:21** In this case, my yellow footprint is the closest to the northwest corner, so that will be displayed on top...

**33:28** ...followed by green, followed by purple.

**33:31** Next, let's look at Closest to Center.

**33:34** Closest to Center, once again we're using the center point of your footprints, and the way it works is...

**33:41** ...whatever the display center is closest to your footprint center, those are the ones shown.

**33:50** So my screen here or my display is outlined in the black dotted line, and the center of my screen is shown by this X over here.

**34:00** And therefore, the closest center to my X would be my yellow one, followed by my green, followed by purple...

**34:07** ...so that's the order that these would be displayed in terms of what's on top.

**34:14** Next, we have Closest to Nadir. The center of your footprint is not always the nadir point on your footprint...

**34:23** ...especially in oblique imagery; this could be \_\_\_\_\_ skewed.

**34:26** So we find the nadir point of your imagery, assuming that your metadata had this information...

**34:32** ...and then we find which...which nadir point is closest to your display center.

**34:40** Once again, the display center is an X, and your nadir point is the dot, and therefore, in this case, green, or sorry...

**34:49** ...yellow would be shown on top, followed by purple, followed by green.

**34:55** One thing that we have to mention for Closest to Center and Closest to Nadir...

**34:59** ...whenever you change your display screen or the extent of your display, the way that these are displayed can change.

**35:07** So for instance, we'll go back to Closest to Center here.

**35:11** I zoomed into a different spot within my mosaic dataset here, as shown by the dotted box.

**35:18** When I change my display extent, Closest to Center and Closest to Nadir has now a different center point.

**35:26** So now my center point would be closest to my purple footprint, so that would be displayed on top...

**35:32** ...followed by the yellow, followed by the green. And lastly we have Closest to Viewpoint.

**35:37** Closest to Viewpoint, once again, we use the nadir spot within your footprint or your image.

**35:44** And we can manually choose the viewpoint.

**35:48** So we're not using the center of the screen anymore for viewpoint; we're choosing a predefined location of view...

**35:55** ...and therefore once again, we go, which is the closest nadir point to your viewpoint, and that's how display them on top.

**36:02** It goes from yellow to green to purple.

**36:05** So let's go ahead and discuss some of our mosaic dataset demos here.

**36:13** As mentioned, all the...raster functionality we are showing in this particular demo only uses an ArcView license.

**36:23** Robert will be doing some editing on vector data; that requires an ArcEditor license.

**36:28** All right. Thank you, Simon.

**36:30** So one of my coworkers has created one of these new things called a mosaic dataset.

**36:34** And we find it here in my file geodatabase.

**36:37** I can simply add it to ArcMap, and now I can see that this thing on the fly creates a composite of my Landsat data...

**36:44** ...so now my Landsat data shows up in RGB color rather than grayscale.

**36:51** So now I can zoom in, and as I zoom in and continue to zoom in, I start seeing the scale dependency in my imagery.

**37:01** So at first I saw my Landsat data; now I'm looking at my QuickBird data.

**37:05** I can zoom in further, and here, I can see some of my tiles that are overstretched.

**37:11** So I can...simply change my stretch type to Min/Max to make it look nice.

**37:18** As I zoom in further, I can see I have more data underneath with higher resolution.

**37:24** So let's zoom out a little bit and look at this thing called the mosaic dataset a little bit more.

**37:32** In my table of contents, I can see that the mosaic dataset is a composite layer.

**37:37** So we have my group layer right here, and then a boundary layer, a footprint layer, and my image layer.

**37:43** My boundary is a feature containing all the imagery that I have in this mosaic dataset.

**37:51** My footprints is a feature showing me the extent of each individual tile that is contained within my mosaic dataset.

**37:58** And so you can see here that I have a lot of different data making up this scene.

**38:05** If I right-click on the footprint, I can open the attribute table.

**38:09** This attribute table has a lot of information, so we can see my data here...

**38:15** ...we can see it's populated with a group name and a product; my center x and y...

**38:20** ...which is used for the mosaic method that Simon talked about...

**38:24** ...we have my sensor name, when my data was acquired, and a lot of other information.

**38:31** And my friend has added this Year field to help me figure out exactly what year my imagery is from.

**38:43** So I came across a point where I looked at my feature...where I need to make some edits.

**38:52** So in this case here, we can see that I look at my 2001 imagery and my road map network neatly lines up with the roads on my imagery.

**39:02** Now I'm going to go to this mosaic method through the image properties...

**39:07** ...and I'm going to choose the By Attribute mosaic method and, in my case, the year.

**39:14** So now as I look at my year 2005, I can see that there's a new subdivision and I need to update my roads.

**39:23** Now rather than ...having to go through all my files in this to figure out what exactly are the files I need to use...

**39:30** ...I simply use the mosaic dataset and it does all the managing for me.

**39:34** So I can zoom in to my data. I'm going to start an edit session here for my streets data.

**39:51** Now before I'm going to start an edit session, I want to point out...or as I, as I start editing, really...the...

**39:58** ...in the past, we would edit, and then once we get to the edge of our editing, we would have to pan...

**40:08** ...there you go...and then continue editing.

**40:12** Well, this has changed at 10. I can use the Image Analysis window to accelerate my raster.

**40:23** And now we have several ways that we can take advantage of this technology.

**40:28** So for one, as I pan, now you can see, I have a seamless pan experience, and I can continue my editing.

**40:37** But it goes further than that. I can also use the hot keys on my keyboard.

**40:43** In my case, the Q key, which allows me to now roam through my image and digitize on top of my image...

**40:53** ...as it moves beyond my data.

**40:57** And so now this makes it very easy for me to move around and digitize my data.

**41:04** Back to you, Simon.

**41:10** Thank you, Robert. So the next section we'll talk about deals with processing raster data...

**41:16** ...and we have a lot of different tools even within out-of-the-box desktop core raster in order to deal with your imagery.

**41:24** We have everything from combining bands, clipping data, mosaicking, pan sharpening, orthorectifying...

**41:30** ...and this is just a select list, that we have a lot, lot more tools than that.

**41:36** So let's start out with combining bands.

**41:38** Combining bands takes many images, whether they be single band or multiple band.

**41:44** Oftentimes, they're single-band images. We'll take a bunch of those and put them into a single, multiple-band raster dataset.

**41:52** And the reason we do this is, first of all, assuming that this is the data all lining up on the same spot...

**42:00** ...instead of having to manage three or seven different layers, we can only manage, we only have to manage one file.

**42:06** In addition, since most of the times, our sensor data comes in, for instance, Landsat has seven bands...

**42:13** ...and your QuickBirds have four bands...you put them all together in one raster dataset.

**42:18** We're only managing one file, as mentioned, but we also have the ability to now display your imagery in color.

**42:25** If they're all stored as single bands, they're only displayed as black and white, as we discussed in our default renderers.

**42:32** We have the ability to clip our data.

**42:34** So clipping our data would take a small portion of your study area and simply subset or clip up that portion of your file.

**42:44** When we clip your data, traditionally we tended to use geoprocessing tools such as the Clip tool.

**42:52** We had the Export Data dialog window, but now what we have, as I mentioned...

**42:58** ...we have this processing panel within our Image Analysis window...

**43:01** ...and we're now able to clip on the fly using the Image Analysis window.

**43:07** By the way, I forgot to mention...

**43:09** ...when we use composite bands, that button is also available on your Image Analysis window, as well.

**43:15** In fact, there's a continuing trend here, even with mosaicking.

**43:20** Mosaicking, we take two or more adjacent and overlapping raster datasets, and we can put them together into one file.

**43:29** A lot of geoprocessing tools that are still valid and were available before, such as Workspace to Raster Dataset...

**43:36** ...Raster Catalog to... Raster... Raster Catalog to Raster Dataset, were available and still are available...

**43:43** ...but now we have the ability to mosaic on the fly.

**43:46** We have the ability to just click the Mosaic button on our Image Analysis window.

**43:52** And we also have the mosaic dataset, data model, which is kind of like a virtual mosaic since we can create them fairly quickly.

**44:03** Pan sharpening is when we take a low-resolution RGB image...

**44:08** ...and fuse it together with a high-resolution panchromatic image...

**44:11** ...and the outcome is a high-resolution color image.

**44:17** Once again, geoprocessing tools have been available in the past and still are available.

**44:23** The Raster Symbology tab always let us do this in the past...

**44:26** ...and now we have the button on our Image Analysis window.

**44:29** So we can see that Image Analysis window takes...a lot of the functionality we already had...

**44:36** ...but instead of having to dig through the toolbox or the different symbology tabs and whatnot...

**44:43** ...they're available to you on that window with a single click.

**44:46** As well, they're done on the fly, which Robert will show you later and as mentioned...

**44:51** ...our demos are easily 30 percent shorter now because we're no longer having to persist it out on disc.

**44:59** And lastly, we'll talk about orthorectify. We have the ability to display our imagery with more accuracy...

**45:06** ...assuming that we have a sensor model available and an elevation source.

**45:12** And usually that elevation source is a DEM and your sensor model are rational polynomial coefficients.

**45:19** Once again, not a new feature, per se.

**45:22** Always available within our geoprocessing tools, always available within our raster display tab...

**45:29** ...and now available with our Image Analysis window.

**45:33** Speaking of, this is the processing panel. It's at the bottom of your Image Analysis window.

**45:40** As we saw, we have a lot of different tools that I've mentioned available and a lot more.

**45:46** And all these tools will process on the fly, all except for one.

**45:51** The Export Data will actually bring up the Export Data dialog.

**45:56** But all the other tools on here will simply process your data on the fly within a single...

**46:00** ...click so therefore you get your done, your work done very, very quickly.

**46:06** So let's just go ahead and see how fast this can now be done.

**46:12** All right, then. Thank you, Simon. So this is going to be my last demo.

**46:17** And for this demo, we find ourselves in...downtown Portland, and here you can see I have several feature layers.

**46:26** I have my tax lot information in the gray features.

**46:31** I have building footprints, and then a study boundary that was given to me when I'm supposed to do my analysis.

**46:37** Now my task is to compare the building footprints with footprints that I can identify on new imagery that we've acquired...

**46:46** ...and compare them to see where we need to update our data or where we maybe have to go out into the field...

**46:52** ...to figure out if we need to update the tax information for the tax lot.

**46:58** And so we've received some GOI data, and here you can see that I have several different datasets, each representing a band.

**47:06** I can simply drag and drop them into ArcMap, and here you can see I have my blue band, my green band...

**47:15** ...my red band, my near-infrared band, and my panchromatic band.

**47:20** So now I need to prepare this data so that...that I can properly use it.

**47:25** So the first thing I'm going to do is I'm going to make a selection of my color bands.

**47:31** I'm going to click the Composite Bands button.

**47:34** This creates a new layer, which applies to composite on the fly...

**47:38** ...which allows me to visualize my data in color very easily.

**47:42** I'm going to remove the individual bands 'cause I'm done with them.

**47:48** Next, I'm going to easily apply the sharpen filter on my panchromatic image to make it look a little bit sharper...

**47:56** ...which helps me later on, and then I can remove that. Let me change the order here a little bit.

**48:05** So now as I zoom in a little bit, I can go right here.

**48:14** We will see the higher-resolution color image as well as my lower-resolution...

**48:20** ...my higher-resolution panchromatic image as well as my lower-resolution color image.

**48:27** And so now, I can simply pan sharpen them together to give me a higher resolution, crisp image, the way that I would expect.

**48:36** Now let me reorder this so I can see my features.

**48:41** And now we can start identifying all features.

**48:44** But before we do, I want to set up the imagery a little bit nicer so I can better identify these features.

**48:50** So I'm going to turn on DRA, I'm going to change my stretch type to Present Clip...

**48:57** ...and then I can also change my gamma a little bit so I can see my features a little bit easier.

**49:05** Next I'm going to accelerate my data, and now I'm going to turn on my points of interest.

**49:14** I've already started identifying some of them.

**49:19** For example, here you can see there's a shed that we don't have any footprints for.

**49:25** Next, I'm simply going to start my editing and select To Create Points.

**49:35** So now, I can look around and try to identify features for possible points of interest that I'm interested in.

**49:44** So now we have several ways to roam around. I can, as usual, pan.

**49:49** I can use the Q key that I've shown you earlier, but in my case, I want to use my arrow keys.

**49:55** So I can click my arrow keys, and you can see it goes pretty quickly.

**50:00** And so in addition, I'm going to hold down the Shift key, and now...

**50:04** ...as I roam around, I can simply click wherever I find points of interest...

**50:12** ...like here, we have two buildings.

**50:14** And right now you don't see this point, so as I stop, and I have to wait for the rendering for a second...

**50:20** ...here you can see how I digitize my points even while I'm roaming.

**50:27** So now I just look through my imagery to try to...to find these points of interest, in my case.

**50:38** So now that I'm done, these points are more than just...graphics on my display.

**50:44** These are actual features in my dataset.

**50:47** So for example, I can now create a simple spatial query against my tax lot information.

**50:56** I go into Selection by Attribute, and when I select my lots that contain my ...the points...

**51:05** ...the features that I've just edited.

**51:08** And now if I go to the attribute table off my tax lots, I can get all the information off my tax lots...

**51:13** ...including the owner, the address, the zoning, and everything else.

**51:22** And so now I can easily create driving directions to these places so I can do my ground truthing and everything else that I need to do.

**51:29** And so you've seen how easy it was for me to set up my data and start using it right away...

**51:34** ...rather than running several geoprocessing tools to get the output that I needed.

**51:39** Back to you, Simon.

**51:44** So as we saw, there's...ArcGIS 10 was, not only for imagery and raster but throughout the entire Desktop product...

**51:53** ...about doing your work faster and helping you achieve your tasks.

**51:58** We've listened to a lot of the feedback that you, the users, have had, whether it be through the forums...

**52:05** ...comments you make here at the User Conference, comments you make down at the showcase booths...

**52:10** ...and we try to incorporate a lot of the ideas that you have.

**52:13** So here's the summary of what we've added to ArcGIS 10. Most of these were user driven.

**52:21** The first one was one of our biggest changes that we've made, but hopefully you don't notice too much.

**52:28** What we've done is we've added in a brand-new format library, used for all our data, raster data formats now.

**52:35** Now I say, hopefully you don't notice that we've done this change because...

**52:38** ...hopefully your data still works the exact same way that it used to.

**52:42** The reason we added in the new raster format library is to get rid of the limitations that we had with our old format library...

**52:50** ...add in new data formats, such as the ability to display a big TIFF.

**52:55** A big TIFF is a geoTIFF that is larger than 4 gigabytes in size.

**53:01** We've made a big TIFFs as large as 75 gigabytes or so. I'm not...yeah.

**53:08** So Robert's made one at least 75 or more, and so on and so forth.

**53:11** And we've added in other data formats, as well, such as the BAG format...

**53:17** ...which I know a lot of the nautical people are very happy with...

**53:19** ...and we've added in ISIS, and so much more, as well.

**53:24** As mentioned, we have over 65 different formats available to read at ArcGIS natively.

**53:31** Of course, you can add in your own custom formats still.

**53:34** We've also added in the ability to write out four new formats.

**53:38** Not new formats, per se, but new writing formats for us.

**53:42** We've added in the ability to write out a BIL, a BIP, a BSQ, and also an NVDAT file.

**53:52** We've added in the new mosaic dataset data model, as we've shown.

**53:57** Hopefully, you'll try and use this and implement this within your work if you use a lot of imagery.

**54:04** In fact, this is a big focus for us here at the User Conference, and there's a lot of different sessions dealing with mosaic dataset.

**54:12** I'll go over a session slide with you after what's new.

**54:16** We've added in the image analysis window. As Robert showed you, you did your work very quickly.

**54:22** You didn't have to persist it on disks.

**54:24** So you simply do all the processes that you need to do, and then once you're ready...

**54:30** ...Now you can go ahead and persist it out on disk rather than having to do that several times.

**54:36** We've added in the ability to do advanced labeling, which a lot of the cartographic people are very happy with.

**54:42** And we've added in the ability to do a couple of new features at color correction.

**54:48** Not only did we add in new color balancing methods for the raster catalog...

**54:54** ...we've added in the ability to color correct your mosaic datasets as well.

**54:58** So those new mosaic datasets can be color corrected as well.

**55:03** Keep in mind, we only do color correction on raster catalogs and mosaic datasets.

**55:11** We do not color correct single raster datasets.

**55:16** We've added in raster functions.

**55:17** These are all the on-the-fly processing tasks that Robert showed you.

**55:23** These are all done with what we call raster functions.

**55:27** So they're hidden behind the scenes, and they can also be exposed, but this is how we do them on the fly.

**55:34** We have the raster options menu.

**55:38** This is not new, although it's found under a new spot now. At ArcGIS 10, it's under Customize Options.

**55:44** And the tab itself is not new. We've always had it...

**55:48** ...but we've added in the ability to do so many more parameters and properties...

**55:54** ...that you could set by default before you start any of your raster work.

**55:59** This has been highly user driven.

**56:01** A lot of the users said, Well, I don't like standard deviation.

**56:04** I want to start my raster dataset being displayed with the min/max renderer or the histogram equalizer, and so on and so forth.

**56:12** And I want to use bilinear interpolation since I deal with a lot of satellite imagery.

**56:18** So a lot of these things that you've asked for are here now in the Raster Options tab...

**56:25** ...so that you can start your work and hopefully do your work a lot quicker.

**56:30** We've added in the ability for a lot of new and enhanced geoprocessing functionality.

**56:38** We've added in a new toolset for the mosaic dataset.

**56:41** There are 16 tools in here to help you create, edit, and manage your mosaic datasets.

**56:47** We've also added in four additional geoprocessing tools for your raster datasets.

**56:53** We've added in Split Raster, Raster to DTED, Build Pyramids and Statistics, and Make Mosaic Layer.

**57:03** We've improved two of our previously existing tools.

[57:06](#) Mosaic to New Raster used to be a script tool. Now we've turned it into a full-fledged system tool.

[57:14](#) And as Robert showed you, we've improved the Add Color Map tool.

[57:20](#) So we can not only add in CLR files now, another thing we can add in are ACP Adobe color table files as well.

[57:29](#) In the Environment setting for the geoprocessing tools, we've added in the ability to compress our pyramids.

[57:35](#) So now we can create pyramids that are smaller.

[57:38](#) And we've also added in the ability to do more TIFF compressions.

[57:42](#) In the past, we simply LZW, LZ77.

[57:46](#) Now we have the ability to do CCITT, PAC bit, so on and so forth.

[57:53](#) So we have a lot of development sessions here about raster and imagery.

[57:59](#) You're currently attending Using Imagery and Raster Data.

[58:03](#) Hopefully, you know that now.

[58:04](#) And we have many other sessions which will help you with your raster imagery needs.

[58:13](#) One of the main sessions that you'll probably want to attend after this one, if you're still interested in imagery...

[58:19](#) ...is Managing Imagery in Raster Data.

[58:22](#) So this will not only go over how to manage your raster datasets...

[58:26](#) ...your raster catalogs, it'll also tell you a lot more about this mosaic dataset.

[58:30](#) It'll tell you when you would use it, why you would use it, and how you create it and how you edit it.

[58:37](#) Along the same lines, we have Working with Sensor and Image Data.

[58:41](#) So once again, this deals with the mosaic dataset and managing data, but this has more of a focus on sensor data.

[58:47](#) So if you get a lot of sensor data, QuickBird, Landsat, IKONOS, so on and so forth...

[58:53](#) ...you'll want to attend that session.

[58:55](#) So both of these sessions are actually being offered right after this one.

[59:00](#) Managing will be taking place in this room, and Working with Sensor Data will take place in room 3.

[59:06](#) If you want to know more about what's new in ArcGIS 10 with raster...

**59:11** ...there's three different sessions you can attend to go and see that.

**59:15** And if you're more interested in the server side aspect, we have Working with Image Services in ArcGIS Server.

**59:22** And these are all technical workshops up in green.

**59:26** We have four demo theaters also available for you.

**59:29** Once again, on the server side, we have Building Web Applications for Image Services.

**59:33** That takes place today in the morning at 11 o'clock down at the Server Island.

**59:39** And the next three demo theaters we have take place on the Geodatabase Island.

**59:45** We have Georeferencing Raster Data, which takes place this afternoon...

**59:48** ...Creating Mosaic Datasets, which takes place tomorrow morning...

**59:53** ...and Using Image Analysis Window, which takes place Thursday afternoon, which Robert will show you.

**1:00:01** We also have this thing called Imagery at UC 2010.

**1:00:05** So this is...we have a lot of keynote speakers, case studies, moderated paper sessions, and so on.

**1:00:13** Most of this takes place in the Omni Ballroom. That's at the Omni Hotel across the street.

**1:00:19** And we also have the Exhibit Hall and Demo Theaters.

**1:00:22** The Exhibit Hall will have people within our staff...

**1:00:26** ...and also all our third-party business partners will be right around that Imagery booth.

**1:00:31** So you'll want to go to the Imagery booth if you're highly interested in imagery, not only for ArcGIS...

**1:00:37** ...but also our third-party business partners.

**1:00:42** So we have two links that we'd like to give you, the new Imagery Resource Center.

**1:00:48** So this has been updated for ArcGIS 10.

**1:00:51** So for any and all of your imagery needs, hopefully you can go here and find the information that you want.

**1:00:58** We also have the Imagery blog available. This can be accessed through the resource center...

**1:01:02** ...but I thought I'd highlight it anyways.

**1:01:05** The blog offers a weekly and, sometimes, more than once a week.

**1:01:11** It offers just some supplemental information that we'd like to highlight...

**1:01:16** ...and sometimes we simply give out announcements if there's a big announcement coming out.

**1:01:23** So we'll go ahead now and open the floor to any questions we have. We have about 15 minutes of questions.

**1:01:28** So let's start out. In the black, there in the aisle?

**1:01:31** [Inaudible audience question]

**1:01:45** You know anything about that? Land-use land cover classifications?

**1:01:53** Unfortunately, we had networking problems over at Redlands, so I didn't see the entire plenary.

**1:02:00** It cut out on us a lot, so I'm not sure exactly what particular portion you're referring to.

**1:02:06** But please come up and we'll talk about that in more detail.

**1:02:09** Unfortunately, like I said, most of the plenary, especially the imagery part, was cut out from our end of the viewing spectrum.

**1:02:17** I wasn't here yesterday at the plenary. There in green?

**1:02:21** [Inaudible audience question]

**1:02:24** Oh, oh, thank you.

**1:02:26** [Inaudible audience question]

**1:02:39** So...so the question is, how do you persist that color map with the image?

**1:02:43** And there is a geoprocessing tool called Add Color Map.

**1:02:47** You want to show them?

**1:02:49** Yes. And so you can simply search for Color Map, and then you'll open the geoprocessing tool...

**1:02:56** ...and then you add the image up here, and then on the bottom here, you point to the file that you just saved.

**1:03:05** And then it persists it to the dataset.

**1:03:09** All right. In orange?

**1:03:11** [Inaudible audience question]

**1:03:31** Okay, so the question deals with bathymetry data, and it's very large.

**1:03:37** Do you know which format your particular data is in?

**1:03:41** [Inaudible audience response]

**1:03:46** Okay. It's a grid? Yeah, okay, so it's grid.

**1:03:49** [Inaudible audience response]

**1:03:52** Okay. So grids should be able to handle large amounts of data...

**1:03:58** ...so we'll probably need to talk about that on a case-by-case basis.

**1:04:04** It's something that should work. It might be a bug, it might be the data.

**1:04:07** We're not sure. We'll have to talk about it a little bit more in detail.

**1:04:10** Yes...

**1:04:11** [Inaudible]

**1:04:12** Are you hitting a 65,536 limit?

**1:04:17** [Inaudible audience response]

**1:04:18** Okay. Okay.

**1:04:19** I can go to 9999999. Right.

**1:04:22** Okay, sorry.

**1:04:23** You can set it high, but then it takes a while to create it.

**1:04:26** [Inaudible audience response]

**1:04:28** Okay. Okay, okay. We'll have to look into that.

**1:04:34** Definitely. We'll look into that. Please come see us afterwards. In the blue there?

**1:04:38** [Inaudible audience question]

**1:05:00** So, so the question deals with, they've been using imagery at 9.3.1, displayed fine.

**1:05:08** They bring it into ArcGIS 10 and images are now way off to the other side of the screen.

**1:05:13** It sounds like there's a lot of, this most likely deals with projections and extents and...

**1:05:19** Do we still? Right.

**1:05:22** [Inaudible audience question]

**1:05:23** Do we still have bugs with that? I thought we fixed most of those.

**1:05:27** If you can give us the data, we need to look at it.

**1:05:30** That was definitely one of the issues we had to look for in ArcGIS 10, and as we mentioned...

**1:05:35** ...we hope your data still works fine, but there might have been some formats, some projections that aren't quite working...

**1:05:41** ...especially...do you know which projection you're dealing with?

**1:05:45** [Audience response]...State Plane.

**1:05:46** State Plane, so...

**1:05:48** [Inaudible audience question]

**1:05:49** Okay. Wow. Alright, we'll definitely want to talk about this one. That's a very big deal to us.

**1:05:55** That was one of the ones that we're definitely trying to avoid. In the white in the back there?

**1:06:01** [Inaudible audience question]

**1:06:11** So the question is...mosaic datasets. This User Conference, we're really trying to push this mosaic dataset.

**1:06:19** Are we going to phase out raster catalogs or raster dataset?

**1:06:22** The answer is definitely no, especially for raster datasets.

**1:06:26** If you get rid of raster datasets, you can't use the mosaic dataset since it's based off of a raster dataset.

**1:06:33** We're not phasing out raster catalogs. We're still supporting them.

**1:06:35** I have heard no word about if we will defer them, but my guess is we'll keep them.

**1:06:42** It'll turn into a normal thing where we don't necessarily improve upon it.

**1:06:46** It's still there. We'll still support it for now...until I hear otherwise. They're still available.

**1:06:52** It's just we've added in a lot of functionality to this mosaic dataset, which we're not able to do given the raster catalog structure.

**1:07:00** So this is how we're making it so we're dealing with the issues that a lot of large agencies have.

**1:07:07** We had to create a new data model. In the blue?

**1:07:11** [Inaudible audience question]

**1:07:14** Mosaic datasets? Mosaic datasets, are they compatible back to 9.3.1?

**1:07:19** The answer is no, they are not.

**1:07:21** It deals with the geodatabase, so since we're storing it in a 10 geodatabase...

**1:07:27** ...we cannot back port it to a 9.3 geodatabase, at least not that we have planned on doing, but...

**1:07:33** [Inaudible comment]

**1:07:34** Right. Okay, so Robert mentioned a good point.

**1:07:36** If you do want to serve out your data using ArcGIS Server, your 9.3 client can view it.

**1:07:43** But in terms of the actual desktop product of accessing a mosaic dataset...

**1:07:49** ...we cannot do it because it's stored in a 10.0 database. In the front?

**1:07:53** The boundary and footprint is...

**1:07:57** Right.

**1:07:58** [Inaudible audience question]

**1:08:00** Yes, the boundary and footprint our polygon features.

**1:08:05** Okay, over there in the blue?

**1:08:08** [Inaudible audience question]

**1:08:16** Sorry, I couldn't really hear that. I just heard peak words here and there.

**1:08:20** [Inaudible audience question]

**1:09:08** Okay, so the question is, when you serve out this mosaic dataset, is it like a raster dataset, or what is it like, correct?

**1:09:17** [Inaudible audience question]

**1:09:20** So first off, just to make sure we're on the same level, to serve out the mosaic dataset...

**1:09:25** ...there's an extension on the server that you need.

**1:09:28** But once you serve it, it's an image service, and so as such, it'll be like a normal image service that you consume.

**1:09:36** It looks like a single dataset. You still have the scale dependency.

**1:09:39** And in addition, there are additional tools. You can actually download some of the...like, your data...

**1:09:45** ...if the person that serves it out allows it, and other things.

**1:09:49** But as you consume it, it's like a dataset.

**1:09:53** Right. So as we mentioned, even though it's stored like a mosaic dataset, a raster catalog...

**1:10:07** [Audience question] So when would you use a raster catalog?

**1:10:10** [Inaudible audience question]

**1:10:15** Right. So the question is, when would you ever use a raster catalog?

**1:10:21** There's a lot of drawbacks from raster catalogs and therefore, a lot of people didn't like using them.

**1:10:28** Well, certain people have certain situations where they do want to use this.

**1:10:33** It's definitely a preference, a lot of preference, especially with this new mosaic dataset.

**1:10:38** Some people just wanted to, as the name mentions, just catalog your data.

**1:10:43** Take all your datasets, throw it into the so-called raster catalog, and be able to see where these so-called footprints lie...

**1:10:51** ...and then choose which footprints you want to actually view or sort of make maybe a subselection on them...

**1:10:59** ...we tried to make the user functionality a lot more like a raster dataset or an image service, in this case. In the brown?

**1:11:02** ...save it out to, then, your study area of interest, and so on and so forth.

**1:11:08** So there's definitely still uses for them, but...a very quick way to just display where your data...

**1:11:13** ...like, as a catalog shows you, it's just a quick, small version of what you have available.

**1:11:19** [Inaudible audience response]

**1:11:22** Right. So what will the mosaic dataset do?

**1:11:24** The mosaic dataset still creates these footprints for you but adds in a lot of functionality...

**1:11:30** ...because like you and many other users said...

**1:11:32** ...you know what? This catalog thing, I like the way it's stored but how do I use this?

**1:11:38** And hopefully the mosaic dataset will be able to have more functionality for you to use, like I said...

**1:11:43** ...like a raster dataset, just a lot more easier. I'll get you in a second up here. Oh, yeah, sorry. Alright.

**1:11:50** [Inaudible audience question]

**1:12:06** You can. Repeat the question.

**1:12:07** Okay, so the question is, can you use the mosaic dataset for analysis?

**1:12:10** And I think a lot of those questions for the mosaic dataset will be answered in the next session.

**1:12:15** But to get to your answer, yes, you can use it.

**1:12:19** There are tools to allow you to make sure you're using a specific tile that you choose, that this tile that you're looking at.

**1:12:26** Because you have scale dependency, you're looking at one tile, but the final resolution might be below.

**1:12:31** Right? And so there are ways that you can say, "Really, only use this tile. I want to do my analysis on this tile"...

**1:12:37** ...and those kind of things.

**1:12:40** Yes. Right. They'll talk a little bit more about how to create it and some of those things.

**1:12:46** [Audience question]Do you have any experience with using a huge number of tiles?

**1:12:52** Do you see any performance degradation?

**1:12:56** We've seen, we've loaded into the mosaic dataset some like 8 million and 10 million records, and so...

**1:13:06** ...it scales very well, especially if you have permits... or overviews, overview files.

**1:13:12** And the display also works very well.

**1:13:14** And really, at that point, it's beneficial to turn off the footprint because displaying all those vectors takes a long time...

**1:13:22** ...kind of like if you have a huge feature class that you're trying to display.

**1:13:26** But the raster result is much faster.

**1:13:30** Okay, we'll take three more questions, and then you can either attend the next session or...

**1:13:35** ...you can come and talk with us down at the Imagery and Raster islands.

**1:13:39** In the green up front? Oh, I'm sorry, I thought you...

**1:13:40** [Audience question]Is this PowerPoint going to be available?

**1:13:43** I have given my PowerPoint, I have uploaded to some server, my student assistant has taken it.

**1:13:48** I'm assuming it's available somehow. I just don't know how you would obtain it, but it is available.

**1:13:55** Over there?

**1:13:56** [Inaudible audience question]

**1:14:10** Okay, so the question deals with the new color map files, the CLR files that we create.

**1:14:16** As mentioned, there's a two-step process. We create the CLR and then we persist the CLR.

**1:14:22** When we use the Add Color Map tool to persist our CLR file, it is now persisted to that particular raster dataset.

**1:14:30** You can delete, move, rename, whatever you want, with your color map file.

**1:14:34** And in fact, your color map file, especially if you're using land-use classification...

**1:14:38** ...can then be used for many other raster datasets.

**1:14:43** But, so the question is, if I edit my CLR file now, will that update my raster dataset?

**1:14:49** The answer is no. That Add Color Map tool is when it was persisted.

**1:14:54** Of course, you can change the color map or the CLR file, and then repersist it again, so on and so forth.

**1:15:00** Alright, last question for this particular session.

**1:15:04** Nobody. Alright, great. Thank you very much for attending. Please stay for the next session or just come down...