Introduction

Develop a basic understanding of thematic images and raster attributes, and learn how to use the attributes to extract information.

Software

- ERDAS IMAGINE

Transcript

0:09

Hello and thank you for watching this Hexagon Geospatial eTraining module: Working with Raster Attributes in ERDAS IMAGINE. In this module we'll develop a basic understanding of thematic images and raster attributes, and learn how to use the attributes to extract information.

0:25

First let's understand the basics of thematic imagery. Here we see a thematic image of a soil map. Thematic images are typically single-layer images made up of pixels, where each pixel contains a single value. The values represent a single theme, class, or category of information. Each class value is assigned a unique color to represent the class in the viewer.

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Each class in a thematic image can have associated attributes, such as class name, color, opacity, or area. This image is a thematic soil map, so it contains attributes such as soil type and soil characteristics.

1:00

Attributes can be added and some can be removed. They can be sorted or used in calculations to gain additional information. Let's open the software and see how to work with the attributes of an image.

1:11

Begin by opening a thematic image.

1. From the Quick Access Toolbar, click the Select Layers To Add icon.

2. Navigate to the directory that contains your file, select it, and click OK.

1:23

This map represents soil in the region around the Wynoochee River Valley in Washington state. Next we'll add a vector layer to see the river system.

3. Select File > Open> Vector Layer.

4. Navigate to the directory containing the vector layer, select it, and click OK. The vector layer is added to the viewer.

5. In the Contents Pane, select the thematic layer to make it the active layer.

6. To view the attributes, activate the Table tab and on the far left and select Show Attributes.

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This opens the attribute table along the bottom of the workspace.

7. Resize the table to see more attributes.

8. From the Home tab, select Fit to Frame to resize the image in the viewer.

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Each color in the viewer represents a class in the attribute table.

9. Click on the image to select a pixel, and highlight the corresponding class in the attribute table.

2:05

Because you're actually selecting a single pixel in the viewer, it's easy to identify it in the table.

10. Return to the Table tab and, from the Row group, click Unselect Rows to unselect all rows in the attribute table.

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Identifying a class in the viewer from a row in the attribute table requires an additional step. Because a class is made up of many pixels in the viewer, we need to change the class color in the attribute table to see its location on the image.

11. In the attribute table, click on a color patch and open the color chooser.

12. Select a bright color that will be easy to identify in the viewer, such as chartreuse. Once selected, the entire class changes color in the viewer.

13. To return to the original color, select the undo button from the Quick Access toolbar.

2:59

The attribute editor will only allow one undo, so always be sure to save a copy of your data before making changes.

14. Again, from the Row group on the Table tab, click Unselect Rows.

3:10

Next, we'll add an Area attribute.

15. Select Add Area from the Column group on the Table tab.

16. In the Add Area Column dialog box, select your units and define an attribute name. For this example, leave the defaults.

17. Click OK to close the dialog.

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The column is automatically added to the attribute table. Because the image information includes pixel size, the area for each class is easily calculated using the pixel size and the histogram count.

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Now we'll use the area attribute to calculate the percent area each class represents on the entire map. To do this, we'll first calculate the total area, then create a new Percent attribute calculated using a formula which divides the class area by the total area.

3:52

First we'll calculate the total area.

18. Click the Area column heading to highlight the entire column.

19. Right click and select Compute Stats.

4:03

This opens a Statistics box containing the computed statistics for the Area column, including a Total value. You may want to write down the total value and keep it handy.

20. Before creating the formula, again click Unselect Rows from the Row group.

4:18

This is good practice before running a calculation to ensure the calculation is applied to all classes. If individual classes are selected, the calculation will only be applied to the selected classes.

21. Next, from the Query group, select Column Properties.

4:35

The Column Properties dialog allows you to add and modify the attribute table. First, rearrange the existing attributes to make the table easier to read. On the left under Columns, we see the column headings listed in their left-to-right display order in the table.

22. Select Color to display the attribute properties on the right.

23. Uncheck Show RGB to remove the Red, Green, and Blue columns from the table.

24. To create our new Percent attribute, from the buttons on the bottom left, click New.

25. Enter Percent in the Title box and change the type to Real.

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This allows the calculated value to be reported with decimal values.

26. Next to Format, click More.

27. In the dialog box, scroll down and select the format containing two decimal places and a percent sign, and click OK.

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Now define the formula.

28. Next to Formula, click More.

5:33

Use the Formula dialog box to build a formula to calculate the percent area by dividing the value in the Area column by the total area.

29. Under Columns, double click Area. The attribute is added to the Formula window with the correct syntax.

30. Next, use the keypad to add a division symbol. Then enter the total value from the Statistics box, 431,181.63.

31. When finished entering the formula, click OK and close the formula builder.

32. In the Column Properties window, select OK.

6:08

The new attribute is added to the table, and the changes to the color attribute are applied. You can now close the Statistic dialog.

6:15

Now we'll see how to select attributes based on criteria. We'll use this to create a mask layer in the viewer. In this example, we will use the characteristic attribute to highlight soils in the area most susceptible to erosion.

33. From the Row group on the Table tab, select Criteria. The criteria dialog functions just like the formula builder. Use it to define the criteria filter.

34. Under Column, double click "characteristics".

35. Under Compares, double click "contains".

36. Use the keyboard to type the word "humus": H-U-M-U-S.

37. On the far right, click "and".

38. Again, under Columns, double click "characteristics".

39. And under Compares, double click "contains".

40. Use the keyboard to type "fine": F-I-N-E.

41. Click Select and Close.

7:07

This highlights all of the classes with characteristics that contain both "humus" and "fine" in the attribute. Soils with this type of description are highly susceptible to erosion. Now we'll see how to use the attributes to create a mask layer showing only the classes we're interested in seeing in the viewer.

42. From the Row group, select invert selection.

7:27

This reverses the class selection in the table.

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Now everything that we're not interested in is selected. We'll set the opacity for these classes to zero so that they're no longer visible in the viewer.

43. Click on the Opacity attribute heading to select the column.

44. Right click on this column and select Formula.

45. In the Formula window, type a 0 and click Apply.

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All values of mutually selected rows and columns are changed to a 0.

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This sets the Opacity value for these classes to zero so they are no longer seen in the viewer, leaving only the soils with high erosion rates, the ones we are interested in seeing, left in the viewer.

8:03

Click the small X on the upper right of the attribute table to close it. You may choose to save your changes. For our example, click No.

8:12

Click the Clear View icon from the Quick Access Toolbar to remove all data from the viewer. If needed, save your changes for future use.

8:21

Thank you for watching the eTraining module from Hexagon Geospatial. For more eTraining, please visit hexagongeospatial.com/eTraining.