Cropland and ArcGIS Online Exercise: Pixels and Crop Changes

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Grade Level: College Freshman or High School Seniors

Time Frame: Two Class Periods

National Geographic Standards:

<u>Standard 1</u>: How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information

<u>Standard 14:</u> How human actions modify the physical environment

Objectives
After this assignment, students should be able to:
-   Analyze raster data to examine spatial patterns.

Lecture before Exercise
The teacher would need to complete a lecture on pixels and the Cropland data. They can check out the PAView website for a Cropland Data presentation.
   A) Pixel Presentation
      a) Pixels are geographic data
      b) Gridded data
      c) **GIS Introduction** by David Buckey – *Raster Data Formats*
         http://planet.botany.uwc.ac.za/nisl/GIS/GIS_primer/page_17.htm

Procedures

1) Students should log into ArcGIS online
2) Divide the students by Pennsylvania Counties
3) Click Basemaps and Choose Light Gray Canvas in ArcGIS Online

4) Students should Click Add – Search for Layers – ArcGIS Online
5) Type in USA Cropland – Choose the one by ESRI

6) Click USA Cropland and then Add to Map
7) Search for Pennsylvania Counties and choose the one by glc_esri called County Boundary_Pennsylvania (there are 2 by glc_esri)
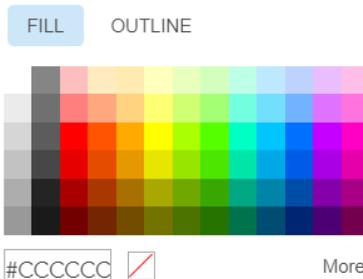

8) Click Change Style Under the County Boundaries
9) Then in Select a Drawing Style – Choose Options
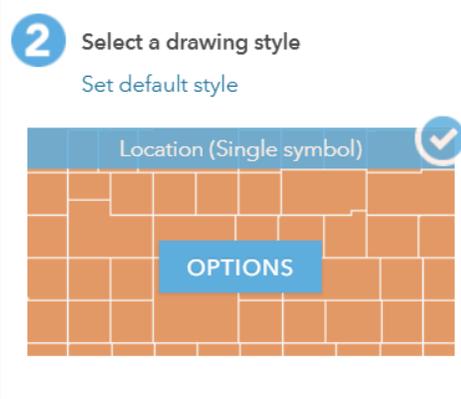
10) Click the Square next to Symbols

11) Under Fill – choose No Color

12) Click Outline and choose the color – Black
13) Click Ok – Ok and then Done

14) Click the Legend Tab

15) Students should zoom into their county and then select Legend on the Top Left

 Legend

16) What types of crops do the students see in their county? They will need to Zoom In and Out

17) Have them zoom in further – are there more crops shown? Why? Discuss the issue of scale

| Large Scale Map	Small Scale Map
- Large Representative Fraction	- Small Representative Fraction
- Small amount of area	- Large amount of area
- More detail	- Less detail

18) Students should zoom in even further and examine the data

19) Discuss the issue of pixels, etc.

20) Students should click the Measure tool – Length and set the units to Meters (Dropdown Menu)

Find area, length, or location
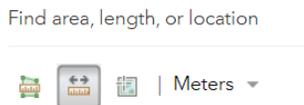
| Meters ▾

21) Click on one side of the pixel and double click on the other side of the pixel
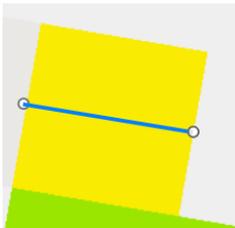
22) What is the distance in meters?

23) Please ask the students to compute the size of the pixel is in square meters. Discuss the data types that create this data layer.

24) Please tell the students click the X to close the Measure Tool

25) Students should Zoom to their selected County

26) Students should divide their county into parts (each student could take a part or two – does not have to be exact) so they can visualize all the types of crops. For example…
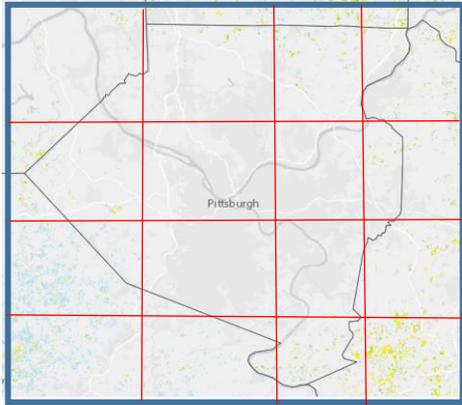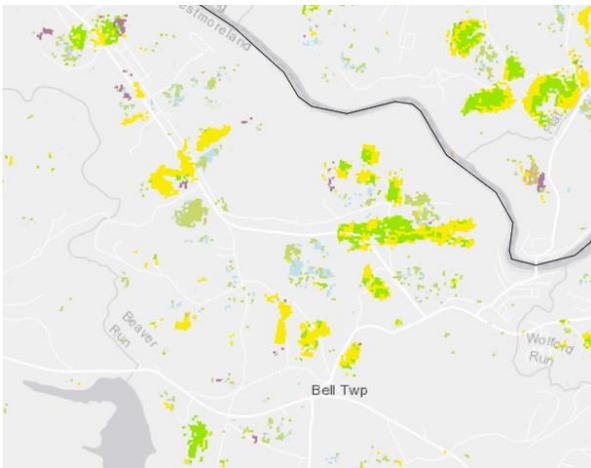
27) Then the student assigned to the Northeastern part of the county should Zoom into the it and click the play button on the Time Animation Tool
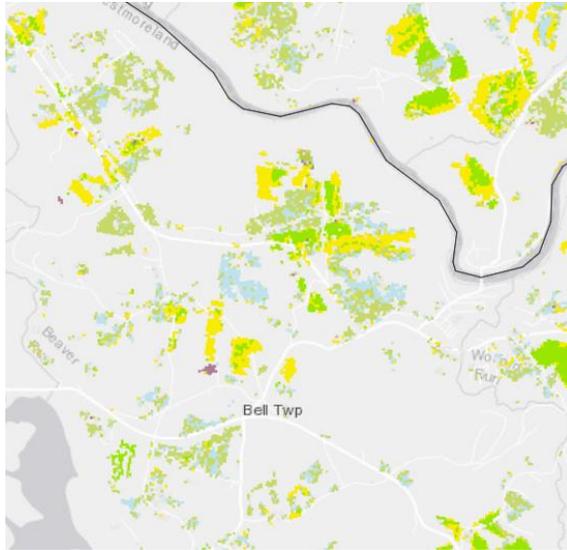

January 1, 2008 - January 1, 2009

28) Students then should write down the changes to the portion of the county (Using the Legend)

A) January 1, 2008 to January 1, 2009

B) January 1, 2010 to January 1, 2011

C) For example…
   a) Increase in Alfa in some areas, etc.
   b) Decrease in Corn, etc.
D) Complete the Table below

Crop Types Increasing	Crop Type Decreasing	Crop Types Similar Amount
Alfa	Corn	
Soybean		

29) Repeat Step 25 for all parts of the county.
30) Group should meet to discuss similarities and differences.
31) Group will complete research on changing crop types in their county and present their findings to the class