

SOC 4650/5650: Lab-11

Christopher Prener, Ph.D.

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Directions

Please complete all steps below. All four maps should be uploaded to your GitHub assignment repository by 4:20pm on Tuesday, April 4th, 2017. This lab uses data from M0Boundary and USInfra.

Coal Mines in Illinois

Missouri does not have any active coal mines but a neighboring state, Illinois, has some. This section of the lab is designed to identify all of those coal mines using a shared attribute.

1. In a new map document, add data on coal mine locations from the directory USInfra to your map document as well as the Illinois state boundary data from M0Boundary.
2. Set the projected coordinate system to USA Contiguous Albers Equal Area Conic projected coordinate system.¹
3. Use either the attribute state or the attribute mstafips to select all coal mines in Illinois and then create a new layer.
4. Make sure the coal mines are symbolized in a way that makes them easy to distinguish from the Illinois state layer, and remove the national data from your map document.
5. Export the map image as a pdf at 300dpi.

¹ The State Plane and UTM zones do not provide a single projection that covers the entire state of Illinois. Using Albers is therefore a good alternative.

Coal Mines in Kentucky

Another neighboring state, Kentucky, has even more coal mines than Illinois does. This section of the lab is designed to identify all of those coal mines using their spatial location.

6. In a new map document, add the data on coal mine locations again. Also add the Kentucky state boundary data from M0Boundary.
7. Set the projected coordinate system to USA Contiguous Albers Equal Area Conic projected coordinate system.²

² The State Plane and UTM zones do not provide a single projection that covers the entire state of Kentucky. Using Albers is therefore a good alternative.

8. Select all coal mines in Kentucky based on their spatial location and the create a new layer.
9. Make sure the coal mines are symbolized in a way that makes them easy to distinguish from the Kentucky state layer, and remove the national data from your map document.
10. Export the map image as a pdf at 300dpi.

Coal Fields in Missouri

While Missouri does not have any active coal mines, there are coal fields within the state. Create a map showing only these coal fields within Missouri.

11. In a new map document, add the data on coal fields from the directory USInfra to your map document as well as the Missouri state boundary data from M0Boundary.
12. Set the projected coordinate system to NAD 1983 UTM Zone 15N.³
13. Clip the coal fields data to the Missouri state boundary.
14. Remove the original coal fields data from your map document so that only the newly created data for Missouri remains.
15. Make sure the coal fields data are symbolized in a way that makes them easy to distinguish from the Missouri state layer.
16. Export the map image as a pdf at 300dpi,

³ This UTM zone covers the majority of the state, and is therefore a permissible choice for projecting data from Missouri.

Bituminous Coal Fields in Missouri

There are two types of coal fields in Missouri, bituminous coal (which causes high amounts of air pollution) and lignite coal (which has limited potential to create heat when burned). Bituminous coal is used in coal-fired power plants. Create a map showing bituminous coal fields symbolized as a *single* polygon.

17. Using the same map document as the previous section, copy the layers into a new data frame.
18. Select only the polygons that represent coal fields with Medium and High Volatile Bituminous coal and create a new layer from your selection. Do not include polygons where this type of coal is indicated to be "in doubt".

19. Dissolve the features that contain bituminous coal into a single polygon using an attribute that each polygon has a common value for.
20. Remove the Missouri coal fields data from the previous section so that only the newly created data for bituminous coal remains.
21. Make sure the coal fields data are symbolized in a way that makes them easy to distinguish.
22. Label this single polygon with the DISCRIPTIO attribute.
23. Export the map image as a pdf at 300dpi.