CO$_2$ Exercise for Global Change 404 XW

EPA inventories of CO2 and other greenhouse gas emissions

Task: Learn about the amount of emissions of CO$_2$ and other greenhouse gases (GHGs) from sources in the U.S. at specific (point) locations. The data examined is for the most recent year archived, 2013.

Goals: Compare GHG emissions from various sources around the country and in Iowa. Develop a consideration of pathways to explore for reducing emissions, through discussion with other members of your discussion group.

Steps:

1a. Read the press-release article on EPA information on power plants and greenhouse gas (GHG) emissions:
(a) on the class web page (http://www.meteor.iastate.edu/classes/mt404-xw/) under "EPA CO2 emissions inventories" in Class Exercises, or
(b) in Blackboard, under "EPA Greenhouse Gas Inventory" in Assignments.

1b. Read the article about focusing on reducing methane (CH$_4$) and aerosol emissions.
(a) on the class web page (http://www.meteor.iastate.edu/classes/mt404-xw/) under "Focus first on methane or soot?" in Class Exercises, or
(b) in Blackboard, under "Focus first on methane or soot?" in Assignments.

1c. Read the article about EPA's 2014 draft regulations for reducing power plant emissions of greenhouse gases.
(a) on the class web page (http://www.meteor.iastate.edu/classes/mt404-xw/) under "EPA draft emissions regulations" in Class Exercises, or
(b) in Blackboard, under "EPA draft emissions regulations" in Assignments.

1d. Read the article by Kintisch on expected impacts of EPA's regulations
(a) on the class web page (http://www.meteor.iastate.edu/classes/mt404-xw/) under "EPA's baby step" in Class Exercises, or
(b) in Blackboard, under "EPA's baby step" in Assignments.

1e. Read the article by Wang on how China might respond to EPA's regulations
(a) on the class web page (http://www.meteor.iastate.edu/classes/mt404-xw/) under "China's possible response to EPA" in Class Exercises, or
(b) in Blackboard, under "China's possible response to EPA" in Assignments.

2. Look through the CO$_2$ emissions web site.
http://ghgdata.epa.gov/ghgp/main.do

3 – Part I. Next, you will find information pertaining to one of the top emitters. You will need to coordinate with other members of your discussion group. To do this, (a) first look in your group's discussion-board thread for this exercise to see what stations other members of your group might have selected already.
(b) then post in the discussion board, under the same thread, the station you intend to research,
(c) then research the station's inventory, as instructed below.

Find one of the top 3 emitters listed in the first article:
        a) Scherer power plant in Juliette, GA
        b) Bowen plant in Cartersville, GA
        c) James H. Miller Jr. power plant in Quinton, AL
or find on of the 3 others in the top 20:
        d) Rockport, IN
        e) Cheshire, OH
        f) St. Albans, WV
Pay attention to what emitters your fellow discussion group members are working on. You need to post information for one of those six that your other group members have not analyzed to get credit.
To find the stations and gather desired information (below),
go to the emissions web site (http://ghgdata.epa.gov/ghgp/main.do)
- click on "View US Facility Map" on the page
- click on the state you are looking for (you may need to do this twice)
- look through the "Total Emitters Displayed" list on the left side. You may need to click on a bar on the left side of the map to make the list pop out from the left side. Using the navigation buttons at the bottom of the list, find your station.

You might find it useful to use Mapquest, Google Maps or Wikipedia to find the location. If you find the county (using Wikipedia), you can narrow your search using the "county" pull-down menu for your selected state in the upper right corner. This only works if you have navigated to a point where only your target state is highlighted.

Once you have found your station in the list, click on its name to bring up the detailed emissions information for it.

3 – Part II. Your emitter, obtain its 2013
a) CO_2 equivalent (CO_{2e}) emissions, in MT units
b) methane emissions
c) nitrous oxide emissions
d) fuel source

3 – Part III. For the emitter you choose, obtain the same information for 2010, 2011 and 2012, from the same web site. You can obtain other years by using the "Data Year" menu in the upper left corner.

Make a list for your station giving this information and post it in your Discussion Group's site.

4. ***For your station, find its state's emissions***
a) for Power Plants + Refineries
b) for all listed sources
You can find this information in the bar that goes across the bottom of the main window, provided you are looking at the state information.
Add to your list the % of a state's CO$_{2e}$ emissions coming from your selected plant.

5. Look at emitters across Iowa and, in particular, Story County. Who are the largest emitters in Story County?   Who are others?
Again, find a Story County or Boone County emitter not yet taking by a group member and add it to the list you created, including all the same type of information as requested under steps 3-5 for the big emitters.
As before, it would be a good strategy to post first on your group's discussion blog the station you intend to research, and then research the station. That way, you should not waste time doing a station already under consideration by another member of your group.

How do the local emitters compare with the big emitters? Who are the smaller emitters? Anything distinctive about them? (e.g., type of activity, source of fuel)

6. Let's think some about possibly trying to reduce CO$_2$ emissions. What might be good strategies with these emitters here (recognizing that further digging would be needed to get more complete answers)? Should attention focus on the biggest emitters? Or should all be required to reduce a certain percentage? Or, would you advocate other options? The articles above might be good to think about here, especially in terms of practical and international implications.

GRADING: Each member of the group will get (10 points total)

3 points for posting a complete set of the requested big-emitter information (steps 3-4) that has not been posted already by another member of your discussion group.

3 points for posting a complete set of the requested local information (step 5) that has not been posted already by another member of your discussion group.

4 points for providing a comment on step 6 that is based in part and in a substantive way on the readings under step 1.