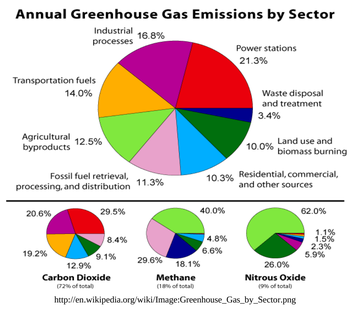


http://en.wikipedia.org/wiki/Image:Greenhouse_Gas_by_Sector.png

Understanding Carbon Dioxide Gas Emissions in the U.S.

List of countries by emissions

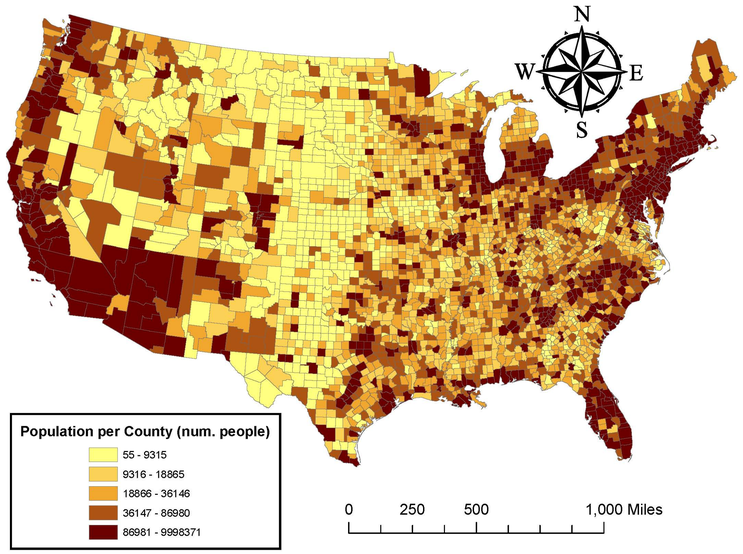
Rank	Country	Annual CO_2 emissions (in thousands of metric tons)	Percentage of total emissions[1]
	World	27,245,798	100.0 %
1	United States [R]	6,049,435	20 %
2	China	6,010,170	18.4 %
3	European Union	3,115,125	11.4 %
4	Russia	1,624,993	5.6 %
5	India	1,342,962	4.9 %
6	Japan	1,257,963	4.6 %
7	Germany	908,767	3.0 %
8	Canada	639,403	2.3 %
9	United Kingdom	587,261	2.2 %
10	South Korea	465,643	1.7 %
11	Italy [R]	449,948	1.7 %
12	Mexico	438,022	1.6 %
13	South Africa	437,032	1.6 %
14	Iran	433,071	1.6 %
15	Indonesia	379,260	1.4 %
16	France [R]	373,693	1.4 %
17	Brazil	331,796	1.2 %
18	Spain	330,497	1.2 %
19	Ukraine	330,039	1.2 %
20	Australia	326,757	1.2 %
21	Saudi Arabia	308,393	1.1 %
22	Poland	307,238	1.1 %
23	Thailand	268,082	1.0 %
24	Turkey	226,125	0.8 %
25	Kazakhstan	200,278	0.7 %
26	Algeria	194,001	0.7 %
26	Malaysia	177,584	0.7 %

http://en.wikipedia.org/wiki/List_of_countries_by_carbon_dioxide_emissions

The United States is the global leader when it comes to carbon dioxide emission. We produce a whopping 1/5 of the world's total carbon emission yet we are only ranked third in population and fourth in total land mass compared to all the other countries in the world. As concerns about climate change rise, reducing carbon dioxide emissions from many different sectors is becoming a more important topic among policy makers and consumers. An important step in fully understanding what can be done to curb CO2 emissions in the United States is to visualize where the greatest emissions arise in the country. From there actions may be targeted at those areas whose impact is the greatest.

Greenhouse gas emissions for the year 2002 have been broken up by sector and visualized in the figure to the left. I have been able to find data for 6/8 of those sectors, making up a total of 86.2 % of the United States' total carbon emission for 2002. I have split these sectors according to the data available from multiple governmental and non governmental sources. I refrained from normalizing the emission data by population because for some sectors, such as farming, that normalization does not make any sense and I wanted to display a set of maps that are comparable to one another within the scope of CO2 emissions. It would be difficult to compare normalized maps to non normalized maps to obtain a comprehensive understanding if the carbon problem. I have briefly described the data sources and the steps taken to produce the maps in the poster below.

Residential/Commercial



Residential/Commercial – A proxy that I used for estimating the distribution of residential and commercial entities in the United States is the population distribution of the country. This data is available from the National Atlas at http://nationalatlas.gov/mld/ce2000t.html in census form. For the map in this poster I used the population census data from the year 2005 and mapped the distribution by county.

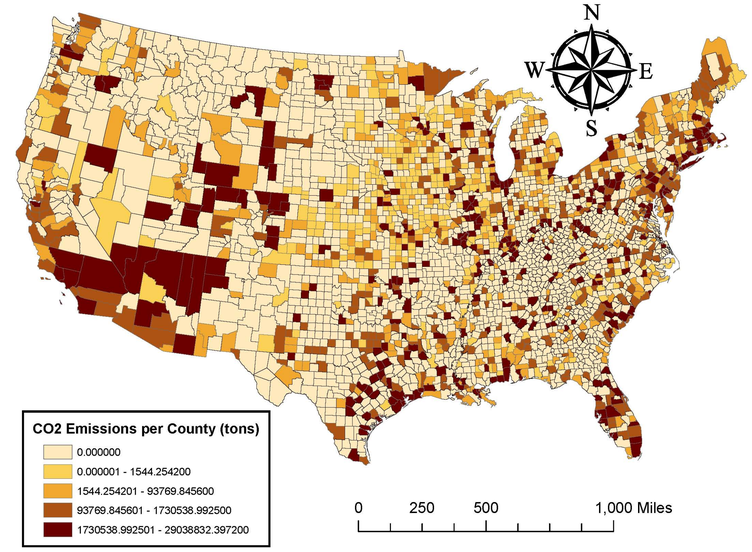
Agriculture – A proxy that I used for estimating the impact of farming on carbon emissions is the size of farms per county in the United States. I obtained a dataset containing a great deal of information about farming in the U.S. from the Agricultural Census for the year 2004 at http://www.nass.usda.gov/Data_and_Statistics/Quick_Stats/index.asp. I then mapped the sum of farming acres per county across the United States.

Power Stations/Fossil Fuel Processing– A comprehensive database of every power station in the United States and their annual emissions of CO2 and other pollutants is available online from the United States Environmental Projection Agency for the year 2002 at http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html. This data is available as a large table which I had to alter before importing into G.I.S. I only analyzed the carbon emission from each power station, though the database contains a wealth of other useful emissions data.

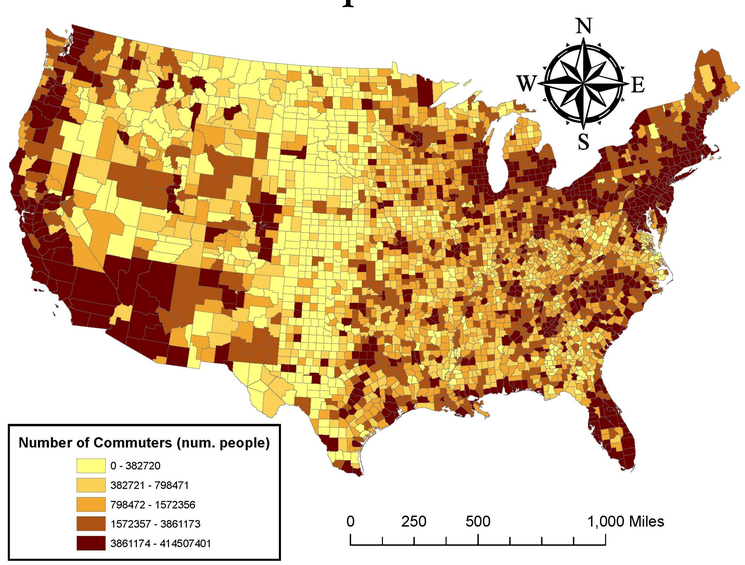
Industrial -- A comprehensive database of every industrial facility emitting pollutants in the United States is available from the EPA's National Emissions Inventory from 2002 at S:\classes\UEP_ENV\misc_data\national_emissions_inventory. This data set, similar to the eGrid dataset, contains more than just CO2 emission data but for the scope of this project I chose just to focus on carbon emission visualization.

Transportation – A proxy that I used for estimating the impact that transportation has on CO2 emissions in the United States is the number of people commuting to work. I obtained a data set containing the percentages of people over 16 who commute to work for every county in the U.S. for the year 2004 from the U.S. Census Bureau's Fact Finder at http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=DEC&_submenuId=datasets_1&_lang=en. I then created a table which tabulated the total number of commuters by multiplying the percentages of commuters per county by the total population of each community over 17 years of age.

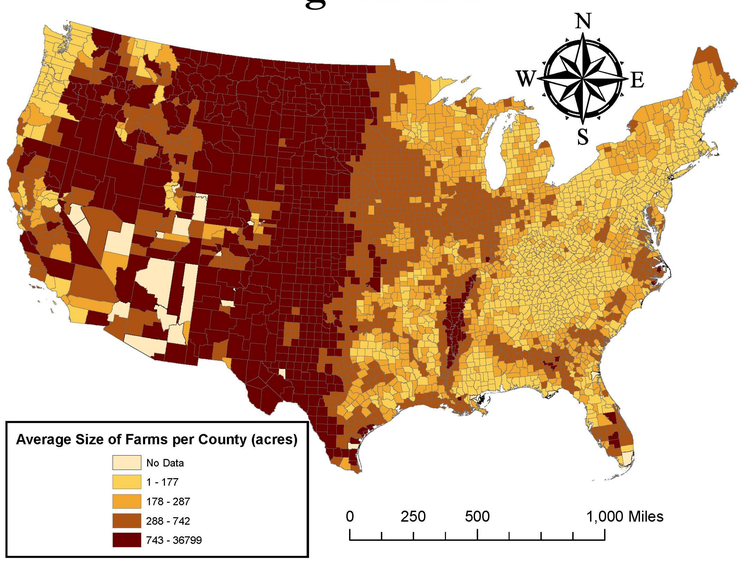
Power Stations/Fossil Fuel Processing



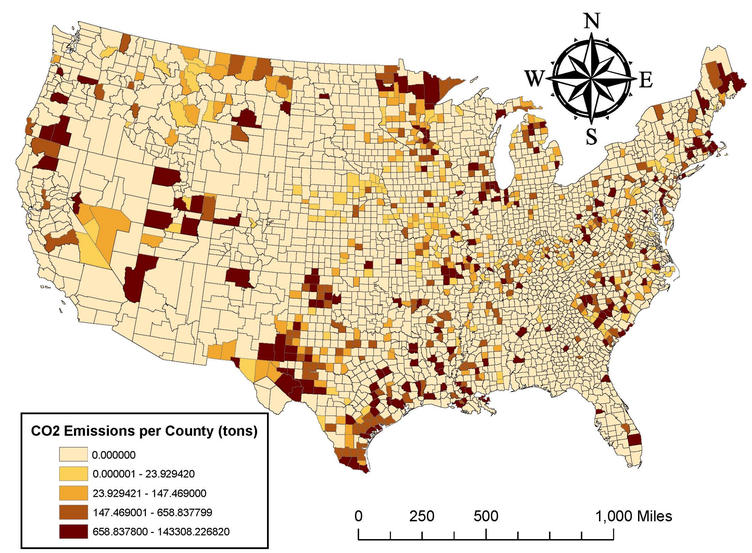
Transportation



Agriculture



Industrial



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