Effects of CO2 emissions on the weather in USA by State(subject to change)

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CO2 emissions data set: - <http://epa.gov/statelocalclimate/resources/state_energyco2inv.html>

(Currently searching for weather data set)

Domain: The domain that we are targeting for this project is the relationship between a state’s CO2 emissions by type and the changes observed in the weather for that state over time. The dataset found during our initial research allows us to target this domain as it shows data dissolved into different types of emissions associated with each state. This visualization will primarily be targeted towards scientific research performed in the field of different types of CO2 emissions and their effect on the atmosphere.

Task: - The visualization should be able to provide tools to a user with which he can compare and summarize different pieces of information associated with each state and observe changes in weather trends correlated with the CO2 emissions generated by each state over time. For example, the user will either be able to observe a static temperature in a specific year for a state or for all states, or the user can observe a trend, a change in weather for all states over a time series representation of the data. The user can compare a trend observed in CO2 emissions by each state over 2 decades, and compare that to a trend observed in climate for each state to summarize if CO2 emissions affect climate, or what type of CO2 emissions specifically cause a negative effect on the climate in a more drastic manner when compared to other types of CO2 emissions.

Dataset: The dataset contains five categories of CO2 emission for each state in the US. Ranging from 1990 to 2012, the dataset shows emission for commercial, industrial, residential, transportation, and electric power in million metric tons unit. This dataset will allow us to determine which state have the highest or lowest CO2 emission, which will allow us to map the data with those from temperature value.

**User Stories**

1. As a user, I want to be able to view the overall CO2 emissions for each state in the US, so that I may be able to see which states are the biggest contributors in CO2 emissions and which states are the smallest contributors in CO2 emissions.

2. As a user, I want to be able to view the overall range of temperatures that have occurred state-by-state across the United States from 1990 to 2012 so that I may be informed as to which states have had the highest temperature changes and which states have had the smallest temperature changes.

3. As a user, I want to be able to view an infovis that cross analyzes temperature changes with CO2 emissions from 1990 to 2012 so that I can clearly see whether a correlation exists between CO2 emission levels and temperature levels.

4. As a user, I want to be able to view an infovis where a time-lapse idiom is implemented so that I may be able to see the temperature change and the changes in CO2 emissions year-by-year so that I may be able to more accurately see the change in CO2 levels throughout the course of 1990 - 2012.

**Previous Work**

***1. Environmental Protection Agency:*** <http://www.epa.gov/climatechange/ghgemissions/global.html>

The environmental protection agency website has constructed several charts which reflect CO2 emissions from fossil fuels from the years 1900-2008 globally and by the countries that are the largest contributors of CO2 emissions. Even though our project is geared towards analyzing this data in the light of weather change, this may prove to be a good source to get us started since it will give us an idea of what type of data to anticipate and analyze.

2. **NASA**

<http://climate.nasa.gov/>

The climate section of NASA’s website provides great information about various sorts of data relating to climate around the world. Data such as global temperature change from the 1880s up till 2010 and global carbon dioxide levels in parts per million from 2005 - 2015 would provide great insight into the type of data that we will be observing. Even though at face value this may seem greatly similar to our project, NASA has created different infographics that reflect these changes. Whereas in our project, we are seeking to merge these two fields together in order to create a visualization where a user can easily see whether a correlation exists between CO2 emissions and temperature changes across the united states.

For us guys: an infogrpahic similar to what we are looking for:

<http://www.planetseed.com/files/uploadedimages/Science/Earth_Science/Global_Climate_Change_and_Energy/Related_Articles/carbon_dioxide(1).jpg>

from: <http://www.planetseed.com/relatedarticle/co2-and-temperature-change>