

PS#5, Due Monday, May 11

1. Calculating your carbon footprint: Please estimate your carbon footprint in Tons of CO₂ per year. Do this by doing rough calculations on your use of:

- a) Car transport – calculate gallons used by you. So if you and your room mate need 200 gallons for the year to commute to Cal Poly from Los Osos, you are responsible for 100 Gallons.
- b) Air transport. What is the mileage of the planes you travel in? How far do you fly? How many people share this fuel? You can say that the planes use kerosene... but it is like gasoline.
- c) Use of Natural Gas and Electricity
- d) Food see below for a paper that will help you.
- e) Clothing and other goods

For the last two categories: The embedded carbon in the things you buy, there is a nice publication with some good graphs for you to look at (in particular Fig #2):

<http://escholarship.org/uc/item/55b3r1qj>

2. Climate Change and You: Chris Jones, at Berkeley has created a spreadsheet-based tool for individuals to estimate all direct and indirect emissions of GHGs in CO₂ equivalent units resulting from their primary energy related choices: transportation, food, housing (including energy use), goods and services, and waste. Go to Chris' website: <http://consumerfootprint.org/> and spend some time exploring to understand the basic logic of what the site. Go to the calculators and fill out the widget that pertains to you, most likely the household widget at the bottom of the calculator page. Fill out the carbon calculator with your individual information for each sector. Please be as honest as possible (I won't publish your names). Go to the Summary tab and save your answers.

a) (5 points) What is the ratio of the highest category (e.g. housing, food, etc.) of your emissions to the lowest? What is the ratio of your total emissions to the national average of 20 tons CO₂ per person per year? What is the ratio of your total emissions to the global average of 4.5 tons CO₂ per person per year?

b) (5 points) What do you find most surprising about your results? Please explain in a short paragraph.

c) (5 points) What lifestyle changes would you have to make in order to emit no more than the global per capita average of 4.5 tons of CO₂? To do this, change the values you entered in the spreadsheet until your total emissions are below 4.5 tons CO₂. Try to make realistic choices. What do the results say about how your lifestyle compares to the lifestyles of the majority of people on the planet? Could you live at or below the global average? Please explain in one short paragraph.

d) (10 points) What if, starting June 1, 2012, everyone suddenly started living like the average American (American per capita CO₂ emissions: http://en.wikipedia.org/wiki/List_of_countries_by_carbon_dioxide_emissions_per_capita)? How quickly would we reach what many climate scientists consider to be the dangerous level of 500 ppm (parts per million) of carbon dioxide in the atmosphere? Assume the oceans and

biosphere will continue to absorb about half of the CO₂ emitted, so the atmospheric concentration of CO₂ increases by one ppm CO₂ for every 2.12 GtC emitted.

e) (5 pts) How did your estimate from #1 differ from the output of the calculator above? Can you comment on reasons for the difference?

3) Please hand in good test corrections for the MT. Make sure you understand and convey everything well.