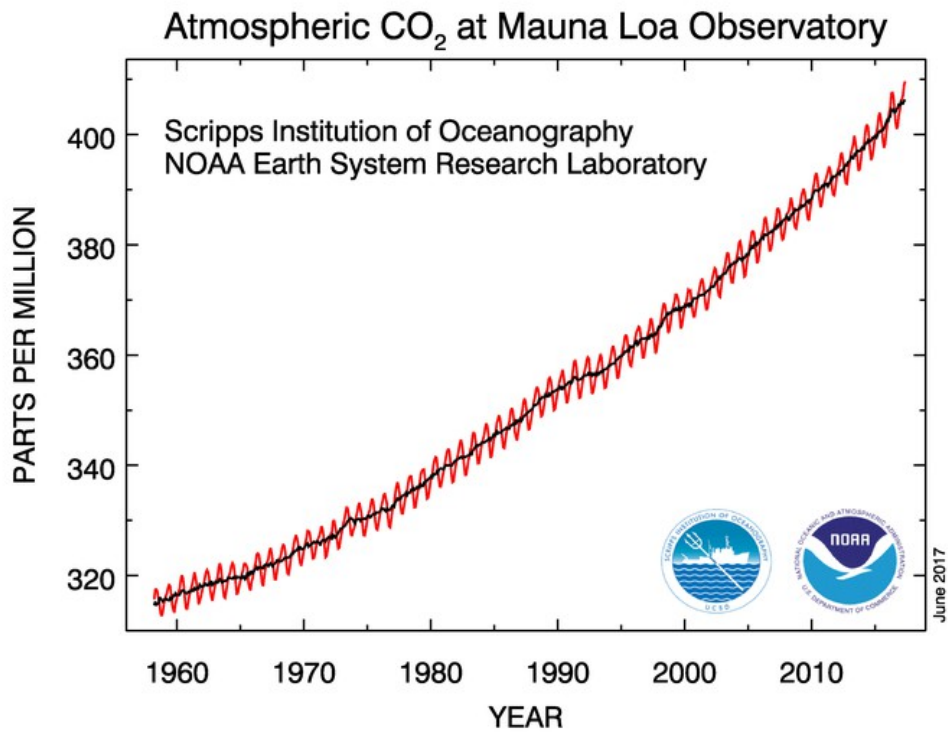


Alan Siddons 2017

Explanation:

We know from reports that atmospheric carbon dioxide is on the rise,



and we're given to understand that our activities are driving this growth. But is this true?

We can assess how much we're contributing by referring to global anthropogenic [emission estimates](#) from year to year.

Global Emissions			
Year	Total	Fossil Fuel & Cement	Land-Use Change
2014		9.795 GtC	~ 0.9 GtC
2013		9.735 GtC	
2012		9.575 GtC	
2011		9.449 GtC	
2010	9.995 GtC	9.140 GtC	0.855 GtC
2009	9.567 GtC	8.700 GtC	0.867 GtC
2008	9.666 GtC	8.740 GtC	0.926 GtC
2007	9.472 GtC	8.532 GtC	0.940 GtC
2006	9.355 GtC	8.363 GtC	0.992 GtC

Source Data Global Carbon Project [.xlsx]

These are usually expressed in Gigatons of Carbon (Gt C), and it's easy to determine the difference from the year before, as I've depicted here.

Year	Gt C	Gt change
1946	1.24	0.08
1947	1.39	0.15
1948	1.47	0.08
1949	1.42	-0.05
1950	1.63	0.21
1951	1.77	0.14
1952	1.8	0.03

CO2 data is usually expressed in parts per million in the atmosphere. But the government's Carbon Dioxide Information Analysis Center (CDIAC) offers a simple [conversion factor](#) to obtain the equivalent gigatons of carbon. Having that, one may once again determine annual differences, as I've depicted here.

Year	ppm	Gt C	Gt change
1946	310.1	660.51	0
1947	310.2	660.73	0.21
1948	310.3	660.94	0.21
1949	310.5	661.37	0.43
1950	310.7	661.79	0.43
1951	311.1	662.64	0.85
1952	311.5	663.5	0.85

So then, drawing on sources like the [CDIAC](#) and the [National Oceanic and Atmospheric Administration](#), one merely compares two respective columns of the year-by-year differences. The chart above is the result.

The average human contribution over this span is 0.135 gigatons, while the atmosphere's average carbon change is 3.202 gigatons, which makes the human contribution 4.2%. This 4.2% is consistent with previous [U.S. government/IPCC](#) reports that attributed about 2.9 to 4.5% of yearly emissions to humans. For instance,

Table 2. Global Natural and Anthropogenic Sources and Absorption of Greenhouse Gases

Gas	Sources		Absorption	Annual Increase in Gas in the Atmosphere
	Natural	Human-Made		
Carbon Dioxide (Million Metric Tons of Carbon) . . .	160,000	7,100	163,000	3,200-3,600
Methane (Million Metric Tons of Gas)	160	375	500	35-40
Nitrous Oxide (Million Metric Tons of Gas)	9	6	11	3-5

Source: Summarized from ranges appearing in Intergovernmental Panel on Climate Change, *Climate Change 1994: Radiative Forcing of Climate Change* (Cambridge, UK: Cambridge University Press, 1995), pp. 41, 51, 86, and 90.

source: [Emissions of Greenhouse Gases in the United States 1987-1994, October 1995](#)

Are the human emission estimates accurate? Are Mauna Loa's techniques sound? I don't know. Assuming they are, though, my impression is that we're not driving a trend at all -- but rather riding alongside a lurching kind of CO₂ increase that seems to have a mind of its own.

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