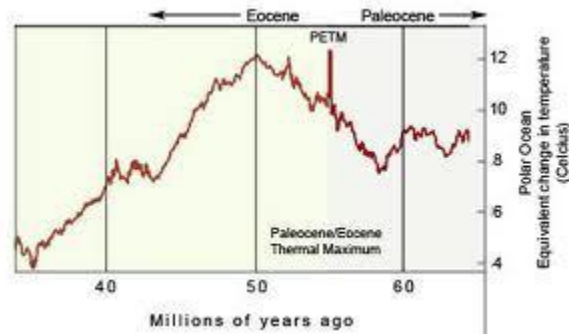


## High carbon levels: Have we been here before?



After Sandy struck the East Coast, we saw what the world will be facing if and when sea levels rise very substantially, as some scientists have predicted.

Is warming really the result of massive amounts of carbon trapping solar heat and warming the planet? A very interesting article in the October 2011 issue of [National Geographic](#) magazine reported on research carried out by Carnegie Institute and University scientists in Wyoming's Bighorn Basin. Analysis of rock formations led these scientists to gain information about an event many millions of years ago at the end of the Paleocene era when, over a period of several hundred thousand years an extremely large amount of carbon was thrown up into the atmosphere. This eventually warmed the earth by 9-12 degrees, melting all of the polar ice and causing the oceans to rise by many feet. The source of the carbon remains unclear, but was most likely attributed to methane hydrates of the type found today under the Arctic and the seafloor. Volcanic eruptions and/or a shift in the earth's orbit to put it closer to the sun may have facilitated the melting of these hydrates, with release of methane that turned into carbon dioxide. The carbon in the atmosphere was reabsorbed over thousands of years, eventually bringing it down to low levels, before it started up again.

Could the scientists' hypothesis be true: i.e. that massive carbon amounts in the atmosphere were responsible for warming the earth, when it might have been the shift in the earth's orbit and nothing to do with carbon? We can only speculate about that. [Other articles](#) have appeared to discuss this subject.

Continuing with their carbon-related hypothesis, the researchers estimated that the massive Paleocene carbon release raised atmospheric carbon dioxide levels to around

1500 parts per million(ppm). Up to the present, fossil fuel burning has released more than 300 billion tons of carbon since the start of the industrial revolution. The researchers estimated that the Paleocene event released about ten times as much carbon, equivalent to burning and releasing as carbon dioxide all of the estimated remaining global coal, oil and gas reserves. Currently, our atmosphere contains about 400 ppm and is rising about 3ppm per year.

Long term, say over the next fifty to one hundred years, events such as Sandy should eventually cause countries to take dramatic steps to limit carbon emissions and perhaps even to absorb carbon already in the atmosphere (such technology is being developed by a number of inventors). In the near term, threatened coastal areas should figure out how to deal with the inevitable rise of the sea level and increasingly severe storm surges and coastal flooding. My January 31st post has Bjorn Lomborg's views on this subject.

Source: <http://chemengineeringposts.wordpress.com/2013/02/16/high-carbon-levels-have-we-been-here-before/>