

Sucking CO2 from the skies with artificial trees

Scientists are looking at ways to lower the global temperature by removing greenhouse gases from the air. Could super-absorbent fake leaves be the answer?

UK researchers have developed a porous material that can preferentially soak up CO₂ from the atmosphere.

It may be a colourless, odourless and completely natural gas, but carbon dioxide is beginning to cause us a lot of problems. It only makes up a tiny fraction of the atmosphere (0.04% of all the gas by volume – or 395 parts per million) but it has a huge effect on the Earth's temperature. That's because unlike nitrogen or oxygen, carbon dioxide molecules absorb the Sun's heat rays even though they let light rays pass through, like a greenhouse.

Scientists are looking at ways to modulate the global temperature by removing some of this greenhouse gas from the air. If it works, it would be one of the few ways of geoengineering the planet with multiple benefits, beyond simply cooling the atmosphere.

Every time we breathe out, we emit carbon dioxide just like all other metabolic life forms. Meanwhile, photosynthetic organisms like plants and algae take in carbon dioxide and emit oxygen. This balance has kept the planet at a comfortably warm average temperature of 14C (57F), compared with a chilly -18C (0F) if there were no carbon dioxide in the atmosphere.

In the Anthropocene (the Age of Man), we have shifted this balance by releasing more carbon dioxide than plants can absorb. Since the industrial revolution, humans have been burning increasing amounts of fossil fuels, releasing stored carbon from millions of years ago. Eventually the atmosphere will reach a new balance at a hotter temperature as a result of the additional carbon dioxide, but getting there is going to be difficult.

The carbon dioxide we are releasing is changing the climate, the wind and precipitation patterns, acidifying the oceans, warming the habitats for plants and animals, melting glaciers and ice sheets, increasing the frequency of wildfires and raising sea levels. And we are doing this at such a rapid pace that animals and plants may not have time to evolve to the new conditions. Humans won't have to rely on evolution, but we will have to spend hundreds of billions of dollars on adapting or moving our cities and other infrastructure, and finding ways to grow our food crops under these unfamiliar conditions.

Even if we stopped burning fossil fuels today, there is enough carbon dioxide in the atmosphere - and it is such a persistent, lasting gas – that temperatures will continue to rise for a few hundred years. We won't stop emitting carbon dioxide today, of course, and it is now

very likely that within the lifetime of people born today we will increase the temperature of the planet by at least 3C more than the average temperature before the industrial revolution.

<http://www.bbc.com/future/story/20121004-fake-trees-to-clean-the-skies>