

Study shows increase of CO2 in the atmosphere is lower than predicted because of plants

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Credit: Wikipedia.

A team of researchers in the U.S. claims that climate models used to predict the rise in CO_2 concentrations in the atmosphere are approximately 17 percent too high because they incorrectly approximate how much CO_2 plants pull from the atmosphere. In their paper published



in *Proceedings of the National Academy of Sciences*, the team describes how they studied the ability of plants to absorb increased amounts of CO_2 and discovered that they are capable of pulling more out of the atmosphere than has been previously thought and the difference is approximately equal to the error difference reported by simulation models.

Plants, as most people learn in grade-school, use light as part of the photosynthesis process to convert the suns' energy into energy the plant can use to grow—oxygen is then emitted as a byproduct. What's not really clear is how plants in general respond to the presence of more CO_2 in the air. Prior research has shown that some plants grow bigger, which tends to cause them to take in more CO_2 .

Recently, it's come to light that <u>climate models</u> have on average been off a little bit in predicting how much CO_2 is being added to the <u>atmosphere</u> by man-made processes. More specifically, over the years, 1901 to 2010, that error rate has been found to be on average 17 percent too high, and scientists have been racing to figure out why.

In this new effort, the researchers took a new look at the photosynthesis process and how it might be altered in the presence of increasingly higher concentrations of CO_2 . They found that as CO_2 levels rose, plants altered the way they processed the gas, saving more of it to use as a fertilizer, which allowed the plants to grow bigger or to become more robust, which in the end meant more CO_2 was taken out of the atmosphere. Not coincidently, the researchers note, their research showed that when plants were exposed to the same higher levels of CO_2 as actually occurred over the past century, they were able to absorb on average 16 percent more CO_2 , which very nearly coincides with the 17 percent error difference earth scientists have found with their climate models.



The research team suggests their results indicate that climate models need to be modified to take proper account of the behavior of plants as CO_2 levels rise.

More information:

www.pnas.org/content/early/2014/10/10/1418075111

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