

## Oceans Absorbing Carbon Dioxide More Slowly, Yale Scientist Finds

Yale University



**New Haven, Conn.** — The world's oceans are absorbing less carbon dioxide (CO<sub>2</sub>), a Yale geophysicist has found after pooling data taken over the past 50 years. With the oceans currently absorbing over 40 percent of the CO<sub>2</sub> emitted by human activity, this could quicken the pace of climate change, according to the study, which appears in the November 25 issue of *Geophysical Research Letters*.

[Jeffrey Park](#) [1], professor of geology and geophysics and director of the [Yale Institute for Biospheric Studies](#) [2], used data collected from atmospheric observing stations in Hawaii, Alaska and Antarctica to study the relationship between fluctuations in global temperatures and the global abundance of atmospheric CO<sub>2</sub> on interannual (one to 10 years) time scales. A similar study from 20 years ago found a five-month lag between interannual temperature changes and the resulting changes in CO<sub>2</sub> levels. Park has now found that this lag has increased from five to at least 15 months.

"No one had updated the analysis from 20 years ago," Park said. "I expected to find some change in the lag time, but the shift was surprisingly large. This is a big change."

With a longer lag time, atmospheric CO<sub>2</sub> can no longer adjust fully to cyclical temperature fluctuations before the next cycle begins, suggesting that the oceans have lost some of their ability to absorb CO<sub>2</sub> from the atmosphere. Weaker CO<sub>2</sub> absorption could be caused by a change in ocean circulation or just an overall increase in the surface temperature. "Think of the oceans like soda," Park said. "Warm cola holds less fizz," Park said. "The same thing happens as the oceans warm up."

Increases in CO<sub>2</sub> levels have tended to precede increases in temperature over the past century, with the human influence on climate accumulating over many

## Oceans Absorbing Carbon Dioxide More Slowly, Yale Scientist Finds

Published on Electronic Component News (<http://www.ecnmag.com>)

---

decades of burning fossil fuels and clearing forests. However, this relationship is reversed on interannual time scales, with multiyear temperature cycles leading multiyear cycles in CO<sub>2</sub> levels.

Park found particularly strong correlations between sea-surface temperatures and CO<sub>2</sub> levels in tropical ocean areas. Conversely, in places with a lot of trees and other biomass to soak up much of the atmospheric CO<sub>2</sub>, there was little or no correlation between temperature and CO<sub>2</sub> on interannual time scales. In those places, such as the vast forests of North America and Eurasia, a large annual CO<sub>2</sub> cycle synchronizes with the seasonal growth and decay of plants.

“Researchers have used climate models that suggest the oceans have been absorbing less CO<sub>2</sub>, but this is the first study to quantify the change directly using observations,” Park said. “It strengthens the projection that the oceans will not absorb as much of our future CO<sub>2</sub> emissions, and that the pace of future climate change will quicken.”

Citation: doi:10.1029/2009GL040975

PRESS CONTACT: [Suzanne Taylor Muzzin](#) [3] 203-432-8555

[SOURCE](#) [4]

**Source URL (retrieved on 03/09/2014 - 10:48am):**

<http://www.ecnmag.com/news/2009/11/oceans-absorbing-carbon-dioxide-more-slowly-yale-scientist-finds>

### Links:

[1] <http://love.geology.yale.edu/people/moreinfo.cgi?netid=jjpark>

[2] <http://www.yale.edu/yibs/>

[3] <mailto://opa.yale.edu/news/suzanne.taylormuzzin@yale.edu>

[4] <http://opa.yale.edu/news/article.aspx?id=7109>