

Ocean probes to help refine climate change forecasting

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A USC researcher has opened a new window to understanding how the ocean impacts climate change.

Lisa Collins, environmental studies lecturer with the USC Dornsife College, spent four years collecting samples from floating sediment traps in the San Pedro Basin off the Los Angeles coast, giving scientists a peek at how much carbon is locked up in the [ocean](#) and where it comes from.

Collins' research suggests that the majority of particulate organic carbon (POC) falling to the basin floor is marine-derived, not the result of runoff from [rainfall](#). This means that the ocean off the coast of Southern California is acting as a carbon "sink" — taking carbon out of the atmosphere via phytoplankton and locking it up in sediment.

Though estimates regarding the effect of carbon in the ocean already exist, her hard data can help climatologists create more accurate predictions of how carbon will impact global warming.

What is unique about Collins' study is that it is not just a snapshot of POC falling, but rather a finely detailed record of four years of POC production, showing how much fell and when.

"It's all tied to [climate change](#)," said Collins, who started the research as a graduate student working for USC Earth Sciences Professor Will Berelson. "This lets us see patterns."

"Our data can help climate modelers better predict the interactions between the oceans and atmosphere with respect to carbon which can help them better predict how much [carbon](#) dioxide will end up sequestered over the long term as sediments in the ocean," she said.

Collins' study is among the longest of its kind in the region. A similar study was conducted in Santa Monica Basin from 1985-1991, and another is currently underway in Hawaii. Her findings appear in the August issue of Deep-Sea Research I.

Between January 2004 and December 2007, Collins took 32 trips to the San Pedro Basin, which is located about halfway between San Pedro and Catalina Island. She deployed giant yellow funnels about the size of a person hundreds of meters under water to collect sediment as it floated by.

Results were anything but guaranteed, which is the nature of the job.

"Oceanography is risky; you lose things," Collins said. "Any time you throw something over the boat, you say 'God, I hope that's not the last time I see it.'" In fact, Collins lost what would have been six months worth of additional data due to malfunctioning sediment traps.

The next step for Collins will be to check out the waters off of Palos Verdes, testing to see if her findings can be seen on a larger scale throughout the region.

Provided by University of Southern California

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