Macalester Professor Discovers CO2 Stored in Deep Pacific During Ice Age

St. Paul, Minn. – Paleoclimatologists have long wondered why atmospheric CO_2 was so much lower during the last glacial period. Where did the carbon go? Macalester Environmental Studies Professor Louisa Bradtmiller demonstrates, in a new paper, that the deep Pacific Ocean (below 2000 meters) likely stored more carbon during the last glacial period than the Holocene (the last 10,000 years of the Earth's history -- the time since the end of the last major glacial epoch, or "ice age.").

It is well known that atmospheric pCO_2 was approximately 80 ppm lower during the last glacial period than during pre-industrial times, but where the carbon was stored during the ice age has been difficult to identify. Bradtmiller is the lead author of a paper that presents evidence from 10 equatorial Pacific Ocean sediment cores showing that the glacial equatorial Pacific Ocean likely stored more carbon during the last glacial period than the Holocene.

“This is a significant discovery because it confirms the ocean’s importance as a part of natural climate variability,” said Bradtmiller. “It also tells us what we long thought, that atmospheric CO_2 went into the ocean.”

Bradtmiller was able to document that bottom water in the equatorial Pacific during the glacial period had significantly lower oxygen concentration than during the Holocene, and therefore likely had a correspondingly greater level of respired CO_2.

“Our results are consistent with recently published data from the North Pacific Ocean, suggesting that increased carbon storage in the glacial deep Pacific Ocean was a basin-wide phenomenon, consistent with a large-scale transfer of carbon to the deep ocean during glacial periods,” said Bradtmiller.

The other three co-authors were from Columbia University, New York, and the University of Washington, Seattle. Bradtmiller's research was first published in *Earth and Planetary Science Letters* (http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6V61-517PW07-4&_user=2596178&_coverDate=11%2F01%2F2010&_rdoc=18&_fmt=high&_orig=browse&_origin=browse&_zone=rslt_list_item&_srch=doc-info%28%23toc%235801%232010%23997009996%232564740%23FLA%23display%23Volume%29&_cdi=5801&_sort=d&_docanchor=&_ct=26&_acct=C000057917&_version=1&_urlVersion=0&_userid=2596178&md5=7db83b9b3bb356d99c22a2fe5e65b8f8&searchtype=a) and was featured in the December 2010 journal *Nature Geoscience.*

Macalester College, founded in 1874, is a national liberal arts college with a full-time enrollment of 1,987 students. Macalester is nationally recognized for its long-standing commitment to academic excellence, internationalism, multiculturalism and civic engagement.

November 30 2010

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