



European Geosciences Union Journal Highlights

14 March 2005

for immediate release

New light on the Global Carbon Cycle

Biogeosciences, Vol. 1 & 2

Two new papers in the online, open-access journal *Biogeosciences* shed new light on the carbon cycle, revealing two hitherto neglected elements of the global carbon pool.

One, the paper by **Keppler et al.**, investigates the role of pectin and lignin from terrestrial plants, which is an important potential source of the greenhouse gas methane in the atmosphere. The other paper, by **Duarte et al.**, assesses the role of marine vegetation (seagrass meadows, salt marshes and mangrove forests) in the carbon cycle of the oceans.

Carbon isotope anomaly in the major plant C1 pool and its global biogeochemical implications

F. Keppler, R. M. Kalin, D. B. Harper, W. C. McRoberts, J. T. G. Hamilton
***Biogeosciences*, 1, 123-131, 2004**

The authors: *'The central issue in our paper is the high ^{13}C depletion of the plant methoxyl pool which we believe could be used as a tool to trace the origin of several atmospheric gases. Our group clearly demonstrated that pectin is a major source of chloromethane released to the atmosphere by leaf material (Hamilton et al, *Science*, 301, 206-209, 2003.).*

In this paper we suggested that this source could be responsible for up to 80% of the global chloromethane budget. Furthermore we demonstrated that the process involved in chloromethane production was non-enzymic and was solely an abiotic process involving thermal denaturation of pectin.'

For this paper and online discussion follow this link: [Keppler et al.](#)

Dick van der Wateren
EGU Press Officer

+31-20-4632559

egu.press@copernicus.org

Major role of marine vegetation on the oceanic carbon cycle

C. M. Duarte, J. J. Middelburg, N. Caraco

Biogeosciences, 2, 1-8, 2005

According to one referee: *'This is a very interesting paper on the importance of benthic vegetation in the ocean carbon budget, which is highly needed for our understanding of the complicated carbon cycling. [...] The authors have used an innovative approach by applying two different approaches to make the budgets: a top-down and a bottom-up approach. The estimates come out quite similar and provide good confidence in their findings.'*

The results are quite surprising compared to previous estimates, which have neglected the importance of marine vegetation in the ocean carbon budget. This paper suggests that the marine vegetation contribute with about 50% of the carbon burial and that previous estimates of coastal carbon burial have to be increased to the double. Also the export from the benthic vegetated systems to the ocean is estimated to be much higher than previous, probably sufficient to support the heterotrophy of the ocean. This is an important paper, which contains novel ideas for discussion of the ocean carbon cycling and highlights the gaps of our knowledge. Finally the paper underlines the perspectives of the anthropogenic pressures on the marine vegetation.'

For this paper and online discussion follow this link: [Duarte et al.](#)

You can contact:

Editors-in-Chief *Biogeosciences*:

Jean-Pierre Gattuso: gattuso@obs-vlfr.fr

and Jürgen Kesselmeier: jks@mpch-mainz.mpg.de

Dick van der Wateren, Press Officer EGU: egu.press@copernicus.org

EGU publications

List of all EGU publications:

www.copernicus.org/EGU/publication/mission_statement_for_publications.htm
