

Open Science Conference on the GHG Cycle in the Northern Hemisphere

Template for Abstract Submission

Call for abstracts

We invite papers for oral presentations or posters. Those interested in presenting a paper or a poster should submit an **abstract** in English by **August 1, 2006**.

Please use this template to submit your abstract and send it to: athuille@bgc-jena.mpg.de.

The abstract should be no more than **300 words** long including a title, name(s) of the author(s), affiliation(s), address(es), email-address, a text describing the problem, methods, main results, conclusions, and 3-5 key words. Please specify which of the conference sessions your abstract refers to.

The Scientific Committee will select presentations on the basis of the abstracts and will notify the authors by 1 September 2006 if their abstract was accepted for either a poster or an oral presentation. Accepted abstracts will be published in the conference proceedings.

Conference Session (*please choose one session*):

- Regional terrestrial C balance estimates
- Oceanic C cycling
- Climate feedbacks on the C and N cycle
- Regional hotspots of vulnerability of the biospheric C cycle
- Regional N and other GHG fluxes
- Partitioning of ecosystem C fluxes
- C and N turnover in soils
- Human impacts on the regional C cycle
- GHG research in relation to policy

Title of presentation:

Carbon dioxide in European coastal waters

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Keywords (3-5):

Europe, coastal waters, freshwater, CO2 fluxes

Abstract (max. 300 words, describing the problem addressed, methods, main results, conclusions):

We compiled from literature annually integrated air-water fluxes of carbon dioxide (CO₂) computed from field measurements, in 19 coastal European environments that were gathered into 3 main ecosystems: inner estuaries, upwelling continental shelves and non-upwelling continental shelves. Air-water CO₂ fluxes were scaled at European regional level and compared to fluxes of atmospheric CO₂ in other aquatic and terrestrial compartments. Continental shelves are significant sinks for atmospheric CO₂ at an average rate of -1.9 molC/m²/yr that scaled at European level corresponds to an absorption of atmospheric CO₂ of -68.1 TgC/yr. This sink is equivalent to the one reported for the terrestrial biosphere of -66.1 TgC/yr, based on carbon-stock change models. Estuaries are significant sources of CO₂ to the atmosphere at an average rate of 49.9 molC/m²/yr that is higher than the CO₂ emission to the atmosphere from rivers and streams (26.9 molC/m²/yr) and lakes (7.6 molC/m²/yr). The scaled emission of CO₂ to the atmosphere from inner estuaries of about 67.0 TgC/yr would almost fully balance the sink of atmospheric CO₂ computed for continental shelves, and is higher than the emission of CO₂ to the atmosphere from continental aquatic systems of 36.5 TgC/yr. However, the scaled emission of CO₂ from estuaries to the atmosphere is inconsistent with the potential emission of CO₂ based on the fate of river organic carbon during estuarine transit. This discrepancy is most probably due to the poorly constrained surface area estimate of inner estuaries.