Geophysical Research Abstracts,
Vol. 11, EGU2009-4168-1, 2009
EGU General Assembly 2009
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The fate of continental dissolved organic matter in the ocean

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Which proportion of DOM reaching the ocean is eventually photochemically or biologically degradable? How much riverine DOM contributes to the heterotrophic production in coastal ocean? We address these questions by sampling the biggest rivers (e.g., Amazon, Lena, Mississippi, Yangtze) exporting >1/5 of DOM to the ocean. We hypothesize that photochemistry plays a major role in the decomposition of riverine DOM in the ocean. The photochemical and biological reactivity of riverine DOM in an oceanic matrix is assessed in laboratory in order to obtain modeling parameters for the photochemical and biological decomposition of DOM. These model parameters are applied to the environmental conditions of each river plume to quantify the rates of photochemical and biological decomposition in the coastal ocean. With this approach we determine the utilization rates of carbon and nutrients (e.g., N, P, iron) bound in the continental DOM. Our study will benefit from collaboration and allows opportunities for assessing global fluxes between the continents and the ocean. We warmly invite researchers interested in the export of matter from the continents to the ocean to join our effort.