

Assessing the impacts of ocean acidification on phytoplankton communities of the Amazon River Plume and on their value as a food source for higher trophic organisms

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ABSTRACT

Rising levels of atmospheric CO₂ concentrations are expected to significantly increase the acidity of the world oceans with biological impacts spanning all marine phyla and potential societal impacts affecting man's relationship to the sea (*Guinotte and Fabry, 2008*). By the end of this century, the average pH of the surface ocean is expected to decline by 0.3 to 0.46 units relative to the pre-industrial level (*Caldeira and Wickett, 2005*). Although global scale models have attempted to describe the open oceanic response to this carbonization in terms of ocean acidification, recent observations suggest that seawater acidification could be much more rapid in coastal waters, especially in coastal upwelling zones and shallow coastal embayments subject to large anthropogenic influences. Rivers emptying into coastal waters are a great source of DIC (*Schlunz and Schnieder, 1999*) but human activities and changes in precipitation patterns as a result of warming trend are expected to have a considerable impact on river discharge. Our primary goal in this project is to undertake manipulative CO₂ experiments to understand the impact of ocean acidification on phytoplankton from within river plume ecosystems.