Abstract Details

Corresponding Author : Mr. Bryan Grace (bgrace@tulane.edu)

Organization: Tulane University

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Title: Sources and Cycling of Dissolved Organic Nitrogen in the Mississippi Plume (USA)

Abstract:

Water samples were collected on the Louisiana Shelf (March 2002 an October 2002) from 12 stations within a sampling grid in the Mississi River Plume. River and blue water stations were sampled outside as end-members. Dissolved free and combined amino acids (DFAA an DCAA) were measured along with dissolved organic carbon and nitrog (DOC and DON), chlorophyll-a (to estimate phytoplankton activity) ar bacterial abundance/productivity. DFAA concentrations ranged from 0 3.22 (average = 1.68) M while DCAA ranged from 1.27 to 4.36 M (average = 3.01). Higher concentrations of dissolved amino acids (DA occurred in the plume/marine water mixing zones. Both bacterial abu and productivity were de-coupled from DAA maxima. Abundance and productivity were highest (1.13 x 109 cells/L, 8.59 x 10-7 gC/L/h) no of the river mouth - an area of combined riverine and estuarine input (Mississippi River and Barataria Bay). Less than 0.1 % of the total dis nitrogen (TDN) in the plume is in the form of total dissolved amino ac Dissolved inorganic nitrogen (DIN), principally nitrate, represented up 55% of the TDN in the plume. These large inputs of DIN are from agr areas in the mid-west that are drained by the Mississippi River .
Phytoplankton activity was highest in mid-salinities where light was n limiting and nitrate from riverine inputs was abundant. Dissolved ami and DOC were linked to phytoplankton biomass, indicating that in situ primary production was a more important source of DOC in the plume riverine sources - during these samplings periods. Bacterioplankton a was not coupled to local phytoplankton biomass and river discharge, may indicate a possible role for the importance of sediment-derived D these shallow waters that are introduced during frequent resuspensio events.

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Co-Authors