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TITLE: Phytoplankton Communities in Louisiana coastal waters and the continental shelf.

PRESENTING AUTHOR: Jan Kurtz, kurtz.jan@epa.gov, 850-934-9212

AUTHORS: Jan Kurtz, Michael Murrell, Blake Schaeffer, and John Lehrter
U.S. Environmental Protection Agency, ORD/NHEERL/GED,
Gulf Breeze, FL

Louisiana coastal waters and the adjacent continental shelf receive large freshwater and nutrient inputs from the Mississippi and Atchafalaya Rivers, creating favorable conditions for increased phytoplankton productivity. To examine inshore-offshore patterns in phytoplankton community composition, we sampled inshore coastal waters near Vermilion, Terrebonne, and Barataria Bays during 2008 and the adjacent offshore continental shelf waters from 2002-2007. Phytoplankton abundance was greater in the coastal waters (range 5610-8230 cells L⁻¹) and lower offshore (range 817-2190 cells L⁻¹). Estimates of phytoplankton biovolume reflected the same pattern ranging from 0.15-38 x 10⁶ μm³ inshore and 0.018-26 x 10⁶ μm³ in offshore samples. Diatoms were the dominant taxon inshore and offshore, comprising from 56-98% and 73-98% of total biovolume, respectively. Harmful algal species were present in both regimes, including the *Prorocentrum scutellum*, *Gymnodinium sanguineum*, and *Pseudonitzschia* sp. Hydrographic and water quality data were collected including temperature, salinity, chlorophyll-a, total nitrogen (TN) and total phosphorus (TP). The similarities in community composition and the differences in biovolumes across the inshore to offshore gradient suggests nutrient loading and mixing as important processes regulating phytoplankton community dynamics in this region.