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TITLE: Abundance and vertical flux of *Pseudo-nitzschia* in the northern Gulf of Mexico

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ABSTRACT:

Many species of the ubiquitous pennate diatom genus *Pseudo-nitzschia* have recently been discovered to produce domoic acid, a potent neurotoxin which causes Amnesic Shellfish Poisoning (ASP). *Pseudo-nitzschia* spp. were extremely abundant (up to 108 cells l⁻¹; present in 67% of 2195 samples) from 1990 to 1994 on the Louisiana and Texas USA, continental shelves and moderately abundant (up to 10⁴ cells l⁻¹; present in 18% of 192 samples) over oyster beds in the Terrebonne Bay estuary in Louisiana in 1993 and 1994. On the shelf there was a strong seasonal cycle with maxima every spring for 5 yr and sometimes in the fall, which were probably related to river flow, water column stability, and nutrient availability. In contrast, in the estuary there was no apparent seasonal cycle in abundance, but the time series of data is relatively short and the environment highly variable. At one site on the shelf, where sediment traps were deployed from spring to fall and sampled at frequent intervals in both 1990 and 1991, approximately 50% of the *Pseudo-nitzschia* spp. cells present in the water sank into sediment traps. *Pseudo-nitzschia* spp. were also abundant in surficial sediments. The species of *Pseudo-nitzschia* present during this study were not routinely identified with the methods employed. However, toxin-producing *P. multiseries* has been identified previously from Galveston Bay, Texas, and cells from a bloom on the shelf in June 1993 were identified by scanning electron microscopy as *P. pseudodelicatissima*, which is sometimes toxic. Although there have been no known outbreaks of ASP in this area, historical data suggests that *Pseudo-nitzschia* spp. abundance may have increased on the shelf since the 1950s. It is hypothesized that the increase is due to doubling of the nutrient loading from the Mississippi and Atchafalaya rivers and increased eutrophication on the shelf.

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