wetland restoration projects. Encouraging results were obtained from the Napa Marsh area, the site of some of the most extensive wetland restoration activities in the watershed, including projects initiated in 1995, 2002, and 2006. Biosentinel fish collected in 2006 from a Napa Marsh salt pond that was opened to tidal action earlier that year had the lowest mercury observed for the indicator species across the entire watershed. Fish from other locations in this area also had low concentrations in both 2005 and 2006. These findings indicate that some restoration projects may be associated with reduced, rather than increased, mercury accumulation in the food chain. Other significant findings from the biosentinel work to date include the observation that seasonal variation in mercury uptake seems associated with episodic flooding of normally dry soils, documentation of significant year-to-year variation, and an improved general understanding of the spatial pattern of accumulation across the watershed.

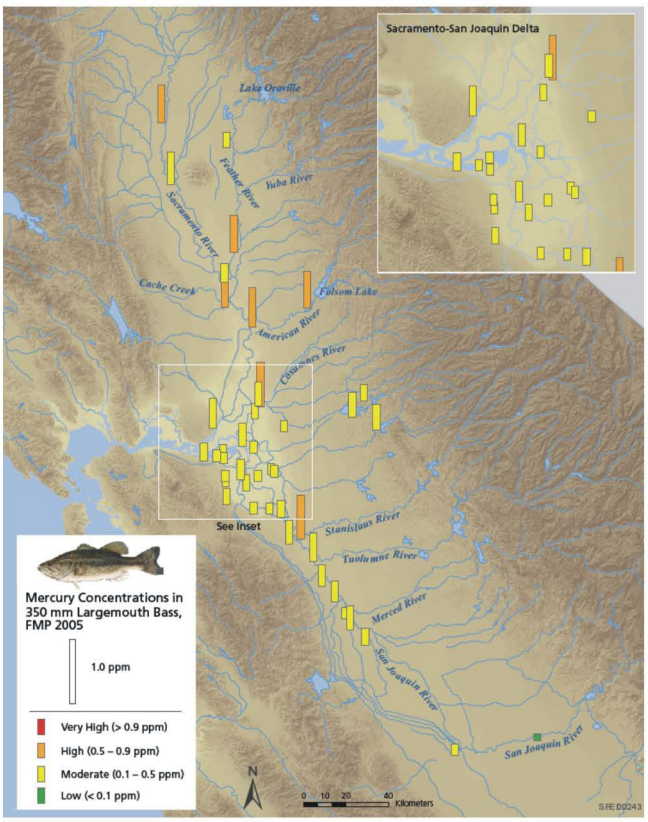

Fig. 1 Mercury concentrations in largemouth bass in the study area in 2005

Increased eutrophication in the northern coastal waters of the South China Sea revealed by sedimentary records

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The sedimentary organic matter in coastal areas mainly originates from primary and secondary production within the ecosystem, terrestrial inputs and bacterial production in the water and sediments. The relative significance of these sources is determined by local environmental factors, such as climate, hydrodynamic conditions and nutrient supply. Changes in any of these factors will result in the change of sedimentary organic matter. Algal blooms or/and red tides caused by eutrophication occurred at some given environmental condition and may imprint markers in the sedimentary records.

The total organic carbon (TOC), total nitrogen (TN) and stable isotope values (^{13}Corg and ^{15}N) from the dating sediment cores were analyzed. The profiles of TOC, TN, C/N, $^{13}C_{org}$ and ^{15}N indicate that terrestrial organic matter downs from 50% to 20% of TOC in the Pearl River estuary while Dapeng Bay has no obvious terrestrial organic matter input. The highest TOC occurred in middle part of the estuary because of high precipitation of terrestrial organic matter. Algal-derived organic carbon content increases with the time in Dapeng Bay. This kind of increase is caused by enhancement of primary marine productivity due to more nutrient input.

The sediment core taken from Dapeng Bay reveals that diatom and dinoflagellate productivity which is reflected in the biogenic silica (BSi) and dinosterol concentrations respectively, increased gradually starting in 1940 and accelerated after 1965, especially between 1980 and 2000, indicating that algal blooms and/or red tides caused by eutrophication increased during this time. The abundance of coprostanol, which reflects domestic sewage discharge, and the terrestrial biomarkers (long-chain fatty acids and fatty alcohols and sitosterol) exhibit similar temporal changes with the primary production, showing that the enhanced eutrophication resulted from increased anthropogenic activities in the northern coastal waters of the South China Sea (SCS) in recent decades.

Studying on formation dynamic mechanism of the freshwater zone near the MeiMaoSha in the Changjiang Estuary