exploitation and utilization of the tidal flat in china, models suitable to local conditions are proposed according to ecological function rationalization.

Discussion for Red Tide Prevention and Environment Sustainable Development in the Culture Area of Sishili Bay

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During 2004-2007, 7 occurrences of red tide in the culture area of Sishili Bay caused serious environmental problems and economic loss. Recent studies showed the concentration of inorganic nitrogen, phosphorus and the ratio of DIN/DIP in this area were relatively low, so the phytoplankton community may be relatively restricted by inorganic nitrogen. But under some special conditions, the relatively superfluous inorganic phosphorus met the demand of some red tide algae. Now, sewage discharge can not be completely controlled. Based on seasons and the extant concentration of nutrition in the water, we can selectively control the discharge of certain sewage with certain nutrition, and induce the well-balanced growth of phytoplankton community. The well-balanced phytoplankton community will benefit aquiculture, prevent red tide, and help to achieve the environment sustainable development in this area.

Estimating submarine inputs of groundwater to a coastal bay using radium isotopes

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This paper reports the initial results derived from radium isotopes of surface ocean waters in the Longjiao Bay, west shore of Taiwan Straits. The objective of this research is to assess the submarine groundwater discharge(SGD). 30 radium isotope samples of surface ocean waters (roughly 1m depth) for radium analyses was collected along two shore-perpendicular transects during two cruises(May 2007 and June 2007), each cruise had one transect with 15 samples. Samples were collected with 60L polypropylene bucket. The sampling was completed within 2h from the coastline(starting at low tide) to 10km offshore. In the laboratory, the water samples were immediately gravity-fed through a PVC column(4.5cm diameter, 50 cm length) filled with manganese oxide-impregnated acrylic fiber at a flow rate of ~300ml/min to retain radium(Moore,1976). The activities of ^{224}Ra absorbed onto Mn-fiber were measured through emanation method. After that, the Mn-fiber was sealed for more than 7 days and the activities of ^{226}Ra absorbed onto Mn-fiber measured through direct emanation method.
To assess the spatial distribution of ^{224}Ra and ^{226}Ra, two shore-perpendicular transects were sampled from the coastline to more than 10 km from offshore. Both of these tracers have high activities near the coast, activities decrease from nearshore to offshore. Offshore transects of the long-lived ^{226}Ra indicate that eddy diffusion controls their distributions within 10 km of shore, ^{226}Ra distribution yield a activity gradient of 0.79□10^{10} dpmkm^{-3}km^{-1}. The short-lived ^{224}Ra distribution in this region yield an eddy diffusion coefficient of 68.83 km^{2}d^{-1}.
To estimate the seepage rate of groundwater into the study area, we used the approach developed by Moore(1996,2000). The short-lived radium isotopes, ^{224}Ra, were used to establish eddy diffusion coefficient for the near-shore study area. The product of the eddy diffusion coefficient and the offshore ^{226}Ra activity gradient established the ^{226}Ra flux of 5.47□10^{11} dpmkm^{-2}d^{-1}. This flux must be balanced by Ra input from SGD. The flux of SGD within the shore based on the ^{226}Ra budget was 2.61□10^9 m^{3}km^{-2}d^{-1}.This magnitude of SGD includes terrestrially-derived fresh SGD and recirculated seawater SGD (Burnett,2003), further research will be required for both of them.