

Influence of urbanization and economic development on Yangtze River intertidal zone sediment

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Concentrations of selected heavy metals in surface sediments from 26 sites within the Yangtze River estuary intertidal zone were studied to understand the environmental impact due to urbanization and economic development in Shanghai, China. The sediment samples were collected between 2004 and 2005 during several sampling events. We found that heavy metal concentrations in surface sediments (0-5 cm) ranged from Al: 40803-97213 mg kg⁻¹; Fe: 20538-49627 mg kg⁻¹; Cd: 0.12-0.75 mg kg⁻¹; Cr: 36.9-173 mg kg⁻¹; Cu: 6.87-49.7 mg kg⁻¹; Mn: 413-1112 mg kg⁻¹; Ni: 17.6-48.0 mg kg⁻¹; Pb: 18.3-44.1 mg kg⁻¹ and Zn: 47.6-154 mg kg⁻¹, respectively. Metal enrichment factors (EF) suggest that individual metal contamination (e.g., Cd, Cu) exists in some localized areas that could be caused by the local point sources. However, the study shows that heavy metals in the intertidal zone are mainly from natural weathering processes in general.

The sediments characteristics of the tidal zone in Tianjin

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36 surface sediments in the tidal zone had been positioned and sampled, and the grain size had been analyzed by the integrated methods. The results showed that the surface sediments in the tidal zone consisted of silty fine sand, fine sand-silt-clay, silt-clay-fine sand, fine sandy silt, fine sand-silt, silt and fine sand. They gradually became coarse grain from the shore to the subtidal zone. Horizontally, the surface sediment grains changed from coarse to fine between Lujia River and Duliujian River. The reason was the outline of the shore changes the water current by building the shore bathing place. Vertically, the sediments were coarse at the bottom and fine at the upper

part, because the coastal freeway had been built and the coastal line was retreated to the sea. These characters were closely related to the mankind activity and the water current changing.

Pollution induced water shortage in the Yangtze River Delta: chances and challenges for wetlands as treatment system

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• Introduction

The Yangtze River Delta is one of the world largest river deltas in the world. It includes the whole Shanghai metropolitan region, southern Jiangsu province and northern Zhejiang Province, with an area of 99,600km²(about 1% of China), and a population of 74 million (about 6% of China). It is one of the most rapidly developing zones in China, even in the world. In 2007, the GDP of this area reached 4667.2 billion Yuan, which accounts for 18.9% of the whole country, with an increase speed of 15%.

The annual average precipitation in this delta is about 1100mm. Yangtze River brings nearly 1000 billion m³ water discharge every year. Therefore, it is "rich" in water theoretically. But, with the quick economic development, pollution induced water shortage has become the "bottle neck" for further economic development in this region.

• Pollution induced water shortage in the Yangtze River Delta

High economic growth rate has attracted large amount of labour flow from outside of the region. Therefore, the real population size is far higher than the registered number. Most of the labours are hired by small enterprises all over the area, such as spinning and dyeing companies, chemical plants, paint factories, and feedingstuff factories, etc. Due to lack of efficient waste treatment facilities and scattered distribution pattern of these small enterprises, water pollution has become a serious problem. The occasional pollution water discharge from upper streams further deteriorates the situation.

Most of the lakes in this delta experience eutrophication problems nearly every year during warm and hot seasons. In 2007, the average total nitrogen and phosphorous in Tai Lake reached 4.0 and 0.13 mg/L, respectively (Hu, 2007), which resulted in the devastating algae blooming in May. Most of the lake water belong to class level IV, V,