

珠江三角洲河网与河口夏季水沙通量的模拟

Simulation of water and suspended sediment fluxes in Pearl River Delta during summer season

中文关键词: [珠江三角洲](#) [水](#) [悬浮泥沙](#) [通量](#) [数值模拟](#)

英文关键词: [Pearl River Delta](#) [water flows](#) [suspended sediment](#) [flux](#) [numerical simulation](#)

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中文摘要:

本文利用一、三维水动力与泥沙耦合模型, 计算珠江三角洲河网与河口夏季水沙通量, 构建其收支模式, 并分析水沙迁移路径与泥沙沉积特征。研究表明, 西江为最主要的水沙输入源, 磨刀门为最主要的水沙输出口门, 蕉门次之。夏季泥沙以淤积为主, 上游汇入的泥沙, 有39.4%沉积于河网区, 其余60.6%经八大口门输入珠江口后, 有59.5%发生沉积, 另外1.1%输入外海。河网区的水沙输送由径流控制, 而河口区则由径流、潮汐、季风等因素控制。河网区各区域的沉积特点因动力条件的差异而呈现不同的规律, 大量泥沙在西江干流、虎门水道淤积。珠江口以内伶仃洋与磨刀门海域的沉积量最大, 泥沙在西滩周边和磨刀门海域快速沉积, 其中磨刀门海域淤积最为强烈。

英文摘要:

A 1-D and 3-D coupled hydrodynamic sediment model was applied to calculate the water and suspended sediment fluxes of river network and river mouths in Pearl River Delta during summer season, and the flux budgets for the entire region was established. The transportation route of water and suspended sediment and the deposition feature of silt in this region were investigated. The results show that the Xijiang River dominates the inputs of water and suspended sediment, while the output of Modaomen is the largest among the eight river outlets. The Jiaomen comes the second. Deposition is the dominant process for suspended sediment in summer, 39.4% of the suspended sediment coming from the upstream deposit in the river network, 59.5% deposit in the Pearl River estuary, only 1.1% is transported to the South China Sea. The flow and sediment transport are controlled by the runoff in the river network area, but in the river mouths area the transport of water and sediment are jointly controlled by the runoff, monsoon wind, tide, etc. in the Estuary. The characteristics of deposition in different areas vary with the hydrodynamic conditions. A lot of sediments deposited in the Xijiang mainstream and Humen channel. Most of sediment deposited in the Inner Lingdingyang bay and the Modaomen bay in the estuary.

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