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## 长江河口潮流界与径流量定量关系研究

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Study on the quantitative relationship of the location of the tidal current limit and the river discharge in the Changjiang Estuary

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**摘要** 长江河口是径流、潮流相互作用的潮汐河口, 潮汐的变化导致河道水体流态发生改变. 本文设计高分辨率数值模式, 基于河道断面流量的计算, 得出了枯季和洪季不同保证率径流量下的长江潮流界位置. 枯季潮流界位于芜湖上游70 km附近的太阳洲和镇江水文站之间, 洪季潮流界变化范围在江阴上游太平洲叉道中段至民主沙之间100 km范围内. 对不同径流量下潮流界位置的计算结果作多次拟合【JP2】合, 得出枯季潮流界y与径流量x的相关关系为  $y = -4 \times 10^{-10}x^3 + 1 \times 10^{-5}x^2 - 0.1937x + 1232.9$  ( $R^2 = 0.9842$ ), 洪季潮流界y与径流量x的定量关系为  $y = 2 \times 10^{-13}x^3 + 3 \times 10^{-8}x^2 - 0.0074x + 359.35$  ( $R^2 = 0.9969$ ). 本文结果可为长江潮流界的确定提供科学依据.

**关键词:** 长江河口 潮流界 径流量 定量关系

**Abstract:** The Changjiang Estuary is a tidal estuary with the interaction of river discharge and tidal current. The tidal variation results in the change of flow state in the river. By designing a high resolution numerical model, and based on the calculations of water flux along the river transverse sections, the Changjiang River tidal current limits were obtained in various guarantee rate river discharges in dry and flood seasons. The tidal current limit is between Taiyang island (located at the 70 km upstream of Wuhu) and Zhengjiang hydrological station in dry seasons, and is in the range of 100 km between the middle of Taiping island (located at the upstream Jiangying) and Minzhu island in flood seasons. With the multi power fitting of the calculated results, the relationship between the location of the tidal current limit and the river discharge is  $y = -4 \times 10^{-10}x^3 + 1 \times 10^{-5}x^2 - 0.1937x + 1232.9$  ( $R^2 = 0.9842$ ) in dry season, and is  $y = 2 \times 10^{-13}x^3 + 3 \times 10^{-8}x^2 - 0.0074x + 359.35$  ( $R^2 = 0.9969$ ) in flood season. This result can provide a scientific basis for determining the tidal current limit of the Changjiang River.

**Key words:** Changjiang Estuary tidal current limit river discharge quantitative relationship

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