



华东师范大学学报(自然科学版) » 2010, Vol. 2010 » Issue (6): 26-34 DOI:

环境工程 地理学

最新目录 | 下期目录 | 过刊浏览 | 高级检索

◀◀ Previous Articles | Next Articles ▶▶

长江河口石洞口电厂扩建工程温排水三维数值模拟

许晟轶, 朱建荣, 陈炳睿

华东师范大学 河口海岸学国家重点实验室, 上海 200062

Three dimension numerical simulation of thermal discharge from the Shidongkou electric power plant expansion project in the Changjiang Estuary

XU Sheng-yi, ZHU Jian-rong, CHEN Bing-rui

State Key Laboratory of Estuarine and Coastal Research, East China Normal University, Shanghai 200062, China

- 摘要
- 参考文献
- 相关文章

全文: PDF (0 KB) HTML (0 KB) 输出: BibTeX | EndNote (RIS) 背景资料

摘要 采用改进的河口海岸海洋三维数值模式ECOM, 考虑潮汐、径流、风应力和江表面热通量的作用, 计算和分析石洞口电厂扩建工程夏季温排水的输运扩散. 数值模式计算流速流向和实测资料符合良好, 表明模式能较正确地模拟长江河口的水动力过程. 模式计算结果表明, 温排水分布在沿岸一带, 受径流作用, 下游受影响范围远较上游大. 在本工程排水口附近, 大潮和小潮平均温升分别为2.34和2.84 °C, 表层温升为1.0 °C的面积分别为0.09和0.20 km², 底层温升为1.0 °C的面积均为0.09 km². 大潮期间流速大, 平流和侧向扩散作用大, 造成大潮期间本工程排水口附近温升大小、温升沿岸扩展的范围和量值明显比小潮期间小.

关键词: 温排水输运扩散 数值模拟 长江河口 热排放 输运扩散 数值模拟 长江河口

Abstract: By using a improved three dimension numerical ECOM (estuarine, coastal and ocean model), the transport and diffusion of thermal discharge from the Shidongkou electric power plant expansion project in summertime was calculated and analyzed, in terms of the factors of tide, river runoff, wind stress and river surface heat flux. The calculated current speed and direction is consistent with the observed data fairly well, indicating that the model can simulate the hydrodynamic processes correctly. The results show that the thermal discharge is released along with the coast, the influenced extension in the downstream is larger than that in the upstream due to the effect of river runoff. During spring and neap tides the time averaged temperature rise near the waterspout of the project is 2.34 and 2.84 °C, respectively; the areas with surface temperature rise 1.0 °C is 0.09 and 0.20 km², respectively; and the areas with bottom temperature rise 1.0 °C are both 0.09 km², respectively. The current speed is larger, the advection and lateral diffusion of water temperature is greater in spring tide, resulting in temperature rise near the waterspout of the project and its expand extent and magnitude along the coast is obvious smaller in spring tide than in neap tide.

Key words: transport and diffusion numerical simulation Changjiang Estuary thermal discharge transport and diffusion numerical simulation Changjiang Estuary

收稿日期: 2009-12-01;

通讯作者: 朱建荣

引用本文:

许晟轶, 朱建荣, 陈炳睿. 长江河口石洞口电厂扩建工程温排水三维数值模拟[J]. 华东师范大学学报(自然科学版), 2010, 2010(6): 26-34.

XU Shengyi, ZHU Jianrong, CHEN Bingrui. Three dimension numerical simulation of thermal discharge from the Shidongkou electric power plant expansion project in the Changjiang Estuary[J]. Journal of East China Normal University(Natural Sc, 2010, 2010(6): 26-34.

没有本文参考文献

没有找到本文相关文章

服务

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ E-mail Alert
- ▶ RSS

作者相关文章

- ▶ 许晟轶
- ▶ 朱建荣
- ▶ 陈炳睿

版权所有 © 2011 《华东师范大学学报(自然科学版)》编辑部
本系统由北京玛格泰克科技发展有限公司设计开发 技术支持: support@magtech.com.cn