

基于拉格朗日粒子追踪的渤海冬季与夏季环流及影响因素

Study of Bohai Sea circulation and its influencing factors during winter and summer based on Lagrangian particle tracing method

中文关键词: [渤海](#) [Lagrangian](#) [非结构网格](#) [有限体积分法](#) [三维水动力模型](#)

英文关键词: [Bohai Sea](#) [Lagrangian](#) [unstructured grid](#) [finite-volume method](#) [three-dimensional hydrodynamic model](#)

基金项目:

作者	单位
王金华	大连理工大学 海岸和近海工程国家重点实验, 辽宁 大连 116023
沈永明	大连理工大学 海岸和近海工程国家重点实验, 辽宁 大连 116023
石峰	大连理工大学 海岸和近海工程国家重点实验, 辽宁 大连 116023
陈晓亮	大连理工大学 海岸和近海工程国家重点实验, 辽宁 大连 116023

摘要点击次数: 157

全文下载次数: 99

中文摘要:

基于三维非结构有限体积海洋模式 (FVCOM) 对渤海环流进行了数值模拟研究。数值模拟中采用三角形网格, 以更好地拟合渤海复杂的岸线边界。潮位、潮流、温盐模拟结果验证良好。通过对粒子的拉格朗日追踪研究了渤海冬季与夏季环流及潮、风、海气热交换和入海径流对渤海环流的影响。研究表明: 粒子输移存在明显的三维结构; 与渤海中部及海峡附近相比, 3个湾内水体输送均较小、表底层相差不大; 渤海夏季环流强度较冬季强; 由风引起的水体输送对渤海环流影响较大; 温盐环流对水体输送的影响主要在夏季, 在冬季, 影响可以忽略; 河流只对河口附近环流结构有影响; 夏季, 与热盐、风相比潮流对水体输送贡献较小; 在研究渤海的拉格朗日余流时, 只考虑单分潮的作用将不能反映渤海的实际环流情况。

英文摘要:

Numerical study of the Bohai Sea circulation was carried out based on three-dimensional primitive equation ocean model. The model was easy to fit the irregular coastal boundary of the Bohai Sea with the unstructured triangular grid. The simulated tides, tidal current and thermohaline field were well verified by observation data. The circulation of Bohai Sea during winter and summer and their relations between tides, wind, river discharge as well as the heat flux were studied by means of Lagrangian trajectory. It shows that the transport of particles behaved 3D structure in the Bohai Sea. Compared with central Bohai Sea and Bohai strait, transportation in three bays and the differences between surface and bottom layer were small. Circulation in summer was stronger than that in winter. Wind played an important role in circulation, and the thermohaline circulation was important during summer; however it was negligible during winter. River runoff only affects the area around river mouth. Compared with wind and thermohaline effect, the contribution of tides was small during summer.

[查看全文](#) [查看/发表评论](#) [下载PDF阅读器](#)

您是第1055680位访问者

主办单位: 中国水利学会 出版单位: 《水利学报》编辑部

单位地址: 北京海淀区复兴路甲一号 中国水利水电科学研究院A座1156室 邮编: 100038 电话: 010-68786238 传真: 010-68786262 E-mail: slxb@iwhr.com

本系统由北京勤云科技发展有限公司设计