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河流与海洋

日本海混合层深度季节和年际变化的数值模拟

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摘要 基于垂向混合坐标系统的海洋模式HYCOM模拟了北太平洋1981~2001年间的月平均三维水动力学和热力学结构. 在对模拟结果验证的基础上，得到日本海混合层时空场的分布情况，剖析了日本海混合层深度的季节及年际变化特征. 对模拟结果分析表明, 日本海混合层存在着显著的季节和年际变化:冬季混合层深度深，夏季混合层深度浅，其深度变化范围在10~100 m 之间. 日本海混合层深度的年际变化与季节变化存在共性而又各具特色. 研究证实，日本海地形、环流、海面风场和温度梯度场等的综合作用，导致日本海混合层深度的变化.

关键词 HYCOM；日本海；混合层深度；季节及年际变化分析

分类号 P722.3

Numerical study on the seasonal and interannual variations of the mixed layer depth in Japan/East Sea

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Abstract

Base on the Hybrid Coordinate Ocean Model (HYCOM), this paper simulated the three dimensional dynamic and thermo logic structure of the North Pacific Ocean from 1981 to 2001. After verifying the validation of the model results, the mixed layer depth (MLD) field and its seasonal variation in Japan/East Sea (JES) as well as the interannual variation were analyzed. The analysis shows that there exists strong seasonal and interannual variations of MLD in JES; which can be seen as one of the noticeable hydrological phenomena there. The MLD is deeper in winter and shallower in summer. The variable range is from 10 meters to 100 meters. There exists both similarity and difference between seasonal and interannual variations of MLD in JES. The analysis shows that the topography, the current, the monsoon and the temperature gradient in JES work together, making the variation of MLD in JES.

Key words HYCOM Japan/East Sea mixed layer depth seasonal and interannual variations

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