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www.elsevier.com/locate/csr

PII: S0278-4343(17)30225-X  
DOI: <https://doi.org/10.1016/j.csr.2017.10.006>  
Reference: CSR3686

To appear in: *Continental Shelf Research*

Received date: 26 April 2017  
Revised date: 7 October 2017  
Accepted date: 13 October 2017

Cite this article as: Zhu Junying, Shi Jie, Guo Xinyu, Gao Huiwang and Yao Xiaohong, Air-sea heat flux control on the Yellow Sea Cold Water Mass intensity and implications for its prediction, *Continental Shelf Research*, <https://doi.org/10.1016/j.csr.2017.10.006>

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# Air-sea heat flux control on the Yellow Sea Cold Water Mass intensity and implications for its prediction

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## Abstract

The Yellow Sea Cold Water Mass (YSCWM), which occurs during summer in the central Yellow Sea, plays an important role in the hydrodynamic field, nutrient cycle and biological species. Based on water temperature observations during the summer from 1978 to 1998 in the western Yellow Sea, five specific YSCWM years were identified, including two strong years (1984 and 1985), two weak years (1989 and 1995) and one normal year (1992). Using a three-dimensional hydrodynamic model, the YSCWM formation processes in these five years were simulated and compared with observations. In general, the YSCWM began forming in spring, matured in summer and gradually disappeared in autumn of every year. The 8°C isotherm was used to indicate the YSCWM boundary. The modelled YSCWM areas in the two strong years were approximately two times larger than those in the two weak years. Based on the simulations in the weak year of 1995, ten numerical experiments were performed to quantify the key factors influencing the YSCWM

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