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The influence of climate regime shifts on the marine environment and ecosystems in the East Asian Marginal Seas and their mechanisms

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Abstract

Step changes to seawater temperature (SWT) in the East Asian marginal seas (EAMS) are associated with three recent climate regime shifts (CRS) occurring in the mid-1970s, late 1980s, and late 1990s, but the responses of the ocean conditions and marine ecosystems had regional differences. A step change in SWT in the East China Sea (ECS) was detected after the CRS of the 1970s as were step changes in the North Pacific Index (NPI), Pacific Decadal Oscillation Index (PDOI), and East Asian Winter Monsoon Index (EAWMI). SWT in the ECS decreased with decreasing warm water volume transport into the EAMS and a strong monsoon, but step changes in SWT in other regions were not detected as clearly. After the CRS of the 1980s, SWT in all EAMS increased rapidly with step changes detected in all five

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