Abstract View

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Circulation and Hydrographic Structure over the Ghana Continental Shelf during the 1974 Upwelling

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ABSTRACT

The changes in the circulation and hydrographic structure over the continental shelf south of Tema, Ghana, during the 1974 upwelling are described. For the first time in this region an Aanderaa current meter mooring provided a continuous record of currents at three levels. During the onset of the upwelling there is evidence of a vertical flow of 8×10^{-5} m s^{-1} and an offshore flow at the surface of 7×10^{-2} m s^{-1}. A large vertical shear, which is a permanent feature throughout most of the year, vanishes during the upwelling. Sea level changes are predominantly steric in origin. The upwelling event and the subsequent changes in the hydrography and circulation do not correlate with changes in the coastal wind. These are important differences between the Ghana regime and that observed in other coastal upwelling areas, and no simple driving mechanism is apparent. As a result, existing theoretical models may not be applicable. The possibility that waves of oceanic origin play an important role in the evolution of the coastal hydrography is discussed.