

Eastern Boundary Upwelling Ecosystems under a changing climate

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Abstract

Upwelling systems are some of the most productive ecosystems of the world. Those associated to the Eastern Boundary Current Systems have been of much interest due to extent of their upwelling areas and their response to changes in climate. In 1990, A. Bakun proposed that upwelling-favorable winds in EBUE were intensifying due to climate change, through an increase of the pressure gradient between land and ocean that drive these winds. Since then, a great amount of research has been conducted on how these Eastern Boundary Upwelling Ecosystems (EBUE) are changing with climate. The results have been mixed and challenging, in great part to data sources and availability, and the complexity of the systems themselves. For example, trends in winds in different EBUEs depends on the dataset analyzed, or the region within and EBUE analyzed. Changes in water temperature, although related to upwelling, can change due to larger scale processes impacting. However, after 35 years, good progress have been done and we have some clear results as to how these systems are changing, and how the different elements of the system (winds, water temperature, oxygen, pH) are changing and, in combination, how are can impact their ecosystems. In this talk we present a brief review of these results and outline some questions that still need to be investigated.