



Weakening of the senegalo-mauritanian upwelling system under climate change in the CMIP5 data base

Adama Sylla (1), Juliette Mignot (2), Xavier Capet (2), and Amadou Gaye (1)

(1) LPAOSF, ESP/UCAD, Dakar, Senegal, (2) LOCEAN, IRD-UPMC-CNRS-MNHN, Paris, France

The oceanic region located off the Guinean, Senegalese and Mauritanian coasts is one of the most productive one in the world ocean. This is due to the senegalo-mauritanian upwelling system. This upwelling occurs in winter which is very specific to this region. In particular, it differs from the well-known upwelling systems located along the eastern coast of the tropical oceans but further poleward such as along the Moroccan, Californian, Peru-Chili and Benguela coasts. These upwelling systems are maximum in summer. Several studies have investigated their sensitivity to global warming. Early studies have suggested that their intensity may increase in the future, but recent observations do not show clear robust evidence. The winter senegalo-mauritanian upwelling system has been largely excluded from these studies, in spite of its crucial role for the socio-economical development of the populations of the surrounding region, whose food and income strongly depend of the halieutic resources. In this context, this study proposes a precise characterization of the representation of this system in the CMIP5 climate models, and its response to climate change. Our analysis is based on characteristics of the upwelling in terms of wind forcing, anomalous sea surface height and sea surface temperature signature. In spite of some diversity in the model's ability to represent the senegalo-mauritanian upwelling system, the results suggest that its intensity may decrease in the future, primarily because of a reduction of the wind forcing.