Geophysical Research Abstracts
Vol. 18, EGU2016-15881, 2016
EGU General Assembly 2016

Bio-physical processes contribution to oxygen budget in the ETNA OMZ: a model based analysis study

Eyram Koku Apetcho (1), Ivonne Montes (2), Katja Fennel (3), Birgit Schneider (4), and Andreas Oschlies (1)

(1) GEOMAR Helmholtz Center for Ocean Research Kiel, Biogeochemical modeling, KIEL, Germany (eapetcho@geomar.de), (2) Instituto Geofisico del Peru, (3) Department of Oceanography, Dalhousie University, (4) Institute of Geosciences, Department of Geology, Kiel University

We analyze the influence of physical processes on the oxygen distribution in the Eastern tropical North Atlantic (ETNA) oxygen minimum zone (OMZ) and their contribution to the oxygen budget in the oxygen minimum layer. A validation of the model shows a realistic representation of the main features. An improvement of the relative weak velocity observed in the model by a combination of higher resolution and appropriate wind forcing is proposed. The model diagnostics reveals that oxygen supply is mainly driven by advection. However, the importance of small scale processes is highlighted and it is observed that they potentially could hinder oxygen supply and thus contribute to ongoing depletion of oxygen. The main consumption mechanisms found in this modeling study are remineralization of DON and the 2 stages of nitrification.