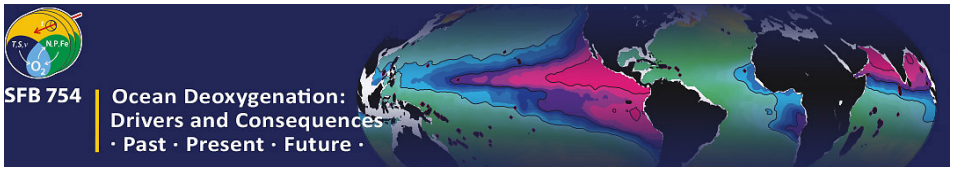

Contribution ID : **105** Type : **Oral**

Zooplankton-mediated fluxes in the Eastern Tropical North Atlantic

Monday, 3 September 2018 16:30 (15)

Zooplankton occupies an important role in pelagic ecosystems as it provides the link between primary producers and higher trophic levels and to a large extent shapes elemental cycles. Zooplankton organisms feed on all kinds of small particulate matter (e.g. phytoplankton, detritus, smaller zooplankton organisms) and egested fecal pellets contribute substantially to the passive sinking flux out of the surface layer. Some zooplankton species also conduct diel vertical migrations (DVMs) between the surface layer where they feed at nighttime and midwater depth below the sunlit euphotic zone where they hide at daytime from predation. These DVMs result in the active export of organic and inorganic matter from the surface layer as zooplankton organisms excrete, defecate, respire and get eaten at depth. In the Eastern Tropical North Atlantic (ETNA), the daytime depth (300-600 m) coincides with an oxygen minimum zone (OMZ) that was observed to expand and intensify in the past decades. We here constrain zooplankton impacts on the nitrogen and oxygen budget in the upper 1000 m of the ETNA using a comprehensive set of day and night catches with a Hydrobios Multinet, analysed using the Zooscan method. We estimate that about 13 to 28 % of the external nitrogen supply (diapycnal diffusion, atmospheric deposition, nitrogen fixation) to the upper 100 m of the water column is lost via DVM activity of zooplankton. Likewise, zooplankton contributes about 20 % to oxygen consumption in the 300 to 600 m depth layer. Changes in zooplankton abundance and migration behavior due to decreasing oxygen levels at midwater depth could therefore considerably alter the elemental cycling of oxygen and carbon in the ETNA OMZ, but might also impact the removal of nitrogen from the surface layer.

Position

Senior Scientist

Affiliation

GEOMAR Helmholtz Centre for Ocean Research Kiel

Email Address

rkiko@geomar.de

Are you a SFB 754 / Future Ocean member?

Yes

Primary author(s) : KIKO, Rainer; HAUSS, Helena; Mrs CHRISTIANSEN, Svenja (Oslo University); Mr FAUSTMANN, Jannik (Kiel University); Mr RODRIGUES, Elizandro (INDP, Mindelo, Republic of Cape Verde); Prof. SOMMER, Ulrich (GEOMAR Helmholtz Centre for Ocean Research Kiel); Dr MELZNER, Frank (GEOMAR Helmholtz Centre for Ocean Research Kiel)

Presenter(s) : KIKO, Rainer

Session Classification : 02 Ecosystem Impacts

Track Classification : 02 Ecosystem Impacts