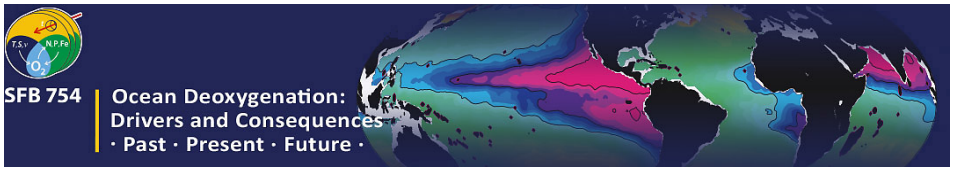

Contribution ID : **56** Type : **Oral**

Particle Flux of Sinking Organic Matter in the Peruvian Oxygen Minimum Zone

Wednesday, 5 September 2018 14:30 (15)

Oxygen Minimum Zones (OMZs) may expand in the future as a result of the decline in oxygen concentrations in the ocean (e.g., Stramma et al. 2010). The downward flux of particulate organic matter (POM) from the euphotic zone via the biological carbon pump (BCP) is critical to transfer carbon to the ocean's interior. Export efficiency and flux attenuation impact the vertical distribution of oxygen and nutrients in the ocean's interior. Flux attenuation indicates the amount of sinking OM that is remineralized in the mesopelagic zone, contributing to oxygen demand within the OMZ. Particle export has been suggested to fuel nitrogen loss in the OMZ by supplying ammonium required by microbial anaerobic ammonium oxidation (Kalvelage et al. 2013).
Observations suggest that the flux attenuation is lower in the OMZ compared with well-oxygenated waters at similar temperatures. However, the processes behind reduced POM flux attenuation in the OMZ remain unclear. Proposed mechanisms include reduction of aggregates fragmentation due to the absence of zooplankton within the OMZ, a higher refractory nature of sinking particles, preferential degradation of nitrogen-rich organic compounds, enhanced chemoautotrophy, and a decrease in heterotrophic activity due to oxygen limitation.
Here, we investigate how oxygen deficit affect the magnitude and composition of the particle flux in the Eastern Tropical South Pacific (ETSP) OMZ off the coast of Peru. Sinking OM was collected in April and June 2017 using surface-tethered drifting sediment traps. The traps were deployed for four to seven days, at six to eight different depths between 50 and 600 m to estimate fluxes to and within the OMZ. Characterization of the sinking material includes total mass, particulate organic carbon/nitrogen/phosphorus, biogenic silica, and gel particles. We will evaluate the effect of oxygen deficit on sinking particles composition and flux attenuation in the OMZ of the ETSP.

Position

Postdoc

Affiliation

GEOMAR

Email Address

ccisternas@geomar.de

Are you a SFB 754 / Future Ocean member?

Yes

Primary author(s) : Dr CISTERNAS-NOVOA, Carolina (GEOMAR)

Co-author(s) : LE MOIGNE, Frederic (GEOMAR, KIEL); ENGEL, Anja

Presenter(s) : Dr CISTERNAS-NOVOA, Carolina (GEOMAR)

Session Classification : 10 Biogeochemical Cycles: Feedbacks and Interactions

Track Classification : 10 Biogeochemical Cycles: Feedbacks and Interactions