

Tuesday, October 9

Poster Session 2

10:30–12:30

Poster 122**WATER MASS FORMATION AND BIOGEOCHEMICAL RESPONSE IN THE NORTHERN RED SEA**

Numerical simulations and remote sensing studies have characterized the northern Red Sea (NRS) as the region where Red Sea Outflow Water (RSOW) and occasionally deep water is formed. Until now, no substantive in situ studies exist to describe the physical and biochemical processes in the NRS. Weakening stratification and winter cooling during December 2015 - January 2016 preconditioned the upper layer facilitate upward entrainment of intermediate water, that with coastal mixing leads to formation of RSOW. Glider observations that include temperature, salinity, oxygen, carbon dissolved organic matter (CDOM), chlorophyll fluorescence (CHL) and multi-wavelength optical backscatter have been used to characterize and trace the water masses. Modeling studies suggested that the circulation in this region is dominated by a cyclonic gyre. Our results verified the presence of a cyclonic circulation in the center of the NRS that upwells nutrients into the euphotic layer. In addition, deep winter mixing entrained nutrients into the euphotic zone resulting enhancement of the phytoplankton biomass. These mixing events dispersed the phytoplankton from the deep chlorophyll maximum throughout the mixed layer (ML) increasing the chlorophyll signature detected by ocean color imagery. However, the magnitude of increase offshore during winter due to the cyclonic circulation's associated upwelling was much greater than the increase due to nearshore mixing. This study reveals that AUVs platforms and their associated optical measurements provided significant insight into key physical and biochemical processes within the region.

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