

OCEAN OPTICS XXIV

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<https://oceanopticsconference.org>

Monday, October 8

Poster Session 1

16:00–18:00

Poster 41

THE BASE OF THE FOOD WEB AND ITS KEY PLAYERS: CASE STUDY OF THE OLIGOTROPHIC SOUTHERN ADRIATIC SEA

The common knowledge points to picophytoplankton as the most important primary producer in the oligotrophic southern Adriatic Sea, and wintertime deep convection to be the main driver of the whole food web dynamics. In order to test this theory, an interdisciplinary research composed of two winter cruises was conducted along the coast-open sea transect, from surface to aphotic layers of water column. To recognize key players of the base of the food web, we combined physical, chemical and bio-optical measurements with molecular and microscopical signatures of plankton communities. Apparent oxygen utilization (AOU) had positive values, indicating respiration, mainly from heterotrophic bacteria, as a main process in the area. The photosynthetic component of picoplankton was dominated by cyanobacteria, while eukaryotic picoplankton was 95% hetero- or mixo- trophic and 5% photoautotrophic, supporting the respiration processes within the microbial food web. Our findings suggest that chlorophyll rich waters, encountered on larger depths, have to originate in surface layers, then being transported to aphotic layers by a strong wintertime convection event. Due its short duration, such convective mixing may go undetected, but its consequences are highly visible through increased phytoplankton abundance and Chl a concentration in the surface, as well as in deeper layers of the water column. Our findings emphasize the importance of wintertime deep convection in the southern Adriatic Sea for primary production. However, this study suggests that the respiration is the main process for the food web dynamic in the southern Adriatic Sea.

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