



Effects of physical forcing on COastal ZOoplankton community structure: study of the unusual case of a MEDiterranean ecosystem under strong tidal influence (Project COZOMED-MERMEX)

Marc Pagano and the Groupe COZOMED Team

Institut Méditerranéen d'Océanologie (M I O) , Aix-Marseille Université, France, France (marc.pagano@mio.osupytheas.fr)

Groupe COZOMED:

R. Arfi (1), A. Atoui (2), H. Ayadi (6), B. Bejaoui (1), N. Bhairy (1), N. Barraï (2), M. Belhassen (2), S. Benismail (2), M.Y Benkacem (2), J. Blanchot (1), M. Cankovic(5), F. Carlotti (1), C. Chevalier (1), I Ciglenecki-Jusic (5), D. Couet (1), N. Daly Yahia (3), L. Dammak (2), J.-L. Devenon (1), Z. Drira (6), A. Hamza (2), S. Kmia (6), N. Makhlof (3), M. Mahfoudi (2), M. Moncef (4), M. Pagano (1), C. Sammari (2), H. Smeti (2), A. Zouari (2)

The COZOMED-MERMEX project aims at understanding how hydrodynamic forcing (currents, tides, winds) combine with anthropogenic forcing and climate to affect the variability of coastal Mediterranean zooplankton communities under contrasting tidal influence. This study includes (i) a zero state of knowledge via a literature review of existing data and (ii) a case study on the system Boughrara lagoon - Gulf of Gabes. This ecosystem gives major services for Tunisia (about 65% of national fish production) but is weakened by its situation in a heavily anthropized area and under influence of urban, industrial and agricultural inputs. Besides this region is subject to specific climate forcing (Sahelian winds, scorching heat, intense evaporation, flooding) which possible changes will be considered. The expected issues are (i) to improve our knowledge of hydrodynamic forcing on zooplankton and ultimately on the functioning of coastal Mediterranean ecosystems impacted by anthropogenic and climatic effects and (ii) to elaborate management tools to help preserving good ecological status of these ecosystems: hydrodynamic circulation model, mapping of isochrones of residence times, mapping of the areas of highest zooplankton abundances (swarms), and sensitive areas, etc. This project strengthens existing scientific collaborations within the MERMEX program (The MerMex Group, 2011) and in the frame of an international joint laboratory (COSYS-Med) created in 2014. A first field multidisciplinary campaign was performed in October 2016. The strategy combined measurements of sea level and currents (mooring of ADCP, Argonaute and tidal gauges), hydrological description of water masses (horizontal and vertical transect with a Minibat equipped with CTD, fluorescence and turbidity sensors) and discrete sampling of nutrients, DOC, POC, pico, nano, microphytoplankton and mesozooplankton. The first results allow a description of water currents and shows a good coupling between tidal cycles (ebb-flood and spring tide neap tide) and the dynamics of planktonic compartments in the lagoon.