Macrozoobenthos changing in Venice Lagoon: a monitoring story since 2011

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Macrozoobenthos are invertebrates larger than 1 mm, predominantly sedentary, living in or on the sediments, playing a fundamental role in the ecosystem processes of several environments, such as lagoons. Indeed, they contribute to nutrient cycles, metabolization of pollutants, sediment oxygenation, as well as they both filter phytoplankton, and are a food source for other organisms in higher level of the food web. The distribution of macrozoobenthos depends on both abiotic and biotic factors, such as salinity, depth, hydrodynamics, sediment size and composition, as well as inter- and intraspecific competition and predation. Macrozoobenthos communities are usually used as bioindicators to assess quality of coastal and transitional marine ecosystems. Indeed, they are among biological quality elements to assess ecological quality in transitional and coastal waters according to Water Framework Directive.

The aim of this study is to investigate changes in macrozoobenthos community and their relationship with environmental parameters in Venice Lagoon, one of the largest and most important transitional water in Mediterranean Sea. To this purpose, ecological indices were applied to 268 samples and 252 taxa, gathered since 2011 to 2022, once a year (spring-summer) every three years. Trends in environmental conditions were also investigated, highlighting a significant increasing in some parameters, and then related to dissimilarities in macrozoobenthos abundances. Results showed that macrozoobenthos community in Venice lagoon changed in time, showing differences among polyhaline and euhaline areas, as well as areas with different hydrodynamics, and they related to environmental and chemical physical parameters, such as organic carbon, silicates, salinity, and temperature.