

## **CONSEQUENCES OF SINGULAR ENVIRONMENTAL EVENTS ON THE CYCLE OF METALS IN COASTAL LAGOONS AND THEIR INFLUENCE ON THE INCORPORATION OF METALS BY PRIMARY PRODUCERS**

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**Abstract:** Coastal areas are valuable and sensitive environments subjected to great anthropogenic pressure. Among these pressures, metal pollution is of priority concern as these pollutants can reach concentrations that exceed the levels established to protect sensitive organisms in the ecosystem. In coastal lagoons, shallow systems with a reduced exchange with the open sea, metal concentrations are one or two orders of magnitude higher than in open-waters. In addition, these systems are subjected to physicochemical variations that can alter the biogeochemical cycling of the metals. Singular environmental events such as strong winds cause metal resuspension, torrential rain events provoke the entrance of solutes and pollutants, and phytoplankton blooms dramatically increase the concentration of organic matter. These events provoke alterations in the concentration and speciation of metals in the water column. This will have a direct impact in the organisms living in the area, since metal toxicity and bioavailability depends on the chemical speciation. Dissolved organic matter (DOM) is the most important variable influencing metal speciation and bioavailability in seawater. However, the effects of DOM on metal bioavailability have not been yet unravelled and contrasting results have been reported, some showing that DOM protects against metal toxicity and others showing the opposite. The present study was designed to study how the biogeochemical cycling of trace metals in the water column of coastal lagoons is influenced by these singular environmental events and how this affects the incorporation of metals by the primary producers, in this case, microalgae, with particular focus on the effect of dissolved organic matter on metal biouptake. The proposed work combines field sampling and analytical work in the Mar Menor lagoon (SE Spain). This project will substantially contribute to widen our knowledge about the behaviour of metals in coastal areas and to determine how the presence of DOM affects their toxicity.

**Key words:** coastal lagoons, singular environmental events, metals, bioavailability

**Acknowledgments:** This work has been supported by the Spanish Ministry Science and Innovation and by the European Union through the European Regional Development Fund (ERDF) through 'SEEME' (PID2019-109355RA-I00) project.