Geophysical Research Abstracts
Vol. 16, EGU2014-16829, 2014
EGU General Assembly 2014

The role of connectivity and hydrodynamic conditions in the configuration of ichthyoplankton assemblages in coastal lagoons

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Fish assemblages in coastal lagoons are constituted by species with different gilds and life stories including estuarine residents but also a high percentage of marine stragglers and marine migrants. Previous studies showed that different ichthyoplancton assemblages can be identified inside a lagoon, depending on hydrological conditions, but at the same time a high spatial and temporal variability haven observed. The proposed models to explain lagoon assemblages configuration based on probabilities of colonization from the open sea involves an important stochastic component and introduces some randomness that could lead to that high spatial and temporal variability at short and long-term scales. In this work we analyze the relationship between ichthyoplankton assemblages in the Mar Menor lagoon and the adjacent open sea in the framework of the hydrodynamics of the lagoon and connectivity between sampling stations using hydrodynamic models. The results, show a complex interaction between the different factors that lead to a highly variable system with high accumulated richness and diversity of species, and a large proportion of occasional visitors and stragglers suggesting that the mechanisms of competitive lottery can play an important role in the maintenance of communities of coastal lagoons , where environmental variability occurs in a system with strong differences in colonization rates and connectivity, not only with the open sea, but also between locations within the lagoon.