



Surface Lagrangian transport in the Adriatic Sea (Mediterranean Sea) from drifters, HF radar and models: implications for fishery and Marine Protected Areas

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Surface transport in the Adriatic Sea is investigated using data from historic drifter data, HF radar and virtual particles computed from a numerical model.

Alongshore coastal currents and cyclonic gyres are the primary circulation features that connect regions in the Adriatic Sea. Their strength is highly dependent on the wind, with Southeasterly Sirocco winds driving eastward cross-Adriatic transport from the Italian coasts and Northwesterly Mistral winds enhancing east-to-west transport. Results from the analysis show that Cross-Adriatic connection percentages were higher for east-to-west transport, with westward (eastward) transport observed mostly in the northern (southern) arms of the central and southern gyres.

These pathways of patterns influence the connection between Marine Protected Areas (MPAs) and between spawning and nursery areas for small pelagic fish. Percentage connections between MPAs are computed, showing that while the highest percentages occur through boundary currents, significant percentages also occur through cross-gyre transport, suggesting the concept of cell-based ecosystems. The nursery area of the Manfredonia Gulf has limited retention properties, and eggs and larvae are likely to reach the Gulf mostly from remote spawning areas through current transport