

Abstract Submitted
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Search strategy in a complex and dynamic environment (the Indian Ocean case) SOPHIE LOIRE, HASSAN ARBABI, PATRICK CLARY, UCSB, STEFAN IVIC, NELIDA CRNJARIC-ZIC, SENKA MACESIC, BOJAN CRNKOVIC, University of Rijeka, IGOR MEZIC, UCSB, UCSB TEAM, RIJEKA TEAM — The disappearance of Malaysia Airlines Flight 370 (MH370) in the early morning hours of 8 March 2014 has exposed the disconcerting lack of efficient methods for identifying where to look and how to look for missing objects in a complex and dynamic environment. The search area for plane debris is a remote part of the Indian Ocean. Searches, of the lawnmower type, have been unsuccessful so far. Lagrangian kinematics of mesoscale features are visible in hypergraph maps of the Indian Ocean surface currents. Without a precise knowledge of the crash site, these maps give an estimate of the time evolution of any initial distribution of plane debris and permits the design of a search strategy. The Dynamic Spectral Multiscale Coverage search algorithm is modified to search a spatial distribution of targets that is evolving with time following the dynamic of ocean surface currents. Trajectories are generated for multiple search agents such that their spatial coverage converges to the target distribution. Central to this DSMC algorithm is a metric for the ergodicity.

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