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**Finding Lagrangian Coherent Structures from Spatially Limited Flow Data** WENBO TANG, Arizona State University, GEORGE HALLER, Massachusetts Institute of Technology, P.W. CHAN, Hong Kong Observatory — Extracting Lagrangian Coherent Structures (LCS) from a flow is challenging when a velocity field is only observed or computed over a spatially limited domain. In such cases, Lagrangian particle tracking is typically stopped on the boundaries of the domain, which turns the boundaries into artificial attractors for the particle motion. In addition, trajectories heading towards, and then stopped at, different boundaries tend to generate artificial shear-type LCS inside the domain. We present a technique borrowed from invariant manifold theory that eliminates artificial LCS and enhances real LCS in the Lagrangian flow analysis of flows on limited domains. We apply this technique to extract LCS from a flow fitted to LIDAR observations near Hong Kong Airport. Our improved LCS extraction method eliminates noise from the results and enhances LCS strongly correlated with topography.

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