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Lagrangian dynamics in the Gulf of Trieste from high resolution HF-Radar

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The Gulf of Trieste (GoT) is shared by Italy, Slovenia and Croatia, with most of its coasts belonging to Italy and Slovenia, along with the two main harbours; the Harbour of Trieste (Italy) and Koper (Slovenia). Both are subject to heavy marine traffic and exposed to different threats including oil spills, maritime accidents and SAR operations. The GOT High frequency radar network provides near-real time data of sea surface currents and waves since 2016. In this work we provide a statistical description of surface variability in terms of Lagrangian descriptors in order to elucidate the transport and retention in the GoT as well as to provide the seasonal evolution of the residence time. Among the most widely used Lagrangian techniques, we focus the study on Lagrangian Coherent Structures and Path-integrated topological variables like Lagrangian divergence and Lagrangian vorticity.

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