Uncertainties in Lagrangian mixing  WENBO TANG, ALEX MAHALOV, Arizona State University — Lagrangian Coherent Structures have been discovered to be the building blocks of chaotic mixing in turbulent flows and mathematical tools have been developed to extract the invariant manifolds that highlight Lagrangian mixing. These mathematical tools are based on deterministic velocity fields and it is unclear how random processes can modify chaotic mixing. In this talk we discuss archetypical geophysical flow examples embedded in an environment of Gaussian white noise. We examine how the deterministic nonlinear background flow fields alter the Gaussian statistics and the consequences of stochastic processes on Lagrangian mixing.