

Mathematics Department Colloquium

Speaker: Dr. Helga S. Huntley, Program of Physical Ocean Science & Engineering,
School of Marine Science & Policy, University of Delaware, Newark, DE

Title: Clustering, deformation, and dilation: Diagnostics for material accumulation regions in the ocean

Date: Wednesday December 11, 2019

Time: 2:00pm to 3:00pm.

Place: James Hall 2100

Abstract: Material floating at the ocean surface is generally not distributed uniformly. Identifying accumulation regions is important for a variety of applications, from locating hotspots of biological activity to targeting pollution mitigation. This talk will introduce an improved metric for defining clusters and propose strategies for diagnosing regions likely to contain clusters. For the latter purpose, the classic deformation metric based on finite-time Lyapunov exponents is decomposed into components capturing the integrated effects of divergence and shear deformation separately. The concepts are developed theoretically and illustrated in the context of an ocean circulation model of the Gulf of Mexico.