

## Energetics of Eddy-Mean Flow Interactions in Western Boundary Currents: The Kuroshio and the Gulf Stream

\*Enrique N Curchitser<sup>1</sup>, Dajuan Kang<sup>1</sup>, Xiaomei Yan<sup>2</sup>

1. Rutgers University New Brunswick, 2. Institute of Oceanology, Chinese Academy of Sciences

Mesoscale eddies are most energetic along Western Boundary Currents, such as the Gulf Stream in the North Atlantic and the Kuroshio in the North Pacific. A better understanding of the eddy dynamics and variability is essential for prediction of ocean states and evaluating the ocean contributions to the climate system and interactions with the ecosystem. We derive a full set of eddy energetics analysis framework that provides quantitative description of the energy sources, sinks, and exchanges among different energy reservoirs. We perform detailed energetics analysis of the Kuroshio eddies using the OFES quasi-global ocean simulation and compare it to high-resolution simulations of the Gulf Stream region. Through the combination of theoretical and numerical analysis, we investigate eddies' generation, spatio-temporal variability and the underlying dynamics in these two eddy-prominent Western Boundary Current regions.