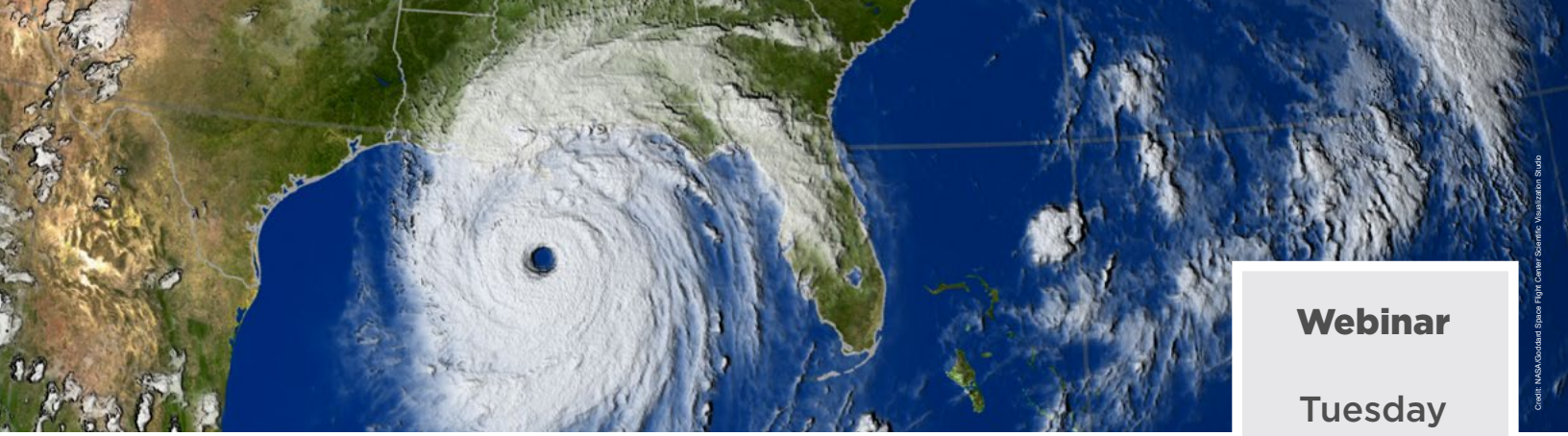

Webinar

Tuesday
Aug. 28, 2018

12 - 1 PM ET

Resolving the Loop Current Complex: Implications for Hurricane Intensity Forecasting

As a hurricane moves over the Gulf of Mexico's Loop Current, hurricanes often intensify to severe (Category 3) status due to the deep warm water and the sustained air-sea fluxes feeding the storm. Given that the Gulf is a semi-enclosed basin, these intensifying hurricanes will make landfall around the Gulf and significantly impact coastal ocean processes.

In this context, it is critical to understand the 3-dimensional oceanic velocity response of the Loop Current and its complex warm and cold eddy field to hurricane forcing. This allows scientists to accurately evaluate dynamical loading on marine oil facilities and to assess mixing and dispersion of oil products through the water column. In addition, it is critical to understand the vertical extent of wind-forced ocean processes such as upwelling and downwelling of isotherms. In this context, measurements of ocean current, temperature and salinity fields prior, during, and subsequent to hurricane passage are critical to resolve these upwelling and mixing processes. Measurements also provide reference data sets to initialize, evaluate, and validate coupled forecast models.

As part of NOAA's Hurricane Field Program over the past two decades, profilers have been deployed in the LC from NOAA research aircraft during hurricanes Isidore and Lili, Katrina and Rita, Gustav and Ike, Isaac and Nate. During Nate, the Gulf of Mexico Research Institute sponsored EM-APEX floats measured the hurricane-induced ocean response to the strong winds. These profiler measurements are cast into 2-dimensional satellite fields derived from multiple missions to estimate oceanic heat content, mixed layer and isotherm depths, and sea surface temperatures as part of ongoing research with scientists from NOAA-NESDIS. The oceanic response affects physical processes as well as biochemical processes and the ecosystem through upwelling, mixing and transport throughout the water column.

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About the Presenter

Dr. L. K. (Nick) Shay holds a Ph.D. and a M.S. in Physical Oceanography (Applied Math minor for the Ph.D. specializing in upper ocean response to strong atmospheric forcing events) from the Naval Postgraduate School, and a B.S. in Physical Oceanography from Florida Institute of Technology. He is currently a Professor in the Department of Ocean Sciences at the University of Miami's Rosenstiel School of Marine and Atmospheric Science and directs the Upper Ocean Dynamics Laboratory. He has published over one hundred fifteen peer-reviewed publications in top tier journals and books and has chaired or served on forty student committees. The overarching goal of the research is to conduct scientific and technological investigations that require both basic and applied research activities that have societal relevance at its core. In this context, research interests include: experimental and theoretical investigations of the ocean response and coupled air-sea interactions during strong atmospheric forcing events (tropical and extratropical cyclones, atmospheric jets, fronts), Loop Current effects of the atmospheric boundary layer, coastal oceanographic process studies associated with the Florida Current, radar oceanography using high frequency radar and satellite altimetry, and velocity profiling techniques from floats and aircraft-deployable measurements. Read more on www.secoora.org/webinar-series.

Lynn K. (Nick) Shay, PhD
University of Miami's Rosenstiel School of Marine and Atmospheric Science

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Contact Abbey Wakely at abbey@secoora.org for more information.