MODELING OF CROSS-SHELF TRANSPORT IN SUPPORT OF MONITORING AND FORECASTING OF
HARMFUL ALGAL BLOOMS ALONG THE WEST FLORIDA COAST

Le N. Ly*, Richard P. Stumpf, Thomas F. Gross and Frank Aikman III
National Ocean Service, NOAA, Silver Spring, MD, USA

Studies have shown that harmful blooms of *Karenia brevis* routinely occur along the West Florida Shelf in late summer and often persist for months. These blooms impact fisheries and tourist industries by inducing *neurotoxic* shellfish poisoning. An effort to monitor and forecast these blooms has been ongoing by NOAA for the past three years. Near real time information on likely transport over a week is an important component in forecasting bloom development as part of this effort. Blooms appear to be associated with wind-driven cross-shelf transport, indicating that modeling of this transport may aid in forecasts. A two-dimensional physical-biological coupled model is developed for harmful algal bloom (HAB) studies on the West Florida Shelf. The Rutgers Ocean Modeling System (ROMS) primitive equation model is coupled with simple biological dynamics with four components: *NPZD*. The model has realistic bathymetry and wind, temperature and salinity forcing, and has 1-km horizontal resolution and 60 vertical terrain-following levels. The model is initialized with the physical and biological data for summer. Numerical experiments are carried out to study the model physics-HAB interactions under various conditions of wind forcing and stratification. The model outputs are compared with available data, and the results are discussed.