INTERDISCIPLINARY COASTAL OCEANOGRAPHIC OBSERVATIONS

Investigators: **Peter Ortner** and Elizabeth Johns, NOAA/AOML, Miami, FL
Tom Lee and Vassiliki Kourafalou, RSMAS/University of Miami, Miami, FL

This project will continue coordinated measurements of coastal physics, biology and chemistry and analytical interpretation of the coupled local, regional and remote processes influencing the transport and exchange of South Florida coastal waters and their suspended or dissolved constituents. It is intended to not only be specifically responsive to SFP 2002 announcement topics (2) "Water Quality" and (3) "Circulation and Physical Oceanography", but also to help provide the detailed understanding of the South Florida coastal ecosystem required to fulfill NOAA-specific mandates in regard to both the Florida Keys National Marine Sanctuary and the sustainability of living marine resources.

At this point in time interagency Florida Bay science program scientists are being called upon not only to continue to improve and enhance understanding of the Bay and the coastal systems with which it is connected, but also to provide information critical to Everglades Restoration management and planning. Other aspects of what will be done are therefore intended to provide information required by the Comprehensive Everglades Restoration Plan (CERP) in support of and explicitly complementary to both the CERP Florida Bay Florida Keys Feasibility Study and the long term regional Monitoring and Assessment Plan (MAP) being developed through the CERP Restoration Conservation and Verification (RECOVER) process. In this project our ongoing shipboard, in-situ and small boat efforts have been modified and redesigned to maximally complement separately funded FIU/SERC water quality monitoring, avoid unnecessary duplication and together provide for the long term coastal water quality and salinity monitoring required by CERP. Moreover, in contrast to traditional monitoring, an adaptive, smart and nested sampling scheme will be implemented rather than fixed temporal and spatial or stratified-random sampling. In particular maximum emphasis will be placed upon available real-time in-situ data and continuous synoptic mapping data with point measurements made selectively rather than routinely across the sampling domain.

The major objectives of our study are to: (1) Continuously monitor the volume and salt transports coupling the Gulf to the Atlantic through the southwest Florida shelf and Florida Keys; (2) Measure the advection and dispersion of low-salinity waters from the Shark River and Taylor Sloughs; (3) Describe the physical processes controlling transport and exchange of plant nutrients, suspended sediments and biological particulates (plankton) on monthly to interannual time scales with particular emphasis upon the "event" scale; (4) Determine the circulation, water mass and property patterns within Florida Bay and surrounding coastal areas in response to wind forcing and coupling with oceanic regions; (5) Determine the pathways and rates of water and suspended and dissolved constituent exchange between freshwater discharge sites, Florida Bay and connecting coastal regions; (6) Improve understanding of recruitment pathways into Florida Bay nursery grounds for shrimp, fish and lobster larvae; and (7) Provide data and insights needed for the required evolution from local hydrodynamical models to larger-scale regional hydrodynamic, water quality, and ecological models.