

Water Quality Changes within the Guana Tolomato Matanzas National Estuarine Research Reserve, FL Associated with Four Tropical Storms

Nicole G. Dix, Edward J. Phlips, and Richard A. Gleeson

The objective of this study was to document the effects of extreme wind and rainfall conditions associated with tropical storms on physiochemical variability in a tidal creek, Pellicer Creek, in northeast Florida. High frequency salinity and meteorological data from the Guana Tolomato Matanzas National Estuarine Research Reserve were examined, and monthly measures of nutrient and water clarity parameters were compared to salinity variations. The four tropical systems of 2004 suppressed tidally induced salinity variations. Strong northeasterly winds associated with the storm events initially prompted salinity spikes, but rainfall over the course of each event ultimately caused strong declines in salinity for extended periods of time. Nitrogen concentrations in Pellicer Creek were significantly elevated following storm events. Since primary production in many coastal environments is nitrogen limited, increases in nitrogen input represent a potential for enhanced algal production and biomass. Given the major changes in watershed characteristics and global climate patterns expected in future years, the ability to predict the influences of these changes on the estuarine environment will be an essential part of designing, implementing and justifying management efforts.