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Correlating qualitative with quantitative measurement of sea level rise in Florida Bay

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Four decades of sea level rise have been well documented in Florida Bay. National Oceanic and Atmospheric Administration (NOAA) Tides and Currents gauging station data from the middle Florida Keys show a trend of 2.78 mm sea level rise per year since 1970. These data points can be correlated with qualitative observations from the same region - in this case from a fishing guide with more than 30 years guiding experience in Florida Bay. Observations of the fishing guide include reference to seasonally submerged boat launch ramps and docks in Flamingo, at the extreme southern tip of mainland Florida. Certain docks were noted to have been partially submerged for two weeks in the 1980s, and by late 2012 were fully submerged and inaccessible to boating for nearly two months - the annual high water season occurring in the fall. An analysis of NOAA gauging station data from Vaca Key, FL correlates the fishing guide's qualitative observations remarkably well. Monthly water elevation data from the Vaca Key station from 1970 to 2013 confirm peak water levels occur annually in October. More concerning are the long term data records confirming the annual fall flooding elevations in the 1980s which are today the average elevations. With a trend of sea level rise equivalent to 0.91 feet in 100 years in this region, the impacts of flooding due to climate change on coastal communities surrounding Florida Bay are measurable in "real time" environmentally, commercially and economically.

Biography

Douglas J Leaffer graduated from the University of Miami, FL with a BS in Geological Sciences, where he studied with renowned paleoclimatology pioneer Dr. Cesare Emiliani. Prior to earning an MS in Civil and Environmental Engineering from Tufts University, MA, he worked as an environmental scientist and hydrogeologist for several leading consulting firms, including Camp Dresser & McKee, EG & G, and Leggette, Brashears and Graham. He began teaching as an adjunct faculty at Merrimack College, MA Civil Engineering Department in 2009 and is currently full-time faculty in the Department of Physics and Earth Science at Framingham State University, MA.

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