

Helen Gerlach  
CE 394K  
September 24, 2015

### **Term Project Proposal: Flooding in Brevard County, Florida Due to Hurricanes**

For my term project, I would like to focus on the effect of hurricanes on the water systems of the East coast of Florida, due to both flooding and precipitation. This is of interest to me because I am from Indian Harbour Beach, Florida, which is on a barrier island on Florida's East coast (in Brevard County). I've had to evacuate several times for hurricanes and have seen firsthand how much flooding even a Category 1 storm can cause. While looking through some of the past projects for this class, I saw that one student did a project where the objective was to "create an hourly-interval flood map series for New York City during Hurricane Sandy" (Xing Zheng, 2013). I was hoping I could do a project similar to that, either by mapping the flooding in my hometown during a past hurricane, or by creating a predictive tool that would estimate flooding based on expected precipitation and storm surge.

There are several datasets I've found that would be useful for a project like the one I've described, as well as lots of information I haven't found yet. So far, I've found that the USGS Water Resources group has six stream gauges in various locations around Brevard County, and that information is publicly available. Brevard's Property Appraiser office has GIS data for the various floodzones in the county. The Florida Geographic Data Library (FGDL) is a metadata explorer which allows you to search many Florida datasets; a cursory search found National Elevation Data for Brevard, Water Management Districts, coastal emergency management flood data, land use data, and groundwater levels. The St. John's Water Management District also provides a lot of hydrography and detailed DEM data.

My goal for this project would be to combine some of the datasets above in GIS; for example, using elevation, precipitation, and average river levels to predict flooding. This could either be done with historical data from past hurricane or with general data to develop a model to predict the effects of future hurricanes. NOTE: There are several sites that have tools which predict your property's risk of flooding, but they aren't only looking at the specific flooding effects due to a hurricane. NOAA also has a storm surge predictor tool, but it's in the experimental stage. If these already-existing GIS projects are too similar to what I'm proposing, I'd still like to do a project looking at the effects of hurricanes on my hometown but I could focus on a different aspect.