

## 2022 COOPERATIVE SUMMER FELLOWSHIP PROGRAM – PROJECT PROPOSAL

APPLICANT TYPE: GIS;

PROJECT TITLE: ESTUARINE SHORELINE CHANGE

Kathryn Smith,

Discipline: Hazards;Ecology;General Geology;

### PROJECT DESCRIPTION

#### BACKGROUND

Coastal wetlands serve as buffer zones between marine and terrestrial environments that protect upland environments from waves, storms, sea level rise, and episodic flooding. These areas also provide habitat for commercially and ecologically important species, sequester carbon and are an important component of global carbon budgets, and are popular destinations for recreational activities. Many coastal wetlands are in ecologically and economically important estuaries and are at severe risk to habitat loss from increasing urbanization, climate change, sea level rise, and storms.

As sea level rises, coastal wetlands can maintain area by accreting vertically (accumulating sediment or organic matter) and/or shifting horizontally toward the upland (converting upland to wetlands also known as upland transgression). Shoreline change rates, upland transgression, and vertical accretion are critical components for evaluating whether wetland habitats will persist under rising sea level or result in habitat loss. In addition, tropical storms impact coastal wetlands by changing the rate of shoreline erosion and vertical accretion. Evaluating both short- and long-term coastal hazards are critical tools for coastal management and planning.

In the past, shoreline change research has focused primarily on sandy beach shorelines, however understanding wetland shoreline change is equally as important due the coastal habitat loss and expanding coastal communities at risk to rising sea level and storms. This information is also used for planning and making decisions regarding living shoreline projects, habitat management, land-use planning, and coastal restoration.

#### INTERN TASKS

The intern will work as a team with myself and a Physical Scientist technician, Joseph Terrano, in gathering modern and historical shorelines for several estuaries within the Gulf of Mexico that have previously not been studied for shoreline change rates. The intern will use ArcGIS and other geospatial tools to perform georeferencing, digitizing, data documentation and spatial analyses. Some training on ArcGIS, R or other software may be required.

#### BENEFITS TO INTERN

The intern will gain knowledge on geospatial data collection, data analysis, metadata generation and data documentation. The intern will be a co-author on the publication of any data sets that have not been previously published.

#### MENTORING PLAN

Typically daily visits with the intern are required in the initial 2-3 weeks for on-boarding, gather details on skills, and conduct training. After this initial phase, weekly meetings will be arranged. If the student is working remotely, a visit to St Petersburg may be arranged.

## ADDITIONAL DETAILS

### STUDENT SKILLS AND INTERESTS

Students should have some experience with GIS, in particular the Esri products ArcMap, ArcCatalog and ArcPro. A university-level introductory course should be sufficient.

LOCATION: St Petersburg, Florida

### ACTIVITY LEVEL:

Level 8-1: The work is sedentary. Typically, the employee may sit comfortably to do the work. However, there may be some walking; standing; bending; carrying of light items such as papers, books, or small parts; or driving an automobile. No special physical demands are required to perform the work.

FIELD WORK	None	VIRTUAL?	Yes
LAB WORK	None		
OFFICE WORK	75-100%		
OTHER	None		

PROJECTED START DATE 4/1/2022

EXPECTED DURATION 6 mos