## Project Description: Satellite Detection of Harmful Algal Blooms in the West Florida Shelf

Microscopic algae in the oceans are amongst the most prolific growing species. They form part of the basic food chain in the oceans for many aquatic species and even play an important role in the carbon dioxide cycle, by absorbing the latter in photosynthetic processes. As well as many benign species of algae, there are a number of toxic ones. Under the right conditions of temperature and nitrogenous nutrients (eg from fertilizer run=offs), algae can reproduce rapidly resulting in localized blooms in the ocean and bays. When the algae are toxic, this can result in fish kills and shellfish poisoning. At high concentrations, these algae blooms can also be harmful to humans, particularly affecting those with respiratory problems.

The west coast of Florida, known as the West Florida Shelf (WFS), is particularly prone to harmful Karenia  Brevis algal blooms. These regularly cause fish kills, and often result in beach closures, both with subsequent damages to the local economy. In this project we will investigate and compare the potential for satellite detection, identification and tracking of the harmful Karenia Brevis algal blooms in the WFS by applying neural network Algorithm and other current retrieval methods to MODISA and VIIRS satellite images and comparing their retrieval accuracies and their propensity for false positive and false negative results

### Mentoring will include:

- Introducing the student intern to the Ocean and Coastal waters research.
- Orienting the student intern to the Ocean Remote Sensing Laboratory's structure and operations.
- Allocating specific tasks to  each of the student interns to deal with  Alga bloom detection and analysis.
- Assigning the student intern MATLAB tasks that'll help, to achieve their project.
- Providing the student intern with adequate resources necessary to accomplish their project.
- Supervising  the completion of tasks with the student intern's and guidance on the presentation of their results.