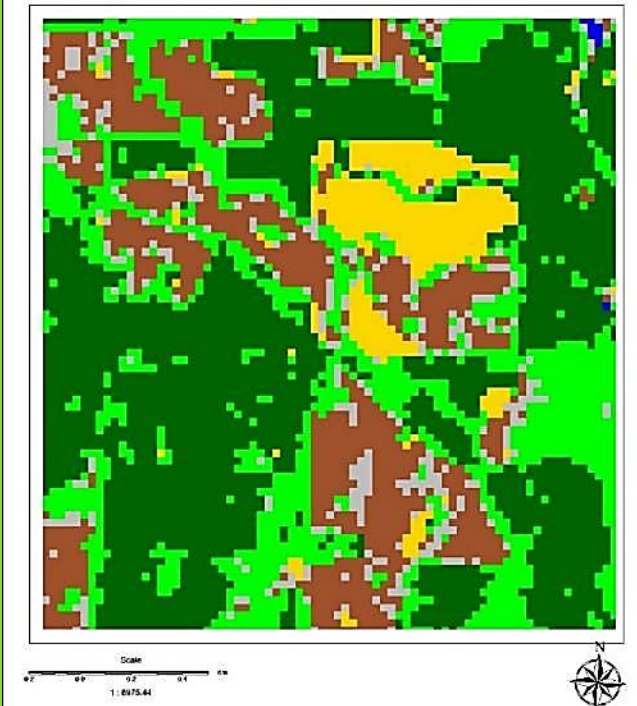


### Analysis and Update of Land Use in 16<sup>th</sup> Section Lands in Mississippi

LANDSAT 8 Supervised Classification MS 16th Section Lands, Jefferson Davis County, MS



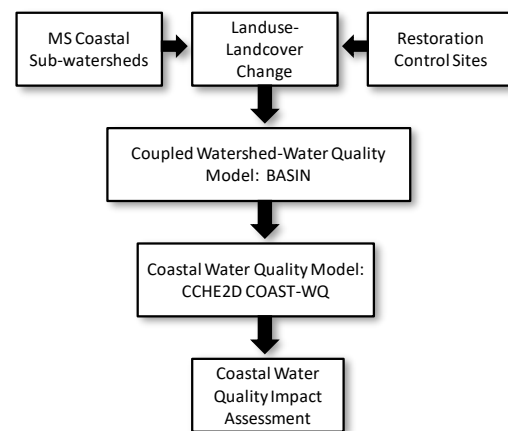
Land use in one of the 16<sup>th</sup> section lands in Jefferson Davis County, Mississippi. Supervised classification of Landsat 8 data, designed to show updates to land use for fee collection by the Secretary of State's office in Mississippi.

As part of the Introduction to Remote Sensing class, MSView initiated a long-term project to create updated maps of the 16<sup>th</sup> section lands in Mississippi. These lands are public lands in each county that have been designated by the Mississippi State Legislature. The funds raised from the uses of these lands are to be used to support public education in that county. Historically, the uses of these public lands varies, depending on the area, with some schools receiving more funds than others. The other key issue is the inability of the Secretary of State's office to accurately determine how each section is being used. Each student was assigned a 16<sup>th</sup> section and required to map the land use using two data sets; Landsat 8 and NAIP digital photography.

### Evaluating the LU/LC Changes in Coastal Watershed in Mississippi

The first steps in developing a decision support system (DSS) to evaluate the impacts of upland land use and land cover (LULC) change on coastal water quality in the Mississippi Sound is to develop a set of LULC change data sets from remote sensing data. For this analysis we used a combination of USGS Landsat 5, 7, and 8 to map changes in LULC in watersheds that drain into the Mississippi Sound and then into the Gulf of Mexico. The goal is to provide analytical tools to help select the most suitable areas for restoration and sites for monitoring the progress of the restoration. The DSS will use remote sensing-based LULC and water quality data for selected coastal watersheds in Mississippi. LULC change analysis is completed and model integration has begun, with a targeted completion date of August, 2017.

Bay St. Louis, Biloxi Bay, and Tchoutacabouffa Watersheds with 2015 Landsat Scene



## SOIL MOISTURE ESTIMATION USING OPTICAL AND MICROWAVE REMOTE SENSING

The collection of field data for calibrating satellite-derived daily soil moisture data requires the collection of in-situ soil moisture data. The data collection was coordinated with the collection of USGS Landsat 8 data, which is used for land cover/land use calculations. Using a combination of Landsat, MODIS and VIIRS, MississippiView is calculating vegetation indices that will be used to determine when the active sensors are detecting vegetation and not soil parameters. This will guide users in determining when the accuracy of the soil moisture data from microwave sensors falls below acceptable accuracy standards. In-situ soil moisture data measured at 15 stations of the National Resources Conservation Service (NRCS) in the delta are used as a comparison to our field collection data.



## BENEFITS TO MISSISSIPPI

The MississippiView High Impact Activities demonstrate the valued application of remotely sensed data for practical analysis of issues impacting the state of Mississippi. The 16<sup>th</sup> section lands project will be on-going and continue to improve the revenue for public education. With coastal restoration moving forward, understanding these watersheds is critical to improving water quality in Mississippi Sound. The significance of the soil moisture study to a heavily agricultural state like Mississippi cannot be overstated.



## MISSISSIPPI VIEW CONSORTIUM MEMBERSHIP

The MississippiView consortium consists of representatives from the research institutions in Mississippi, as well as selected community colleges in Mississippi. The representatives are:

- Jones County Junior College - Chad Garick
- Alcorn State University - Lixin Yu
- Mississippi State University - Bill Cooke
- Jackson State University - John Young
- University of Mississippi Medical Center - Fazlay Faruque
- University of Southern Mississippi - George Raber
- Mississippi Valley State University - Raymond Williams
- University of Mississippi - Greg Easson

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