TRACKING INDUSTRIAL METALS AND CONTAMINATION IN THE CHATTAHOOCHEE RIVER: POTENTIAL POINT AND NON-POINT SOURCE POLLUTION TO THE APALACHICOLA BLUEWAY. *EMILY POWELL*, JOE MORGAN AND EMILY POWELL, JACKSONVILLE STATE UNIVERSITY.

This is a preliminary study to assay the concentrations and proximate locations of point source pollution for heavy metal content in sediment samples in the Chattahoochee River Basin. As a follow up to the Gulf of Mexico and Deep Water Horizons oil spill research we discovered increased levels of heavy metal concentrations in the Apalachicola Bay region. We determined that due to gulf currents and directional flows of the Gulf of Mexico these higher than normal concentrations were not likely to have resulted from the oil spill. Our investigation was designed to determine the level of concentrations along rivers and tributaries leading into the bay area. The two major waterways feeding into the bay region are the Chattahoochee River, traversing the State of Georgia from north to south in the west and the Flint River. These waterways converge at Lake Seminole at the Florida-Georgia border emptying into the Apalachicola Bay through the Apalachicola River. Looking primarily at the Chattahoochee River due to higher density of populations and density of industry we took samples of sediment and water at strategic locations from Atlanta to Lake Seminole. Using these samples we analyzed them for heavy metal concentrations for Aluminum, Chromium, Lead, Nickle and Vanadium using sediment analysis more completely describe in our methods section. Using the analysis from an independent laboratory in Northern Alabama, using analysis of variance we have found statistically significant variation in metal content and variations in our sample sites. We are narrowing our focus to specific areas.

ENVIRONMENTAL AND EARTH SCIENCE POSTER ABSTRACTS

PREDICTING SOIL MOISTURE IN NORTH ALABAMA USING AN ARTIFICIAL NEURAL NETWORK. *DARIUS KEITH*, ALABAMA A&M UNIVERSITY.

Soil Moisture information and research is important to producers in the agricultural industry. Currently, large amounts of water resources are depleted due to lack of accurate data. Ground and satellite data was used to train an Artificial Neural Network (ANN) using the Backpropagation method. In contrast traditional methods of gathering soil moisture have been time consuming and physically strenuous on farm workers. Our research of will focus upon cost efficient methods of collecting soil moisture data using an ANN. Our study was conducted in Huntsville, Alabama which is geographically located in the Tennessee Valley. The parameters of our research study were based on temperature, rainfall, radiation, bulk density, and a water retention curve. The objective is to predict soil moisture using satellite remote sensing data. Our model for this study was done with a fully functional neural network capable of predicting soil moisture data with a rms of 4 % accuracy.

INVESTIGATION OF ADSORPTIVE MATERIALS FOR USE IN REMEDIATING CRUDE OIL SPILLS. *KENNETH LIVERMORE*, CHRISTOPHER BATES, ALFRED NICHOLS AND DAVID STEFFY, JACKSONVILLE STATE UNIVERSITY. ASHLEE MILAM, JACKSONVILLE STATE UNIVERSITY.

Oil spill material released by the 2010 Deepwater Horizon accident contaminated a majority of Alabama coastline. Efforts undertaken to prevent his material from washing ashore were largely unsuccessful. Adsorptive materials (fiberglass, vermiculite, Styrofoam and three different polymeric adsorbents) were investigated for use in the remediation of oil slicks and sheens before they could wash ashore. Desired characteristics in materials included affinity for oil, flotation, high surface area to mass ratio, lack of toxicity, disposability and low cost. Weighed amounts of test materials were added to a 24 cm x 24 cm x 5 cm plastic dish containing 300 mL of salt water and 40 mL crude oil. The mixture was placed on a multi-purpose rotator at low speed for one hour. The test material was removed from the salt water/oil mixture, allowed to drain for two minutes, and the mass of the material plus the bound oil was measured. Commercially available SpillTech Oil-Only Meltblown Pads served as a benchmark for these experiments. When tested, this material gave a ratio of grams of adsorbed oil per gram of adsorbent value of 9.3. The best performing test material, Styrofoam granules, had a grams of oil adsorbed per gram of adsorbent ratio of 12.1. In addition, Styrofoam meets the other desired characteristics for a remediation agent