Dates to Remember

http://nia.ecsu.edu/events.html

April 11, 2013
2013 ADMI Symposium
Virginia Beach, VA
http://www.admiusa.org/admi2013/

April 12-27, 2013
UNH Undergraduate Research Conference
University of New Hampshire
http://www.unh.edu/urc/

May 28 – July 19, 2013
URE in Ocean, Marine, and Polar Science
Elizabeth City State University
http://nia.ecsu.edu/ure.pdf

July 21-26, 2013
2013 IEEE International Geoscience & Remote Sensing Symposium
Melbourne, Australia http://www.igarss2013.org/

October 2013
Celebration of Women in Mathematics
Elizabeth City State University
http://nia.ecsu.edu/cwm.html

November 17 – 12, 2013
Supercomputing Conference 2013
Denver, Colorado http://sc13.supercomputing.org/

December 9-13, 2013
2012 American Geophysical Union (AGU) Fall Meeting
San Francisco, California http://www.agu.org/meetings/

Christine Butcher – Univ. Alaska
Mentors: Leigh A. Stearns, C.J. van der Veen, John Paden, KU
Flow Dynamics of Upernavik Ice Stream, Greenland

Sea level rise from enhanced ice sheet discharge is one of the largest and most immediate consequences of climate warming. Roughly half the increase in Greenland mass loss comes from the acceleration of outlet glacier flow (Van den Broeke, 2009). Here, we seek to understand mass changes and flow variability of Upernavik Ice Stream. Upernavik Ice Stream, located on the Northwest coast of Greenland, consists of four glaciers which all drain into Upernavik Icefjord. Upernavik Ice Stream is a unique system to study, because its four tongues are experiencing different patterns of ice dynamics and mass loss over time. We will investigate mass changes of each tongue and the flow pattern of Upernavik North using remote sensing data sets for accumulation rate, ice velocity, surface elevation, ice thickness, and bed topography.

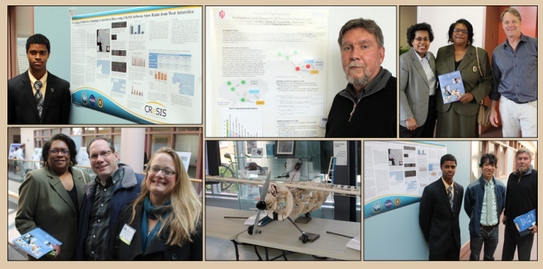
Shaquia Johnson-MSVU, Maya Smith-WSSU
Mentor: Jeffrey Wood, ECSU
Utilizing Data Sets from the CReSIS Data Archives to Visualize Greenland Echogram Information

Since 1993, the Center for Remote Sensing of Ice Sheets (CReSIS) has been gathering ice thickness data in Greenland. This information is in various formats such as: Postscript Document Format, Joint Photographer Expert Group, Keyhole Markup Language, and Comma Separated Values. These formats display data in individual visualizations while another format, Matrix Laboratory, displays multiple sources of data. The goal of this project was to combine the non-MATLAB visualizations into one window utilizing the PHP Hypertext Preprocessor scripting language and Google Earth. These product files would be simple in their construction, easily adaptable to new data formats, and provide continued display of newly acquired data. The PHP Hypertext Preprocessor language was used to modify the Keyhole Markup Language files to add description tags in order to display data from other formats. The combined files were displayed in the geographical program Google Earth available as a free download to users.

UNH Undergraduate Research Conference

Representatives from Elizabeth City State University attended the 13th Annual Undergraduate Research Conference (URC) held April 24, 2012 at the University of New Hampshire. The URC is a presentation of students research from all academic disciplines where demonstrations, performances, oral and poster presentations are presented.

Attending this year's conference were Dr. Linda Hayden, Director of the Center of Excellence in Remote Sensing Education and Research, and Dr. Darnell Johnson, Education Research Associate for CERSER. Research students Glenn Koch and Ryan Lawrence gave poster presentations on their research. Glenn presented "Hybrid Cloud Security: Replication and Direction of Sensitive Data Blocks" and Ryan presented "Developing a Method for Accumulation Rates Using CReSIS Airborne Snow Radar from West Antarctica."



For more information visit http://nia.ecsu.edu/ur.html or http://nia.ecsu.edu/ureomps2012/
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ONR - URE/OMS N00014-01-1-0529 NSF REU grant ANT-0944255 CReSIS - NSF FY 2005-108CM1

E L I Z A B E T H C I T Y S T A T E U N I V E R S I T Y

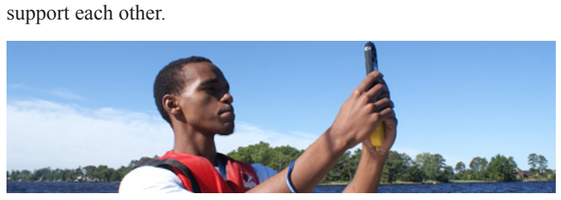
Undergraduate Research Experience

Center of Excellence in Remote Sensing Education and Research

Summer 2012 Research Abstracts :: 2012-2013 Program Highlights

Ya'Shonti Bridgers - ECSU
Mentors: Jerome Mitchel, Dr. Geoffrey Fox, IUB
Designing a Curriculum for Communicating Parallel and Distributed Computing Concepts to Underserved Communities

The emergence of multi-core and distributed computing has transformed mainstream application areas in industry and has demanded a rise for teaching parallelism and concurrency in computer science curriculum. However, minority serving institutions are at a disadvantage for offering courses in parallel and distributed computing because of the lack of resources and inability to teach those concepts. We argue for teaching these topics incrementally in computer science courses at underserved institutions, and propose a comprehensive approach involving flexible teaching modules with experiential programming exercises and other supplements, support materials for parallel computing resources, and development of an online community of educators and module contributors who support each other.



Malcolm McConner - ECSU
Mentors: Cheri Hamilton, Brandon Gillette, Steve Obenhaus, KU
How does Precipitation and Temperature Contribute into the Decreasing of Glacier Mass Balance?

Glaciers account for 10% of the Earth's surface. During the Ice Age that surface was three times the size it is now. The most prominent glaciers are located in Antarctica and Greenland and are decreasing in mass balance. Mass balance is the difference between accumulation and ablation (melting and sublimation). Climate change may cause variations in snowfall and temperature (warmer temperatures, less snowfall). Glaciers are more essential to human life, than people take for granted; they release fresh water scour bedrock and cool the weather during the summer. The downfall of the decrease of glacier mass balance is that it is increasing the global sea level rise. With the decline of our glaciers it can define a major loss in a natural resource, as well as higher sea level rise and warmer than normal temperatures. The research will support how much significance a warmer climate and precipitation can affect how fast our glaciers will dwindle.

Donquel Davis-WSSU, Kevin Brodie II-NSU
Mentor: Dr. Malcolm LeCompte, ECSU
Cobbs Point-Culpeper Rebellion Archaeology Project

During the decade of 1670 to 1680, political maneuverings were initiated by prominent property owners north of Albemarle Sound with the ultimate intent of obtaining control of the lucrative tobacco trade developing between New England and the mother country. These activities, aggravated by severe weather and low crop yields, and a perception of excessive crown taxation erupted in a bloodless rebellion against the laws and governance of the crown. The center of activities during these events was the courthouse and customs house reported to be located on the Pasquotank River at Cobb's Point, south of the current center of Elizabeth City. This land has recently become available and accessible for an exploratory survey to ascertain the location of any historically significant structures and to determine the extent of any remains that may yet exist.

Aerial photos of the Elizabeth City area, made prior to and just after World War 2, were examined to determine the location of the original shoreline and any structures that may have contained elements of the original colonial era buildings. The geographic coordinates of structures formerly occupying the Cobb's Point site defined an area that allowed a Ground Penetrating Radar survey to be made. The purpose of the survey was to reveal whether any remains of earlier structures are present. Transects were made at sufficiently small separation to allow computer processing aided re-construction of a three-dimensional visualization of what lies beneath the surface to a depth of about 3 meters. Features appear to be present within the soil depth probed by GPR, their nature and exact location may be determined by a trained archaeologist using a probing device to physically penetrate the soil at locations revealed by the GPR survey. Sufficiently interesting results prompted a request to the property owners to allow excavation of any structural remains that have been discovered.

XSEDE12

XSEDE12, the first conference of the Extreme Science and Engineering Discovery Environment, was held July 16-19, 2012, at the InterContinental hotel in downtown Chicago. Dr. Linda Hayden, Jerome Mitchell, and Justin Deloatch attended a meeting with Nancy Wilkins and others, where the demo project dealing with Science Gateway Institute (SGW-I) was discussed. Within this project institutions are broken down into different intuitions where ECSU is tasked with the responsibility to:

- Produce a model of engagement
- Create a plan for resource development
- Integration of research education (IRE)
- Mentoring of students while addressing diversity and participation

The final result of this project will be the collaboration of scientist creating the gateway for institutions, which allows non-web developers to input data and keep it updated constantly.

Glenn Koch, Nyema Barmore - ECSU
Mentors: Dr. Sridar Anandakrishnan, Mr. Peter Burkett – PSU
ECSU Research Experience for Undergraduates in Ocean, Marine and Polar Sciences
Using CReSIS Radar Data to Determine Ice Thickness and Surface Elevation at Pine Island Glacier

The Pine Island Glacier region of Antarctica is an area under intense scrutiny because of its sensitivity to climate change. Pine Island Glacier is located in Western Antarctica and drains a large portion of the West Antarctic Ice Sheet. It has shown to be particularly vulnerable to glacial ablation [1]. The 2012 Research Experience for Undergraduates (REU), Ocean Marine Polar Science (OMPS), Penn State Team analyzed CReSIS radar data to identify the ice-surface and ice-bottom features. From this, both elevation and ice thickness at Pine Island Glacier were determined. The team utilized MATLAB along with an add-on picker program; The Penn State Environment for Seismic Processing (PSESP), developed at Pennsylvania State University. MATLAB is a programming environment that analyzes data as well as many other technical processing applications. With the picker program the team selected specific, maximum-strength radar peaks on individual radar traces and applied a formula to compute the distance traveled by the signal. The difference between the distance traveled from the surface and bottom features was calculated to produce an ice thickness map. The team results will provide data that will aid in modeling of the Pine Island Glacier.

Ryan D. Lawrence - ECSU
Mentor: Dr. Ruth K. Varner, UNH
Automatic Chamber Measurements of Methane and Carbon Dioxide Fluxes and the Isotopologues of CH_4 in a sub-Arctic Mir

Northern peatlands currently store ~30% of the world's soil carbon and are the largest single natural source of atmospheric methane (CH4). Since 2000, the Swedish sub-Arctic mean annual temperature has crossed the significant 0°C threshold, potentially impacting many cryospheric and ecological processes. As the climate warms, possible positive feedbacks driven by changes in peatland carbon dioxide (CO2) and CH4 cycling could have major impacts on the atmospheric concentrations of both greenhouse gases. This study examines the dynamics of CO2 (both net ecosystem exchange and respiration) and CH4 exchange utilizing autochambers and measurements of 12C and 13C isotopologues of CH4 using a Quantum Cascade Laser Spectrometer (QCL). Isotopic composition of the CH4 source is derived from Keeling regressions of isotope and concentration data from automated chamber flux measurements. Chambers are located in three different sites; a dry palsa underlain by permafrost, an intermediate moisture site dominated by Sphagnum spp., and a completely thawed wet site dominated by Eriophorum spp. at Stordalen Mire near Abisko, Sweden (68°21' N, 19°03' E). Results indicate that as the landscape transitions from a dry palsa, underlain by permafrost, to a predominately wet site dominated by Eriophorum spp., more photosynthesis compared to respiration is occurring, resulting in the sequestration of CO2. This could however be offset as permafrost thaw yields an increasing amount of CH4 to the atmosphere.

Kyle Sykes – KSU
Mentor: Richard Hale, KU
Traveling Radars: Designing a Sled

CReSIS is developing state-of-the-art ice penetrating radars to study ice sheets and how they are changing, but they need a way to move the radars across these very large areas of ice. The radars must travel very close to the surface, and always point straight down toward the center of the earth to maximize data accuracy. This research project provides a solution by implementing the engineering design process to design a sled on which multiple radar antennas can be mounted so that they may be towed across glaciers. Design parameters that must be included for the sled are: the cost and ease of constructing the sled, the freezing temperatures, the size of the sled, the comfort of the sled operators, the stability of the sled, vibration of antennas, the friction of the sled on the ice, the ability to traverse rough surface terrain and inclines, and the structural integrity of the sled with respect to the stresses and strains experienced during handling and operation. After the sled is created in a computer-aided design (CAD) model to meet all specifications, it will be analyzed for structural efficiency, verified for antenna performance, and given time fabricated based on the CAD specifications. Once available to CReSIS researchers and collaborators, this sled will be used in ground field expeditions, traversing long distances in subzero temperatures to help CReSIS research large, complicated glaciers and how they are changing.

IEEE Geoscience & Remote Sensing Symposium

Elizabeth City State University students and researchers attended the 2012 IEEE Geoscience and Remote Sensing Symposium in Munich, Germany. This 32nd annual symposium celebrated accomplishments over three decades of leadership in remote sensing instrumentation, techniques, and applications development. The Symposium brought together world-class scientists, engineers and educators engaged in the fields of geoscience and remote sensing. The 2012 Symposium theme was "Remote Sensing for a Dynamic Earth" focusing on the characterization of dynamic Earth processes, assimilation, integrated Earth observing systems and current as well as the next generation of satellite missions. Supported students are listed below.

Justin Deloatch: Elizabeth City State University: The Spectral Reflectance of Ship Wakes between 400 and 900 Nanometers

Michael Jefferson: Elizabeth City State University: Temporal Reduction and Loss of an Ice Shelf in Pine Island Bay, Antarctica: 1972 - 2003

Nartezya Dykes: Spelman College: Charles Creek Flood Zone Modeling: A Correlation Study of Environmental Conditions versus Water Level in the Pasquotank Watershed

Kirsten Hawk: Spelman College: Temporal Reduction and Loss of an Ice Shelf in Pine Island Bay, Antarctica: 1972 - 2003

Ignatius Williams: University of Ghana: Development of an Algorithm to Predict Coastal Buoy Temperature from Advanced Very High Resolution Radiometer

Amadi Sefah-Twerefour, Kwame Agyeku: University of Ghana: Development of an Algorithm for Automatic Detection of Oil Slicks from Synthetic Aperture Radar Imagery in the Gulf Of Guinea

Victoria Moss: Alcorn State University: Analysis of Homeland Security and Economic Survey Using Special Missions Unmanned Aerial Vehicle Utilities

Delandria Jones: Alcorn State University: Analysis of Homeland Security and Economic Survey Using Special Missions Unmanned Aerial Vehicle Utilities

Warith Abdulla: Jackson State University: Ocean-Atmospheric Interactions, Heavy Precipitation, and Hurricane Predictive Index Associated With Land-Falling Hurricane Irene Over the Eastern Coast of the United States

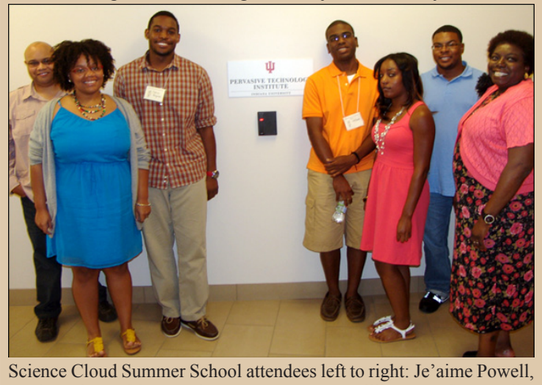
Tyler Berry - HINU
Mentors: John Paden, Ben Panzer, Aqsa Patel
Modifying FMCW Radar Frequency to Calibrate and Improve Side Lobe and Dynamic Range

CReSIS (Center for Remote Sensing of Ice Sheets) designs several radars for use in remote sensing the cryosphere. This work involves modifying the frequency modulated continuous wave (FMCW) radars. Our radars are designed to operate at altitudes centered on 1500 feet. We are testing to see if we can calibrate them to improve the side lobe and dynamic range performance in a way that it will allow operation up to 65,000 feet. With FMCW radars, distortion in the signal after transmission is expected. However, the distortion in the signal can be measured and is predictable. Predistortion of the signal before transmission should be opposite to the distortion of the system so that the two cancel each other out when the signal is returned, ending with a clear, easy to transcribe signal. We will be calculating the distortion received from the signal at 65,000 feet and testing whether predistortion of the transmit signal and reramping the receive signal to clean the signal is possible or not.

Science Cloud Summer School

Ten faculty, graduate students and IT professionals from ADMI institutions participated in the Virtual School of Computational Science and Engineering Science Cloud Summer School July 29 – August 3, 2012 held at Indiana University. The participants represented seven minority serving institutions and one majority institution. ADMI Inc. provided transportation, stipends and housing for the participants using funds from their CReSIS grant.

The Science Cloud Summer School targeted education and training and the fostered of a community around the topic of cloud computing technologies in science. Because cloud computing systems and technologies provide a considerable departure from traditional models and evolve at a rapid pace, this event provided a basis for participants to immerse in a focused, intensive curriculum to learn fundamentals and experiment with these technologies in practice. Current CReSIS Ph.D. candidate, Jerome Mitchell served as one of the VSCSE instructors during the workshop which was organized by Dr. Geoffrey Fox.



Science Cloud Summer School attendees left to right: Je'aime Powell, Patrina Bly - ECSU, Darius Ferguson, Troy Williams - NSU, Jamika Baltrop - ECSU, Jerome Mitchell - IU, Dr. Elvira Caldwell (WSSU)

CReSIS Spring 2012 Distinguished Lecture

On Thursday, April 19, 2012, Dr. Reginald Fletcher of the USDA-Agricultural Research Service (ARS) in Weslaco, Texas presented "Mapping Invasive Weeds and Their Control with Spatial Information Technologies" as part of the continuing Distinguished Lecture Series sponsored by the IEEE-Geographic Remote Sensing Society. Dr. Fletcher is a soil agronomist studying the science of utilizing plants for food, fuel, feed, and fiber.

Dr. Fletcher's research interests focus on the applications of airborne multispectral digital imaging systems, imaging processing techniques, global positioning systems (GPS), and geographic information systems (GIS) for mapping the invasive weeds giant salvinia (Salvinia molesta) and Brazilian pepper (Schinus terebinthifolius) and for monitoring biological control of saltcedar (Tamarix spp.), in Texas.

Kwame Agyeku, Amadi Afua Sefah-Twerefour
University of Ghana
Mentors: George Wiafe, Kwame Adu Agyekum, UG
Development of an Algorithm for Automatic Detection of Oil Slicks from Synthetic Aperture Radar Imagery in the Gulf of Guinea

Pollution in the marine environment caused by oil spills is of great concern to coastal states due to its ecological, environmental and socio-economic impacts. The main objective of this research was to develop an adaptive oil spill detection algorithm for the Gulf of Guinea, and to estimate the location and spatial extent of oil slick in an acquired SAR imagery. The relevance of the use of space borne data for oil slick monitoring is evident in increased vessel traffic and oil drilling activities off the coast of West Africa. Image processing of acquired SAR image of the region involved the application of a median filter, local thresholding, classification, area calculation, and location extraction. Two dark spots were classified as slicks on Radarsat-2 imagery acquired on 18 May, 2008. The information derived from this research is essential for automatic processing and future implementation of oil slick detection and monitoring programme in the Gulf of Guinea.

Andrew Brumfeild, Autumn Luke - ECSU
Mentors: Mr. Je'aime Powell – ECSU, Eric Baptiste, Karen Dubey, Jane Zeer – SeaSpace
ECSU Research Experience for Undergraduates in Ocean, Marine and Polar Sciences
Analyzing Long-Term Drought Effects on Land Surface Temperature and Vegetation Using Aqua-1 Satellite Data

According to the State Climate Office of North Carolina, since 2007 the northern coastal plain of North Carolina has been experiencing a long-term summer drought. The primary goal of this research was to find a correlation between land surface temperature and vegetation due to long-term drought using satellite data. The team collected imagery data through the SeaSpace© TeraScan® system in order to produce land surface temperature and normalized difference vegetation index products. The data products were averaged into monthly and yearly composites so that the team could use TeraVision to depict the differences of values for the products.

ECSU Research Week 2012

The School of Mathematics, Science and Technology sponsored the 8th Annual Research Week to enable the university and the citizens of Elizabeth City an opportunity to observe the research projects students have been conducting this past year. This week gave the opportunity to observe many accomplishments of both the students and their mentors who together are making a significant contribution to the scientific community.

This year's theme was "Viking STEM". Oral and poster presentations representing original research, lectures, panel presentations for academic exchange, and prominent keynote speakers including CMSGT Grant Williams one of the original Tuskegee Airmen, took place during this week.

The week's activities also included the signing of a Memorandum of Understanding between ECSU's Center of Excellence in Remote Sensing Education and Research and the SeaSpace Corporation. This signing involved Dr. Linda Hayden (CERSER Director), Dr. Willie Gilchrist (ECSU Chancellor), Mr. Hyong Ossi (President/CEO SeaSpace Corporation), and Mr. Charles Luther (Past President of the IEEE-GRSS).

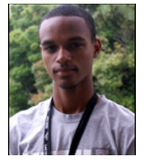
Carolyn Branecky - Rice University
Mentors: Leigh A. Stearns, C.J. van der Veen, John Paden, KU
Geothermal Heat Flux beneath the Greenland Ice Sheet Calibrated for Observed Basal Meltwater Conditions

The presence of meltwater at the base of an ice sheet can reduce basal friction and cause an increase in ice velocity, and is therefore critical for understanding ice sheet dynamics. While the production of meltwater due to pressure-melting can be modeled using direct measurements of ice thickness, surface slope, accumulation and surface temperature, the contribution of geothermal heat to basal melting is largely unconstrained. Models of the Greenland Ice Sheet (GrIS) approximate geothermal heat flux as uniform at all locations in Greenland, but this is unlikely given probable volcanics (Fahnestock et al. 2001) and the variety of lithologies observed in ice-free regions. This study undertakes a comparison of the meltwater distribution beneath the GrIS as computed by simple force-balance methods with observed meltwater locations. A technique for the detection of meltwater by radar measurements has only recently been developed (Siegert et al. 2000) and applied to flightlines over the GrIS (Oswald et al. 2008). Direct measurements of subglacial melt and basal temperatures are available at the location of several ice cores in Greenland. This study aims to constrain previous geothermal heat flux maps for Greenland by incorporating measurements of observed melt (from ice cores and airborne radar observations) into a numerical model. Considerations of the relation between meltwater production and meltwater storage given meltwater evacuation and basal freeze-on are relevant for future research on the basal conditions of ice sheets.

Ignatius Williams - University of Ghana
Mentors: Je'aime Powell, Kuchumbi Hayden, ECSU
Development of an Algorithm to Predict Coastal Buoy Temperature from Advanced Very High Resolution Radiometer

Elizabeth City State University currently operates a TeraScan Grounding station capable of receiving and processing imagery data collected by satellites managed by the National Oceanic and Atmospheric Administration. The imagery received in the Infrared spectrum both measures sea surface temperatures and cloud cover for the eastern coast of North Carolina. Once the data sets were collected, they were statistically analyzed using the analysis of variance methodology and regression. Strong correlations were observed during the AVHRR-Buoy comparison for two of the three areas under the study. The NOAA-16 AVHRR SST emerged as the most consistent with the insitu data from the ORIN7 Buoy, due to its high coefficient of determination.

Derrick Jones-MVSU, Dezerae Little-SAC
Mentor: Dr. Darnell Johnson, ECSU
Applying Common Core State Standards in Grades 4th – 10th using LEGO Robotics

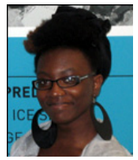


Common Core Standards includes critical content for all students in American education. Forty-eight of the fifty states have adopted the standards as of 2012. Previously, every state had its own set of academic standards and students in each state were learning at different levels. In the new global economy, all students must be prepared to compete with students from around the world. Students are expected to develop a deeper mastery of content and demonstrate what they know through writing and other projects. Changes to curriculum and instruction are more student-centered with greater focus on skills, abilities, and a shift towards more performance assessments. This research was designed to apply mathematical processes of the Common Core Standard in a lesson plan for fourth through tenth. The team used NXT LEGO® robotics to teach various scientific, mathematical, and design concepts, through designing, building, and programming the robots at each level. The students' received hands on experience with physics, mathematics, motion, environmental factors, and used problem solving in a collaborative group setting. The data was collected through observations.

NASA NICE Climate Change Workshop

Elizabeth City State University joined with the University of New Hampshire under the NASA Innovations in Climate Education (NICE) Program to empower faculty of education programs at Minority Serving Institutions to better engage their pre-service teachers in teaching and learning about global climate change through the use of NASA Earth observation sets. The workshop provided the faculty with approaches to understanding climate change and its impacts on terrestrial and ocean ecosystems. The faculty conducted field work that emphasizes place-based pedagogy. They worked with an ecological model in STELLA that utilizes authentic inputs from historical and future climate scenario parameters, with NASA satellite imagery data from the MODIS and SeaWiFS sensors, and discussed the challenges and approaches to integrating all or some of the lessons into their courses.

Erica T. Petersen-MSVU
Mentors: Cheri Hamilton, Brandon Gillette, CReSIS
Utilizing ARCGIS in Education to Map a Glacier and Its Changes over Time



Current studies have noted that there is a major increase in glaciers growing smaller over the past few decades. The cause of this is glacial retreat which happens when the exceeding of ablation over accumulation occurs. Ablation is the removal of snow and ice by either melting or evaporation from glaciers. Glacial retreat can eventually lead to rising sea levels. This study will focus on how the Jakobshavn Glacier has change over the years and include a development of a high school education module. Using imagery collected from Landsat 1-7, students will utilize GIS software to visualize and analyze these changes over time in relation to future sea level rise.

International Remote Sensing Conference

On October 21-24, 2012, representatives from Elizabeth City State University attended SeaSpace's 20th International Remote Sensing Conference in Coronado, California. The theme of this conference was "Building the Bridge to the Next Generation of Remote Sensing Satellites." Those who attended were given information on current and future direct broadcast satellites such as NPP and GOES-R, and an introduction to the new Apex™ high resolution ground systems and products. Dr. Linda Hayden, Director of the Center of Excellence in Remote Sensing Education and Research (CERSER), Dr. Malcolm LeCompte, and Mr. Je'aime Powell along with Mr. Kwame Agyekum and Dr. George Wiafe of the University of Ghana attended the conference. Dr. Hayden, Mr. Powell, and Dr. Wiafe delivered presentations during the conference. Chancellor Willie Gilchrist presented his congratulations to SeaSpace via video and two past interns from ECSU, Andrew Brumfield and Autumn Luke presented their experiences also.

ECSU has an ongoing relationship with SeaSpace which started in 2003 through the Office of Naval Research and Mr. Charles Luther who was also present at the conference. As part of this interaction ECSU will be receiving a 3.6m X/L system in December 2012, a 3.7m C-Band geostationary system which will ship in Feb 2013, and a 5.0m L Band the stationary which system will ship in June 2013.

Black Engineer of the Year Awards 2013

Students from Elizabeth City State University attended the National Black Engineer of the Year Awards (BEYA) Science, Technology, Engineering, and Mathematics Global Competitiveness Conference which took place in Washington, D.C., February 7-9, 2013. Students attended the career fair and met employers, took advantage of onsite resources designed to enhance job searches and academic careers, and received tools for a successful STEM career.

The BEYA Awards recognize the achievement of African-American leaders in the STEM fields. Mr. Je'aime Powell, of ECSU, was awarded the Student Leadership-Graduate Level award. Mr. Powell serves as the GRID Manager/Graduate Researcher/Network Analyst for the Center of Excellence in Remote Sensing Education and Research at ECSU under the direction of Dr. Linda B. Hayden.

Marvin L. Elder II-MSVU
Mentors: Dr. Latonya Garner, Cheri Hamilton, Brandon Gillette, CReSIS
Black and White in Remote Sensing

Temperature varies from location to location due to many factors, such as geographical differences, internal heat, and climate. Introducing this topic in secondary education can be a bit challenging; consequently this research is two-fold. Using a non-contact infrared thermometer, RYOBI, research was conducted to observe two t-shirts (black and white) absorbing and reflecting heat. Findings determined that these t-shirts reflected and absorbed heat differently. A hypothesis test performed at the 95% confidence interval rejected the null hypothesis that the average temperature on a sunny day of a black t-shirt was lower than the average temperature of the white t-shirt in the same condition. Data was gathered and constructed for secondary education purposes in the field of science, with some mathematics background in hopes of proving that math can provide further explanations in the assumption that black is hotter than white.

African Association of Remote Sensing of the Environment Conference

Elizabeth City State University representatives Dr. Linda B. Hayden and Miss Patrina Bly attended the 9th biennial International Conference of the African Association of Remote Sensing and the Environment (AARSE) from October 29 to November 2 in El Jadida Morocco. The conference took place on the campus of the University of ChouaiDoukkali at El Jadida in the Faculty of Sciences. Approximately 450 to 500 participants were present at this year's conference. "*Earth Observation & Geoinformation Sciences for Environment and Development in Africa: Global vision and Local Action Synergy*" was the theme of this year's conference.

Alexis Moyer – Gettysburg College
Mentors: Leigh A. Stearns, C. J. van der Veen, and John Paden, KU Flow Dynamics of Nioghalvfjerdsfjorden (79north) Glacier, Greenland

Nioghalvfjerdsfjorden Glacier (79North) is an outlet glacier in Northeast Greenland, which drains approximately 8.4% of the total Greenland Ice Sheet (GrIS) area (Mayer et al., 2000). The glacier terminates in a large floating tongue that is currently pinned on submarine islands approximately 70km in front of the grounding line. Up-glacier from the grounding line is a bedrock over-deepening that is below sea level and extends far into the interior of the ice sheet. Due to this overdeepending, 79North is potentially unstable, especially if there are changes to its current terminus configuration, which could be triggered by warming climate or basal heat flux (Reeh et al., 2001 and Thomsen et al., 1997). A change in the force budget of 79North Glacier could contribute significantly to the mass balance of GrIS in the future. In this study, remotely sensed data sets of surface velocity, bed topography, elevation, accumulation rates, and terminus position over time were used to calculate the mass budget and force balance of 79North Glacier. Preliminary results indicate that 79North currently has a slightly negative mass budget, which is supported by IceSAT measurements that show minor regional thinning (Csatho, pers. comm.).

Charniece Huff-SC, Bernard Aldrich Jr.-ECSU
Mentor: Je'aime Powell, ECSU
Spectroscopic Image Signature Classification of Land Cover Types using Multi-Spectral Data within a Neural Network

Through improvements in technology, high resolution multi-spectral imaging allowed new capabilities to become available in the remote sensing field. Spectral signature classification technologies existed in the chemical spectroscopy field to identify minerals by way of active systems. The theory of this paper surrounded the premise that passive systems can provide spectral signatures of objects within images from satellite platforms. This project targeted land cover types from the Kittyhawk, North Carolina area. Multi-spectral signals presented up to seven individual readings per pixel. As the decision support system, a neural network was trained to decide the type of land cover based on the band readings. In an effort to determine specific land cover types based on need, ground truthed spectral readings were also classified using a linear model to convert the readings into approximate satellite readings. The converted readings were then classified by the trained neural network. A minimal r-squared valued of 86% was required to be considered a viable method of image classification. Spectral readings were taken from two locations in North Carolina, including the Sand Dunes of Jockey's Ridge and the fields of the Wright Brothers' Memorial Park. The spectral readings were saved with an integration time of 50ms. The coordinates were marked on the GPS device and later transferred to Google Earth. Landsat GeoTIFF imagery was retrieved from the USGS Global Visualization Viewer website. In this specific case, four different bands of the possible seven readings were recorded for each pixel. This limitation occurred because the lab spectrometer's upper wavelength limit was 65535 illuminant readings.

Chartese Jones-MSVU
Mentor: Dr. Raymond Williams, MVSU
What Effect Does the Math Redesign Lab have on Student's Learning?

By changing existing programs, universities seek to impact the cost of serving first year students, particularly those programs addressing developmental education. This is the purpose of the Math redesign lab at Mississippi Valley State University. The math redesign lab will also enhance the students' educational experience, making them more efficient and effective learners in school, and better prepared citizen in the work force.

By identifying the effects the math redesign lab has on the students learning, and the correlation between time duration and test scores, the solution to these questions are employed through a linear regression incorporated with the SPSS program from the analyze menu. I also employed correlations between two or more variable, using the final exam as the dependent variable, to show the relationship each have. SPSS analyzed the data and the following results were reported.