ECSU

ECSU is working to create a large-scale distributed computing system to aide in the processing of data collected during polar expeditions. In October of 2008 the initial 64-node cluster was delivered to ECSU in preparation for the final ~600-node cluster which is scheduled for 2010. This cluster will be housed in the E.V. Wilkins Academic Computing Center.

At that time ECSU will be the first Minority Serving Institution (MSI) to house a cluster capable of acceptance into the national TeraGrid Project. The Polar Grid lab will be the center of operations related to the use and support of that cluster and will grow as new projects, grants, and individuals utilize the cluster through cyberinfrastructure.

Challenges to maintaining the competitive edge:

- **Personnel Support**
  Positions unfilled including Director of Research and Director of Education and Outreach. Increase IT support for 24 hour operation.
- **Maintenance Support and Site Licenses**
  Matlab, Adobe, Cisco, Storage
- **Campus Pipeline**
  The current 1 GB data pipeline to ECSU will be strained. Request to increase the campus pipeline to 10GB.
- **Fellowships & Scholarships**
  Graduate/Undergraduate student support for research/educational efforts

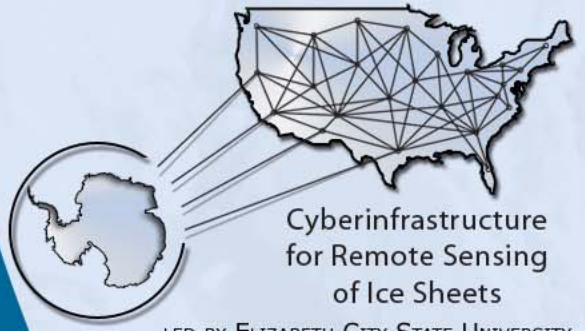
CERSER

The goal of the ECSU Center of Excellence in Remote Sensing Education and Research (CERSER) is to develop and implement innovative and relevant research collaborations focused on ice sheet, coastal, ocean, and marine research. CERSER is also the home of the IEEE-Geoscience and Remote Sensing Society Eastern North Carolina Chapter #03181 and Student Chapter Branch #66221.

The CERSER Laboratory consists of computer workstations on Macintosh, Linux, and Windows platforms; remote storage areas of polar data; servers including a local web server and file server. Also available is an undergraduate research lab containing workstations configured to allow the use of three separate operating systems depending on faculty or student needs.

CERSER operates a Sea Pro Model 210 research vessel with UHF Radio, Raytheon 300 GPS and Raytheon 365 Depth Finder. The vessel utilizes an Imagenex SportScan dual channel, high-resolution, digital sidescan sonar with a 23 meter tow cable.

For land research, CERSER utilizes a SIR-3000 Ground Penetrating Radar by Geophysical Survey Systems, Inc. The SIR-3000 is a small, lightweight system designed for single user operation and incorporates advanced signal processing and display capability for in-the-field 3D imaging. Multiple GPS devices are also available for hands-on training.



Cyberinfrastructure for Remote Sensing of Ice Sheets

LED BY ELIZABETH CITY STATE UNIVERSITY

CReSIS

Center for Remote Sensing of Ice Sheets

LED BY UNIVERSITY OF KANSAS

POLAR GRID

CYBERINFRASTRUCTURE FOR POLAR SCIENCE

www.polargrid.org

LED BY INDIANA UNIVERSITY

Through its Center of Excellence in Remote Sensing Education and Research (CERSER), Elizabeth City State University (ECSU) has partnered in a trio of National Science Foundation projects related to remote sensing of ice sheets and cyberinfrastructure.

Lead Institution: University of Kansas

CReSIS

The Elizabeth City State University (ECSU) Center of Excellence in Remote Sensing Education and Research (CERSER) is partnering with several other institutions sponsored by the National Science Foundation (NSF) as a part of a Science and Technology Center (STC) with the University of Kansas. The center for Remote Sensing of Ice Sheets (CReSIS) develops models and technology to achieve a better understanding of the mass balance of polar ice sheets and its impact on the rising sea level glaciologists have observed in recent years.

The intergovernmental Panel on Climate Change reported that the mass balance of ice sheets is one of the largest unknown factors in the rapid change in sea level. The center brings in scientists and engineers from several institutions to design and create new ways to measure ice sheets as well as models to predict ice-sheet dynamics.

CReSIS researchers seek new innovations in sensors, platforms, and cyberinfrastructure. Scientists and engineers work together on new analytical models and algorithms to interpret data gathered from satellite, airborne, and ground based sources to improve the understanding of glacial dynamics.

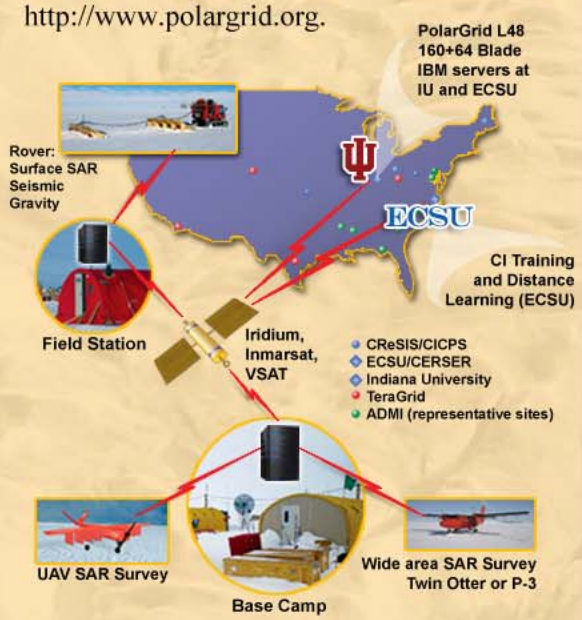
CReSIS AWARD NUMBER FY2995-108CMI

HTTPS://WWW.CRESIS.KU.EDU/

Lead Institution: Indiana University

POLARGRID

Polar Grid is a National Science Foundation Major Research Instrumentation funded partnership of Indiana University and Elizabeth City State University. The partnership goal is to acquire and deploy the computing infrastructure needed to investigate the urgent problems in glacial melting. Polar Grid's major components and concepts of operation are depicted in the diagram below and detailed at http://www.polargrid.org.



POLARGRID NSF GRANT CNS-0723054

HTTP://WWW.POLARGRID.ORG/

Lead Institution: Elizabeth City State University

CI-TEAM

The vision and goals of the NSF CI-Team at ECSU project, "Cyberinfrastructure for Remote Sensing of Ice Sheets," are based on the fact that "educational settings, audiences, and goals are too important to be adequately addressed as afterthoughts or add-ons to Cyberinfrastructure projects and instead, must be treated as high priorities integrated in a project's overall design. As such, the NSF CI-Team at ECSU project aggressively engages computer Science and engineering students from five minority universities in the Grid, remote sensing, and CReSIS training, seminars, workshops, and classes.

ECSU now has a virtual classroom (VC) and is in the process of creating a TeraGrid gateway for remote sensing applications to ice-sheet research and education. The video conference system has a Polycom 8000VSX system and a V-brick encoding system which allows partner institutions to view science lectures, training and presentations..

NSF GRANT OCI-0636361

HTTP://CERSER.ECSU.EDU/CITEAM/