



MINORITY SERVING INSTITUTIONS CYBERINFRASTRUCTURE EMPOWERMENT COALITION

(MSI-CIEC)

(NSF CI-TEAM AWARD 063652)

<http://www.msiciec.org/eduwiki/index.php/MainPage>

The [Minority Serving Institutions CyberInfrastructure Empowerment Coalition \(MSI-CIEC\)](#) is a coalition of leading CyberInfrastructure figures, projects and resources with the American Indian Higher Education Consortium (AIHEC), the Hispanic Association of Colleges and Universities (HACU), the National Association for Equal Opportunity in Higher Education (NAFEO), and the more than 330 MSIs they represent. MSI-CIEC will provide the “human middleware” – the social and technological mechanisms to *meaningfully* engage MSIs in CI research and education.

Imagine having undergraduate students studying sophisticated research problems motivated by recent polar satellite observations that show disintegration of ice shelves in West Antarctica. The great ice sheets in Antarctica interact with the global climate in a complex manner, and the impact on global sea level of their retreat is profound. Recently students and faculty at Elizabeth City State University (ECSU) are undertaking this previously unattainable (for a small institution) and exciting research to make use of and develop CyberInfrastructure (CI). Most of the existing ice-sheet models cannot explain the rapid changes being observed. But ECSU working together with NSF Science and Technology Center for Remote Sensing of Ice Sheets (CReSIS) are able to study a new-generation of high resolution ice-sheet models with realistic boundary conditions, which in themselves require distributed CyberInfrastructure to gather and process data and assimilate them with large simulations.

The [Minority Serving Institutions CyberInfrastructure Empowerment Coalition \(MSI-CIEC\)](#), is encouraging MSIs like ECSU, a historically Black university in North Carolina, to play a leadership role in the second information technology (IT) revolution. MSIs and their students, educated in the new advancements and current tools and methods of science, engineering, humanities and other disciplines have the opportunity to become active participants in the development of CI and the knowledge-based global economy it supports.



FIGURE: POLAR GRID SHOWING LINKING OF PARTICIPATING INSTITUTIONS TO CYBERINFRASTRUCTURE AT ECSU, IU, TERAGRID AND (MULTIPLE) BASE AND FIELD CAMPS ASSOCIATED WITH SCIENTIFIC OBSERVATION EXPEDITIONS

Following two meetings hosted at San Diego Supercomputing Center (SDSC) that described how CI enabled new science, ECSU recognized the value of CI for the collaboration they had with CReSIS which is developing new sensors and new models to understand ice sheet shrinkage and its effects on coastal regions. ECSU along with CReSIS and [MSI-CIEC](#) co-PI Geoffrey Fox have already taken several steps to develop a PolarGrid CI. A follow up CI-TEAM proposal awarded to ECSU will develop the PolarGrid Science Gateway linking TeraGrid with CReSIS research. ECSU will offer a CI track in their master’s program and their undergraduate and graduate students will be offered CI internships this summer. After little more than a year, [MSI-CIEC](#) has helped to bring a relatively small HBCU with less than 3000 students to the leadership position in development of CI for an internationally critical science project.



Navajo Nation Vice President Ben Shelly addresses Navajo Technical College and Government Representatives at the dedication ceremony for the “Internet to the Hogan” project. (Photo Courtesy of Dr. Diane Baxter – SDSC)

Also following on the SDSC meetings, the Navajo Technical College (NTC) began building high-performance networking and grid computing for the College and the Navajo nation working with [MSI-CIEC](#), the University of New Mexico, SDSC, and TeraGrid. SDSC has trained NTC staff and a talented NTC student who in turn is teaching other NTC staff and students to do the actual building and maintenance of the wireless towers and network connections. Additionally, through the TeraGrid Education and Outreach program, a “Little Fe” supercomputing computer cluster was donated to NTC which is among the first to establish the Diné Grid, part of the Navajo nation’s local CI. Spurred by the institution’s progress, NTC is expanding its educational degree offerings through the Ph.D. and strengthening the Navajo STEM education pipeline through partnerships with Navajo K-12 schools and other colleges and universities.

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