

Annual Report for Period:09/2008 - 08/2009

Submitted on: 05/26/2009

Principal Investigator: Davis, Phillip .

Award ID: 0801893

Organization: Texas Engineering Exp Sta

Submitted By:

Davis, Phillip - Principal Investigator

Title:

National Geospatial Technology Center (NGT Center)

Project Participants

Senior Personnel

Name: Davis, Phillip

Worked for more than 160 Hours: Yes

Contribution to Project:

Name: DiNoto, Vincent

Worked for more than 160 Hours: Yes

Contribution to Project:

Name: Rudibaugh, Mike

Worked for more than 160 Hours: Yes

Contribution to Project:

Name: Johnson, Ann

Worked for more than 160 Hours: Yes

Contribution to Project:

Name: Semerjian, Christopher

Worked for more than 160 Hours: Yes

Contribution to Project:

Name: DiBiase, David

Worked for more than 160 Hours: Yes

Contribution to Project:

David DiBiase is the Director of the John A. Dutton e-Education Institute housed in the College of Earth and Mineral Sciences at The Pennsylvania State University. David is a well known researcher and author in the field of geospatial education having published more than 30 articles and numerous presentations. He is the recipient of 2005 UCGIS Educator of the Year award and the 2004 Special Award in GIS from ESRI. David will lead the workforce competency model initiative for the GeoTech Center.

Name: Ballard, Amy

Worked for more than 160 Hours: No

Contribution to Project:

Amy Ballard began using GIS while doing graduate studies in Mayan archaeology. She worked as a GIS technician during graduate school. From 1997 to 2005 she worked for Ebert & Associates, Inc., in Albuquerque, New Mexico using GIS to support archaeology, water rights and environmental remediation studies. In 2003 she began teaching GIS part-time at Central New Mexico Community College. In 2006 she became a full-time faculty member and Chairperson of the Geographic Information Technology Program. She teaches courses in beginning and intermediate GIS, remote sensing, 3D visualization/animation techniques and physical geography. Ms. Ballard holds an undergraduate degree in International Relations from UC Davis, and a Master's degree in Anthropology (1992) from UC Riverside and is an ASPRS Certified Mapping Scientist. She lives with her husband in beautiful Albuquerque, New Mexico. Amy assists the GeoTech Center with teacher education initiatives and other support throughout the Southwest region of the US.

Name: Work, Amy

Worked for more than 160 Hours: No

Contribution to Project:

Amy Work is the Education Coordinator for the Institute for the Application of Geospatial Technology (IAGT) at Cayuga Community College in Auburn, New York. As the Education Coordinator she is responsible for managing and coordinating all geospatial education events and activities; overseeing the development of geospatial tools for use in education settings and promoting the use into K-12, community college, and four year institution classroom environments. Current projects in the K-12 area include: the Teaching with Spatial Technology (TwIST) Workshop to provide training and resources to teachers to integrate geospatial technologies into classrooms; and GIT Ahead Program to oversee the design and development of customized geospatial tool and support a yearlong training institute for environmental science teachers. She is managing the development of geospatial materials for four community colleges and universities in New York to incorporate into different disciplines across the campuses. To assist with workforce development needs, she is developing geospatial content as part of an initiative to provide workforce training to individuals in and entering the wine industry in New York State. Amy will represent the Center for the Northeast region of the US and focus on secondary school and nonprofit initiatives.

Name: Yanow, Ken

Worked for more than 160 Hours: Yes

Contribution to Project:

Kenneth Yanow, Professor of Geographical Sciences, Southwestern College. With over 16 years in education and curriculum development, Professor Yanow has a diverse background in science with Masters Degrees in both geography and astronomy. He has written a number of texts, including an educational CD-ROM entitled 'Winds of Change', published through NASA/JPL and 'Critically Thinking Physical Geography, A Solution Handbook for the Earth Sciences'. He has also written high school marine biology curriculum for the Harvey Mudd Upward Bound program. Professor Yanow has participated in a number of geospatial research projects, including studying the use of geospatial analysis for a cellular network development in South America, and the utilization of geospatial technology (GST) to study the relationship of the distribution of vegetation and solar radiation on a rugged topography. During the past five years, Professor Yanow has written grants totaling over \$600,000 that has turned a technologically deficient Earth Science Department at Southwestern College into a state-of-the-art Center for Earth Systems Studies. As well as being co-PI for the National Geospatial Technology Center of Excellence, he is presently the PI on a \$273,000 NSF-ATE grant (DUE # 802408) to develop a GST program at Southwestern College.

Name: Jackson, Rodney

Worked for more than 160 Hours: Yes

Contribution to Project:

Rodney Jackson received an MA in Geography from East Carolina University (ECU) in 1992 and put this training to use as an environmental chemist until 1994, when he made the switch to GIS. Rodney has worked for various private and public sector agencies until 1998, when he became program coordinator for the first Associate's Degree program in GIS for the state of North Carolina. In 2006, he began working as the Director of Geospatial Technology Education at Central Piedmont Community College (CPCC), which evolved into a role as the Director of the Geospatial Technology Center. Rodney is currently the Division Director for Geomatics & Sustainability in which is housed the Geospatial Technology Center and the Center for Sustainability, as well as associated curriculum programs. Rodney serves as the secondary school initiative and distance learning advisor to the GeoTech Ce

Name: Tsou, Ming-Hsiang

Worked for more than 160 Hours: Yes

Contribution to Project:

Ming-Hsiang (Ming) Tsou is an Associate Professor in the Department of Geography, San Diego State University. He received a B.S. from National Taiwan University in 1991, an M.A. from the State University of New York at Buffalo in 1996, and a Ph.D. from the University of Colorado at Boulder in 2001, all in Geography. His research interests are in Internet mapping and distributed GIS applications, mobile GIS and wireless communication, multimedia cartography and user interface design, and software agents with GRID computing technology. He is co-author of the book, Internet GIS: distributed geographic information services for the Internet and wireless networks. Tsou was the co-chair of the NASA Earth Science Enterprise Data System Working Group (ESEDWG) Standard Process Group (SPG) from 2004 to 2007 and the 2007-2008 Chair of the Cartographic Specialty Group in the Association of American Geographers (AAG). He received the 2004 Outstanding Faculty Award at San Diego State University. He serves as the major university advisor to the GeoTech Center on matters of articulation and recruitment of minority students.

Name: Lewis, Christine

Worked for more than 160 Hours: Yes

Contribution to Project:

Chris Lewis @ California Community Colleges Geospatial Information Support @ C3GIS completed my Masters in Geography in 1995, at California State University, Chico. During my graduate program and for a year after, I worked at the GIS Center on campus in various roles from GIS Technician, GIS Analyst and GIS Lab Manager. After graduation, I taught GIS part-time at CSU, Chico and Butte Community College, writing curriculum for the latter. I later went on to work in the Water and Hydropower industry, for seven years, using GIS on a daily basis and GPS for various field applications. A couple of years ago an empty nest and relocation gave me the opportunity to jump back into education. Currently, I am an adjunct faculty member at CSU, Chico (ArcGIS classes, Spatial Analysis, GIS in Health Policy and Planning) and working on two community college grants in Geospatial Technology, the largest one with a statewide focus (www.c3gis.net). When not at the computer, I most like to be hiking or cycling with family and friends, sometimes GPS unit in hand. Chris will lead the curriculum material review effort for the Center's national curriculum material clearinghouse.

Post-doc**Graduate Student****Undergraduate Student****Technician, Programmer****Other Participant****Research Experience for Undergraduates****Organizational Partners****Penn State University**

CoPI David DiBiase of the Dutton e-Learning Institute @ Penn State University is our lead researcher on the effort to establish a Common Core Competency model within the well established GIS&T Body of Knowledge work. David is working with the Department of Labor, Employment Training Administration, Business Relations Group and the GIS Certification Institute (GISCI) to create entire new Standard Occupation Guidelines to precisely define the entry level GIS Technician standard. Through a series of DACUM workshops, meta-analysis of previous geospatial workforce studies, and extensive vetting with professional organizations and societies, like GISCI, the GeoTech Center will establish national standards of GIS Technician Common Core Competencies that will form the basis of national articulation and certification models.

Institute for the Application of Geospatial Technology at Cayuga

Institute for the Application of Geospatial Technology (IAGT) @ Cayuga Community College researcher Amy Work provides workshop training for geospatial educators in the New York State region on behalf of the GeoTech Center. IAGT @ Cayuga Community College is a collaborative partner with other community colleges and four-year institutions as part of the National Geospatial Technology Center. Amy provides training and curriculum support for secondary school and college instructors in the region.

Central New Mexico College

Researcher Amy Ballard provides summer workshops for geospatial educators in the New Mexico region on behalf of the Center. Amy works closely with surveyors and other geospatial employers in the Albuquerque area to secure meaningful internships and work experience for your GIS students and graduates. She is an active member of the New Mexico Geographic Alliance and well-known throughout the area as a stellar geo-educator, supporting mapping projects throughout her are. She is also an active member of the ASPRS, Rio Grande Chapter.

ESRI, Inc.

Environmental Systems Research Institute, Inc. (ESRI) is our major industry partner and provides unlimited access to its software, online training, campus facilities nationwide, and personnel to assist the GeoTech Center in training learners and educators about GIS application software.

Central Piedmont Community College

Researcher Rodney Jackson provides year-round training to workforce, K-12 educators, and learners on behalf of the Center. He also provides access to distance learning modules and courses that will become part of our professional development offering through the resource repository.

Lake Land College

Lake Land College is led by CoPI Mike Rudibaugh, and his assistant Brooke Ferguson. Together they are responsible for the creation of our national geospatial educator's map which will document the precise location and information of all existing community college geospatial programs. This map will serve as the foundation of our marketing, research, and dissemination efforts for our public-facing website. Mike is also working with CoPI Vince DiNoto to assist Dr. Arlen Gullickson of the Western Michigan ATE Evaluation Center to integrate GIS mapping into ATE reporting.

Kentucky Community & Technical College System

Kentucky Community & Technical College System (KCTCS) CoPI Vince DiNoto leads the technology component of the GeoTech Center in our effort to demonstrate the use of desktop virtualization of GIS application software. Under Vince's leadership, the Center will create an online ArcGIS web service whereby we can demonstrate the use of virtualization to allow colleges and secondary schools to participate in GIS application software without the need for complex local installation, maintenance and support. All these services will be provided by the Center in a 'Software as a Service' (SaaS) demonstration mode. The KCTCS chancellor has provided an additional .5 FTE IT assistant to the GeoTech Center @ KCTCS, at no charge to the project. Vince also works with CoPI Mike Rudibaugh of Lake Land College to assist Dr. Arlen Gullickson on our effort to provide GIS advising services to the Evaluation Center.

Southwestern Community College

Southwestern Community College CoPI Kenneth Yanow leads our female recruitment and retention initiative for the GeoTech Center. Kenneth, assisted by our CoPIs, is creating a white paper series on best practices for the retention and recruitment of minorities and females into geospatial programs. Ken works closely with researcher Ming-Hsiang Tsou of San Diego State University on college-to-university seamless articulation through the innovation of geospatial general education courses. One of the single largest barriers to expanding the geospatial programs of two year colleges is the lack of sufficient numbers of students in our introductory geospatial courses. Kenneth and Ming have perfected the method of offering GIS as a General Education course to: 1) increase the number of students in introductory geospatial courses and 2) improve the seamless transfer of courses from college to universities. Kenneth is performing national research on other methods of implementing GIS as a Gen-Ed course.

Gainesville State College

Gainesville State College CoPI Chris Semerjian leads our efforts at recruitment and retention among the HBCU populations of the Southeastern US. He also provides critical support in our DACUM efforts by organizing regional DACUM workshops. He works with researcher Rodney Jackson of Central Piedmont Community College (NC) to develop DoL and NSF grants with HBCU institutions in their area. Chris is active in promoting professional development activities in the Southeastern US, including Metro Atlanta, through the URISA, Georgia Chapter.

San Diego State University Foundation

San Diego State University researcher Ming-Hsiang Tsou leads our effort to promote two year college to university articulation methods and research. Ming works directly with CoPI Kenneth Yanow of Southwestern Community College across town in San Diego to articulate Southwestern College into the SDSU program. Ming is also our lead researcher on the use of Web 2.0 technology in recruitment activities. He is a leader in the use of iPhone, YouTube, and other technologies to engage the millennium generation.

The Pennsylvania State University

CoPI David DiBiase of the Dutton e-Learning Institute @ Penn State University is our lead researcher on the effort to establish a Common Core Competency model within the well established GIS&T Body of Knowledge work. David is working with the Department of Labor, Employment Training Administration, Business Relations Group and the GIS Certification Institute (GISCI) to create entire new Standard Occupation Guidelines to precisely define the entry level GIS Technician standard. Through a series of DACUM workshops, meta-analysis of previous geospatial workforce studies, and extensive vetting with professional organizations and societies, like GISCI, the GeoTech Center will establish national standards of GIS Technician Common Core Competencies that will form the basis of national articulation and certification models.

Geospatial Infrastructure Tech Assc

Geospatial Infrastructure Technology Association (GITA) is the professional association and leading advocate for anyone using geospatial

technology to help operate, maintain, and protect the infrastructure, which includes organizations such as utilities, telecommunication companies, and the public sector. Through industry leading conferences along with research initiatives, chapters, membership, and other programs GITA provides education and professional best practices. GITA provides their executive director, Bob Samborski, to serve on the Center's National Advisory Board. They also provide venues, such as the GITA power panel, at their national conferences to disseminate Center deliverables.

Century College

Century College researcher Carol Mathews, provides assistance in working with homeland security and first responder communities throughout the US to integrate geospatial technology training in the courses and program curriculum. Carol works closely with Native American populations in the upper Midwest and upper Plains states to train their faculty in the use of geospatial technology.

Western Michigan University

The Center is working with Dr. Arlen Gullickson, to promote the integration of GIS mapping into ATE evaluation and reporting functions. CoPI Mike Rudibaugh is creating a national GIS map of all ATE Centers and Projects that will be published electronically by CoPI Vince DiNoto in the summer of 2009. GeoTech is creating a series of map layers which will display geospatial information specific to ATE researchers, such as the location of project and centers by geographical location, along with a number of research-specific criteria, such as the amount of funding, target audience, participant demographic, evaluation methodologies, etc. The Center is currently working with Dr. Gullickson to disseminate awareness of the collaboration to other Center and Project PIs through a series of webinars, hosted by GeoTech and led by Evaluation, to demonstrate the technology as a tool for research.

Hispanic Engineering Network Association

The GeoTech Center has been in extensive discussion since fall 2008 with the Hispanic Engineering Network Association and Conference (HENAAC) to develop a federal grant to promote geospatial technology in high schools nationwide. HENAAC was established in 1989 as a means of identifying, honoring, and documenting the contributions of outstanding Hispanic American science, engineering, technology and math professionals. Corporations, government agencies, academic institutions, the military, and the business community-at-large.

HENAAC was established in 1989 as a means of identifying, honoring, and documenting the contributions of outstanding Hispanic American science, engineering, technology and math professionals. Corporations, government agencies, academic institutions, the military, and the business community-at-large have submitted thousands of nominees over the last 19 years for this very prestigious recognition.

The HENAAC acronym stood for the Hispanic Engineer National Achievement Awards Conference. This important conference set the precedent for excellence in engineering and science and was run out of Baltimore, Maryland under Career Communications Group.

Illinois GIS Association

CoPI Mike Rudibaugh of Lake Land College has been working extensively with the Illinois GIS Association presenting workshops to their members to develop professional development opportunities to under-served GIS professionals in the rural areas of Illinois. The Illinois Statewide GIS Initiative will provide the vision for GIS leadership, coordination and services to public and private entities that serve the citizens of Illinois.

New Mexico Information Council

Senior research Amy Ballard, of Central New Mexico College, has made several presentations to the New Mexico Geographic Information Council to increase the professional development opportunities for professionals in the New Mexico state area. She also seeks internship opportunities for her students and jobs for her graduates among the members of the Council. The New Mexico Geographic Information Council, Inc. (NMGIC), a non-profit dedicated to things geospatial: education, information sharing, technology advancement, and collaboration in the state of New Mexico.

CITRIX SYSTEMS, INC.

CoPI Vince DiNoto of Kentucky Community and Technical College System is working with Citrix and ESRI to research the use of virtualized desktop application software model to provide remote access to GIS software to end-user desktop computers across the Internet cloud. One of the major impediments to a wider adoption of GIS software in rural and underfunded colleges and high schools is the high technical barrier presented by GIS application software. By providing a virtualized Software as a Service model, the GeoTech Center may be able to overcome technical barriers to a wider adoption for geospatial technology.

Georgia Institute of Technology

CoPI Chris Semerjian of Gainesville State College has been in close collaboration with the GIS Department at Georgia Institute of Technology in Atlanta to provide physical facilities for the GeoTech Center use. We conducted a two day DACUM workshop for Atlanta area technicians at the Georgia-Tech Conference and Hotel Center in January 2009. Along with this collaboration, Gainesville College and Georgia-Tech are working together to develop the Georgia chapter of URISA to provide professional development opportunities for both college faculty and working geospatial professions in the state of Georgia.

Urban and Regional Info Sys Assoc

CoPI Chris Semerjian of Gainesville State College has been working with the Urban and Regional Information Systems Association (URISA) to provide professional development opportunities for geospatial educators and practicing professionals. URISA is a non-profit professional and educational association that promotes the effective and ethical use of spatial information and information technologies for the understanding and management of urban and regional systems. It is a multidisciplinary association where professionals from all parts of the spatial data community can come together and share concerns and ideas.

Middle Georgia College

CoPI Chris Semerjian of Gainesville State College is meeting with Middle Georgia College to discuss articulation between MGC's surveying program and GSC's GIS program. Middle Georgia College will submit an Academic Partner Agreement to GeoTech. Two instructors from MGC will attend summer training at Gainesville State College in the summer of 2009. This partnership can provide a model of programs throughout the Southeastern US between high schools and colleges.

Corpus Christi Independent School District

GeoTech Center GIS specialist, John J. Nelson, is working weekly with the Collegiate High School of Corpus Christi Independent School District (CCISD) campus to infuse GIS and GPS throughout their high school curriculum. He has provided a series of presentations to their 4H club, demonstrating the use of GIS and GPS for community service project, such as mapping city parks and recreational areas.

American Society for Photogrammetry and Remote Sensing

CoPI Ann Johnson is working as the Center's national business and nonprofit liaison to establish a professional relationship with the American Society for Photogrammetry and Remote Sensing (ASPRS) in order to create professional development opportunities for geospatial educators and practicing professionals. Ann is working with the Education Committee of ASPRS to recognize GeoTech Center as the voice for two year college educators and provides an outlet for our participation in the Societies conferences and workshops.

South Carolina State University

CoPI Chris Semerjian is working with the Savannah River Environmental Sciences Field Station to discuss a GeoTech Academic Partnership that would extend to 32 HBCU's and minority institutions. Chris proposes developing grant funding opportunities for the Historically Black Colleges and Universities in order to provide geospatial training for their faculty and staff at the Savannah River facility during the summers of 2010 and 2011.

American Association of Geographers

CoPI Ann Johnson, along with senior researchers Amy Ballard, Amy Work, and Christine Lewis are working with the American Association of Geographers (AAG) to promote collaboration with the AAG and GeoTech to encourage and promote professional development opportunities for geospatial educators and professionals. The AAG is one of the largest professional organizations in American for geospatial technology and can provide events nationwide relevant to the education and professional needs of two year college educators.

Business Relations Group of DoL/ETA

PI Phillip Davis and CoPIs David DiBiase and Ann Johnson are working with the Business Relations Group of the Dept. of Labor's Employment Training Administration (DoL/ETA) to develop a set of job competencies for the geospatial workforce. Currently the BRG has developed only 4 of the 9 levels required for their industry profile model, and we have agreed to assist them in completing the top 5 remaining levels of their model through the work of David DiBiase and researcher John Johnson. Through our extensive DACUM workshop meetings and findings, and the wider researcher of workforce and education alignment efforts by David DiBiase of Penn State University, the GeoTech Center will develop a set of nationally recognized job descriptions for GIS Technician, GIS Manager, GIS Analyst and Remote Sensing Technician and Remote Sensing Analyst.

GIS Certification Institute

PI Phillip Davis and CoPIs David DiBiase and Ann Johnson are collaborating with the GIS Certification Institute to develop and vet

nationwide, a set of common core competencies for the GIS Technician level job description. The GIS Certification Institute (GISCI) is a 501(c) nonprofit organization established to provide professional standards for GIS professionals on a national level. GISCI provides the world's most recognized professional certification, the GISP, exam. GISCI has developed a working group, hosted by the GeoTech Center, to work collaboratively with education and professional groups in the creation of industry-driven job descriptions for the GISCI and Dept. of Labor.

South Central Arc Users Group

The South Central Arc Users Group (SCAUG) is working with the GeoTech Center staff (John Nelson & Phillip Davis) to establish regional subchapters of the organization to provide professional development activities for geospatial workers in more remote and rural areas of the South Central US. SCAUG is the South Central Arc User Group, an organization dedicated to the benefit of users of ESRI's Geographic Information software in the states of Texas, Oklahoma, Louisiana, and Mississippi. The GeoTech Center will model the SCAUG process of creating new subchapter organizations and will document the experience to determine feasibility as a national model.

American Indian Higher Education Consortium

AIHEC Vice President Al Kuslikis contacted the PI in October 2008 about providing GIS training for summer institute in 2009. That contact led to several more exchanges for collaboration and eventually to a face to face meeting in March 2009. Through a professional associate, Angie Milakovic at Bismark State College, the PI arranged to have her provide a week long workshop on GIS during the AIHEC three week Summer 2009 Institute. GeoTech has agreed to sponsor several AIHEC partner college instructors to the upcoming High Impact Technology Conference in Phoenix in July 2009. AIHEC and GeoTech are negotiating about future collaboration for summer 2010 GIS and remote sensing training.

University Consortium for Geographic Information Science

GeoTech CoPI David DiBiase from Penn State is leading our effort to work with UCGIS to create career pathways through the UCGIS sponsored GIS&T Body of Knowledge. This research effort will provide well-defined pathways for occupation-specific sets of knowledge, skills and abilities (KSA) that can be used by both industry and academic organizations to evaluate performance and articulation. CoPI Ann Johnson is also working with the UCGIS Education Committee to get two year colleges recognized as legitimate partners with UCGIS.

Kentucky Geographical Alliance

The Kentucky Geographical Alliance is working with GeoTech Center CoPI Vince DiNoto of Kentucky Community & Technical College System in providing professional development opportunities for its members in geospatial technology. The Louisville campus of the KCTCS is hosting GIS and remote sensing workshops during the spring and summer terms of 2009. The National Geospatial Technology Center, Jefferson Community and Technical College, and the Kentucky Information Technology Center (KITCenter) in Partnership with Kentucky Division of Geographic Information, Kentucky Geographic Alliance and the University of Kentucky Tracy Farmer Center announces a regional one day conference to be held Wednesday, June 17, 2009 with pre-conference workshops scheduled for Monday, June 15 and Tuesday, June 16 on the Southwest campus of Jefferson Community and Technical College in Louisville, Kentucky. This first conference of its kind will provide a regional and Kentucky perspective of geospatial education in the P-16 segment. Presentations by leaders and practitioners in the field will provide participants with an up-to-date view. Plenary sessions and professional development tracks include the following topics: -Educational initiatives in GIS, remote sensing and other geospatial fields.

Other Collaborators or Contacts

The Center for Economic Development of our host, Del Mar College, has contracted with the GeoTech Center to provide GIS maps for our College Board of Regents and President in preparation to expand the college's service area into high-growth regions of our 5 county service area. John Nelson, GeoTech Center GIS Technician, is leading the effort by creating a geographic database and maps, based upon college-provided data as well as commercially available demographic data from several providers. This collaborative effort includes the Office of the President, Dean of Economic Development, and the office of Institutional Research on Effectiveness.

Activities and Findings

Research and Education Activities: (See PDF version submitted by PI at the end of the report)

Findings: (See PDF version submitted by PI at the end of the report)

Training and Development:

Section 3: Training & Development

1. Webinar for Developing a Curriculum Model (DACUM), hosted by the John Johnson, GeoTech Center.
2. Teacher recruitment GIS Workshop (Chris Semerian, Gainesville State College) conducted a 4 hour workshop to introduce K12 teachers and technical school instructors to training opportunities through the GeoTech Center. Teachers were solicited for the summer 2009 training workshops.
3. Offered half-day workshop on using GIS across curriculum in Fall 2008 (Vince DiNoto).
4. Offered two day workshop on getting started with GIS in December 2008 (Vince DiNoto).
5. Offered half day workshop on bases of GIS in Spring 2009 (Vince DiNoto).
6. Offering six workshops as a pre-conference workshop to GeoEd'09 in June 2009 (Vince DiNoto).
7. Offering a workshop on GIS case studies in June 2009 (Vince DiNoto).
8. Offered our second workshop at Kaskaskia Community College. This workshop titled, Downloading Dataset for Local Analysis, was attended by 15 participants (Mike Rudibaugh).

Outreach Activities:

The following are outreach activities report by CoPIs to the PI during the first three quarters (Sep08-May09) of year one:

Del Mar College (Phillip Davis, PI)

Sept 23, 2008, Corpus Christi TX

Texas Advanced Technology Credit Conference

Impact: Attended by 18 secondary level educators from around the state, this workshop described how advanced technology credit towards high school graduation could be articulated between college and schools through the dual-credit or tech-prep articulation.

Oct 30, 2008, Washington DC

Annual ATE PI Conference

Impact: Co-presented as a panelist on the ATE workshop on emerging technologies to a group of 25 ATE project directors and researchers on the latest developments in the geospatial industry. Participants received industry-validated feedback on the need for technicians in the current American geospatial economy.

Nov 13, 2008, Corpus Christi TX

Downtown Rotary Club

Impact: Presented on the GeoTech Center grant to 22 members of the local Rotary club to explain the need for geospatial technicians in the local workforce. Direct result was the recruitment of one member's adult child into the GIS program at Del Mar College in Spring 2009 term.

Nov 19, 2008, Corpus Christi TX

GIS Day 2009 @ Del Mar College

Impact: More than 300 local area high school students were provided a two hour program on GIS technology by Del Mar College, Texas A&M Corpus Christi and Texas A&M Kingsville and several local government and private organization. Employers made by group and individual presentations to interested students to recruit them into the field of study.

Dec 11, 2008, Corpus Christi TX

Collegiate HS 4H Club Exhibit

Impact: A total of 100 collegiate high school students attended this event where they were exposed to a variety of GIS and GPS technologies and applications. The impact was to impress upon these young learners how to integrate technology into their academic fields, like biology, geology, and geography.

Jan 30, 2009, Corpus Christi TX

Smart Growth & Urban Development

Impact: A presentation on the use of GIS software for creating urban growth and development plans to 14 members of this NGO organization of citizens and business leaders.

Jan 30, 2009, National Webinar

GIS Certification Institute Education Working Group

Impact: Hosted a two hour webinar for national members (8) of the GIS Certification Institute's education working group to discuss GeoTech Center's participation in the GISCI effort to develop an entry-level certification examination.

March 27, 2009, Kingsville TX

Career Technology Expo

Impact: Presented career information to approximately 350 students from area high schools regarding geospatial technology opportunities.

April 20, 2009, Tampa FL

GITA Power Panel on Geospatial Education

Impact: Served with panelist on the industry needs for geospatial educations for employers. We examined the current state of the need on graduates from two and four year programs to be successful in the workplace. 25 attendees provided questions and feedback to the power panelist.

May 12, 2009 National Webinar

Evaluation Center Evaluation Needs Webinar

Impact: Hosted a one hour webinar on the needs of ATE project and center PIs on their needs for annual evaluation. Topics covered the changes proposed in the annual ATE survey and solicited feedback from the 14 participants on their recommendations and suggestions.

May 26, 2009, National Webinar

Evaluation Center Evaluation Needs Webinar

Impact: Hosted a one hour webinar on the needs of ATE project and center PIs on their needs for annual evaluation. Topics covered the changes proposed in the annual ATE survey and solicited feedback from the 14 participants on their recommendations and suggestions.

Del Mar College (John Nelson, Center GIS Specialist)

Feb 12 - Apr 15, 2009, Corpus Christi TX

Del Mar College Freshman Seminar Courses

Impact: Completed thirteen 15 minute presentations on geospatial career, courses and GeoTech. Distributed Del Mar College-GIS program and GeoTech brochures. Collected contact information for follow up. 75-100 students.

Mar 10, 2009, Corpus Christi TX

Science Technology Engineering & Math (STEM) Technology Career Day

Impact: Five 25 minute presentation-demonstration of geospatial career technologies in GIS Lab 251. 100-125 students. Distributed Del Mar College GIS program and GeoTech brochures.

Mar 12, 2009, Corpus Christi TX

Tuloso-Midway ISD High School Career Days

Impact: Conducted five separate 45 minute Del Mar College-GIS program and GeoTech presentations-demonstrations at the 03/12/2009. Co presenter Prof. Barbara DuFrain. Distributed Del Mar College GIS program and GeoTech brochures. 100 students

Feb 12 - Apr 15, 2009, Corpus Christi TX

Del Mar College Collegiate High School, World Geography-4H GIS Program

Impact: Instructed GIS through presentations as well as hands on applications. Thursdays, weekly 02/01/2009-04/30/2009. 15 students.

Mar 10-25, 2009, Corpus Christi TX

Del Mar College Collegiate High School

Impact: Recruitment presentation-demonstrations to students to consider a career in geospatial technologies or their applications in other fields of study. Completed a 45 minute presentation to ten separate student groups. Distributed Del Mar College GIS program and GeoTech brochures. Guidance counselor office. 03/10-3/25/2009. 100-125 students.

Mar 27, 2009, Corpus Christi TX

Technology Career EXPO: Kingsville Northway Center

Impact: Set up a Del Mar College - Computer Science-Information technology-Geographic Information System and GeoTech booth with maps, books, journals, brochures and flyers. Lap top computer with GIS video loops. Attendance 20+ high school campuses covering the Educational Service Center-Area 2. 100 mile buffer. 750-1000 students.

Apr 24, 2009, Corpus Christi TX

Robstown ISD Engineering, Drafting, Auto-CAD Day

Impact: GIS 4 year high school program visit the Del Mar College GIS Program and GeoTech Presentation and demonstrations. Distributed GIS program and GeoTech brochures, GIS material, GeoTech pens and ESRI ArcMap 9.0 and 9.2 educational versions 1 year software. 40-50 students 9-12 grade.

Southwestern College (Ken Yanow, CoPI)

Oct 10, 2008, National Webinar

Maricopa ATE Center Webinar

Impact: 'Strategies for Recruiting Women into Technology Programs'. NSF ATE Conference in Washington D.C.: Attended presentations focusing upon recruitment and retention strategies of students into STEM fields.

Oct 25, 2008, Chula Vista CA

SMART meeting at SWC ('SMART' is for Science, Math, Articulation)

Impact: It is an annual meeting with Southwestern College faculty and faculty from the Sweetwater Union High School District). Meeting was held at the UCSD GIS Center with the Director of the Center (Tracey Hughes) and Jeff Sale of the UCSD Supercomputer Center.

Nov 17, 2008, National Webinar

Webinar: Women in SMET Fields hosted by the National Science Foundation 'PAID' project

Impact: Presented SWC's geospatial technology program, geospatial technology in general, and the Center at the annual Women's Conference at Southwestern College.

Nov 14, 2008, San Diego CA

Math Science and Engineering Majors Meeting at SWC.

Impact: Remote Sensing Curriculum Development Webinar hosted by iGETT (Integrated Geospatial Education and Technology Training).

Dec 10, 2008, San Diego CA

Regional Meeting of Community College Geography Professors

Impact: The SDSU Geography Department and San Diego Regional GIS Council Meeting held in Rancho Bernardo. This meeting is attended by GIS users from San Diego County (including members of the private and public sectors).

Gainesville State College (Chris Semerjian, Co-PI)

Sep 11, 2008, Atlanta GA

Georgia Technical College's VP Meeting

Impact: introduced the GeoTech Center to the Vice Presidents of all Georgia Technical Colleges. Colleges were solicited for participation in the summer 2009 training workshops at GSC and for the development of geospatial curricula and articulation pathways with other academic institutions.

Sep 11, 2008, Atlanta GA

Meeting with former Wisconsin Governor Jim Geringer & the University System of Georgia (USG)

Impact: introduced the GeoTech Center to Governor Geringer and to Frank Howell from the University System of Georgia. This was a briefing prior to a meeting between Governor Geringer and Georgia Governor Sonny Purdue to discuss geospatial coordination at the state level. It appears that statewide geospatial coordination in Georgia is in the works.

Sep 26, 2008, Gainesville GA

Strategic Planning Meeting with Georgia GIS Coordinating Committee (GGGISCC)

Impact: introduced the GeoTech Center to the GGISCC and offered assistance in coordinating GIS activities in the state. Gainesville State College and GeoTech will now be regular participants in GGGISCC.

Sep 29-30, 2008, Atlanta GA

United Southern and Eastern Tribes Conference

Impact: presented the GeoTech Center and potential GIS training opportunities for tribes and tribal colleges.

Oct 20, 2008, Gainesville GA

Georgia Executive Technology Briefing

Impact: presented the GeoTech Center to high-level state of Georgia executives as part of an effort to coordinate geospatial activities at the state level.

Nov 19, 2008, Athens GA

Georgia Information Technology Summit (GITS) Panelist

Impact: GITS is a conference of how IT is used throughout government in Georgia. I presented the GeoTech Center as an invited panel member

in a special geospatial session.

Jan 23, 2009, Atlanta GA

Surveying and Mapping Society of Georgia (SAMSOG)

Impact: presented an overview of the GeoTech Center and led a discussion on how the GeoTech Center could assist the surveying community. The responses were mixed. Some surveyors embraced the opportunity for geospatial training while others were threatened by GIS. One positive spin-off was that Gainesville State College will work to develop articulation between its GIS program and Middle Georgia College's surveying degree.

Feb 10, 2009, Atlanta GA

Georgia Urban and Regional Information Systems Association (GAURISA) Invited Speaker

Impact: provided an overview of the GeoTech Center to the Georgia GIS community.

Kentucky Community & Technical College System (Vince DiNoto, CoPI)

July 8-9, 2008, Louisville KY

Kentucky GIS conference.

Impact: Held discussions of the GIS Center at the educational round table and presentations on GIS using Citrix Servers.

Oct 20, 2008, Washington DC

2008 Annual ATE PI Conference

Impact: two presentations on GIS, one showing uses across curriculum and the other showing remote server applications. Audience include 30 participants from ATE Centers and projects who learned how remote application access can provide the convenient access to complex software through the Internet.

Nov 13-14, 2008, Louisville KY

Convergence Conference

Impact: two presentations, one on using GIS across curriculum and the other on Web 2.0 which included remote applications.

Dec, 2008, Louisville, KY

3rd Annual Kentucky IT teacher day at KCTCS

Impact: GIS was one of the major topics presented. Attended by more than 70 teachers.

Chaired the Information Technology Business and Industry Advisory Committee.

Lake Land College (Mike Rudibaugh, CoPI)

Sep 13, 2008, Centralia IL

Kaskaskia Community College

Impact: Centralia offered a professional development Intro to GIS Class through the college's workforce development center. Specifically, this session marketed to college faculty, administrators, and working professionals. The course utilized ESRI Virtual Campus Courses, and ESRI donated 20 1-year seats to assist in promoting the class. The class has 15 students register for the event with a mix of academic and working professional representing local government and economic development agencies.

Sep 19, 2008, Charleston IL

K-12 Education Professional Development Conference

Impact: Session Titled (Geospatial Technology = New Economy Jobs). This session was attended by 10 participants who were primarily local high school teachers in the region.

Oct 30, 2008, Springfield IL

Illinois State Workforce Development Conference

Impact: on the NGTC and how GST services could be used to model workforce/economic development issues in the state. This session was attended by 50 participants who represented agencies across state government. Key contacts were made dislocated worker agencies and the Bureau of Veteran Affairs for the state of Illinois.

Nov 5, 2008, Lombard IL

Illinois GIS Association ILGISA Meeting

Impact -Presented to Board (Lombard, IL) on the NGTC Mission, GOALS, and Objectives. ILGISA is looking for enhancing their education outreach with the state's GIS community to 12 representatives. Specifically, ILGISA is excited about partnering with the NGTC in developing new approaches to market and advertise GIS educational opportunities across the state. As a result of the event, the ILGISA Board appointed

me to join their organization's newly formed Education Committee.

Nov 13, 2008, Arthur IL

Rotary Club of Arthur IL Meeting

Impact: (GIS) for Local Community Service Projects. This event was attend by 20 residents interested in how GIS could be used to local issues facing the community like crop managements and economic development.

Dec 10, 2008, Lawrenceville, IL

Lawrenceville Elementary School

Impact: Worked with 4th Grade Class (20 Students) in Lawrenceville, IL concerning their first exercise using GIS with Thinking Spatially using GIS Textbook from ESRI. This activity is associated with this group developing an ESRI 4-H Grant.

San Diego State University (Ming-Hsiang Tsou, researcher)

Oct 30, 2008, San Diego CA

San Diego County Office of Education Regional Occupation Program

Impact: Attended the ROP meeting and serve on the advisory board. Introduce the new National GeoTech Center to high school teachers in the ROP program and the Web GIS modules (Oct 30, 2008).

Nov 15, 2008, San Diego CA

Patrick Henry High School

Impact: on November 12 to give a GIS guest lecture (45 minutes) for 30 high school students (Mr. Abbot Mark's GIS class).

Nov 20, 2008, San Diego CA

San Diego High School of International Studies

Impact: Issued total 72 certificates for the completion of GIS career awareness learning modules to two high schools in San Diego (21 students from Patrick Henry High School and 51 students from San Diego High School of International Studies).

Dec 10, 2008, San Diego CA

Regional Community College Meeting at San Diego State University

Impact: This meeting was organized by the Department of Geography at San Diego State University. There were 12 community college teachers, 2 Ph.D. students, and 4 SDSU Faculty members joining the meeting. The goal of the meeting was to facilitate the information exchanges and communications between SDSU and regional community colleges. All three community colleges have successfully articulated this course (GEOG104) with SDSU.

Dec 17, 2008, San Diego CA

San Diego High School

Impact: to give two GIS guest lecture (45 minutes x 2 = 90 minutes) for 30x2 = 60 high school students.

Cayuga College (Amy Work, researcher)

Oct 6-7, 2008, Liverpool NY

New York State GIS Conference

Impact: The Panel session provided each institution an opportunity to present the materials they developed to integrate geo-spatial technologies into various disciplines across their campuses involving 4 higher-education institutions: Cayuga Community College, Mohawk Valley Community College, Morrisville State Technical College and SUNY Oswego.

Oct 14, 2008, Hannibal NY

Hannibal School District SPICE Project

Impact: Supported the 8 teachers in the Hannibal School District SPICE (SPatial Innovation Collaborative Environment) run their own Superintendent's Day Program for every teacher in the district. These 8 teachers utilized summer curriculum development meetings to successfully organize and carry out the event in which they were the lead instructors for three concurrent workshops: GIS, GPS, and Google Earth. Each workshop ran 3 times.

Nov 19, 2008, Hannibal NY

GIS Day at Hannibal High School

Impact: Participated as a guest speaker for GIS Day at Hannibal High School in Hannibal, NY. Presented on Careers in the Geospatial Industry and higher education opportunities students available to them in the area. Approximately 100 high school juniors and seniors were present. The

week following the event, a student in one of the sessions schedule a visit to Cayuga Community College to find out more about the GIS Program. For the 10th International GIS Day, hands-on GIS exercises and a LiDAR presentation were provided for approximately 250 middle and high school students and their teachers at Cayuga Community College. A variety of GIS projects from different industries from around the community were showcased in a Poster Gallery.

Dec, 2008, Auburn NY

Faculty Enrichment Seminar @ Cayuga Community College

Impact: Continue work with Cayuga Community College GIS Professor Abu Badruddin to expand GIS across the campus and into various courses through a Faculty Enrichment Seminar for faculty entitled: What is GIS and how can you use it in your class?

Dec, 2008, Auburn NY

Cayuga-Onondaga County Board of Cooperative Educational Services

Impact: Introduced Geospatial Information Technologies to 15 students and 3 teachers from the Cayuga-Onondaga County Board of Cooperative Educational Services (BOCES) New Visions Environmental Science, Legal Professions and Business and Media Communications programs through various IAGT projects. Discussion of each project included reference to how individuals from the three professions present could utilize the information. Projects included: ServirViz Climate Mapper (climate change); EarthScope (geology, plate tectonics and site suitability); Dartmouth Flood Observatory (flooding disasters); and Vineyard applications (crop management; vineyard site selection and market distribution).

Century College (Carol Mathews, researcher)

Nov 19, 2009, Minneapolis MN

GIS Day at Century College

Impact: , Dave Lyons, Century geographer and Carol Mathews spent the day with a large display of GIS maps, GIS and Crime Mapping course offerings, four monitors showing how GIS is used and GeoTech Center as a new available resource. This presentation was held concurrently with Law Day which is an annual fall event at Century sponsored by LECJA, the Century student law enforcement and criminal justice club. Present were seven law enforcement agencies and the law enforcement student club members. Two hundred students were able to view options for GIS education at Century.

Nov 5, 2008, Bloomington MN

ISLET Criminal Investigation Fall Summit

Impact: Presented on Century's role in GeoTech Center was introduced at the ISLET Criminal Investigation Fall Summit in Bloomington, Minnesota. Present were several educators and law enforcement professionals from 40 law enforcement agencies.

Nov 13, 2008, Minneapolis MN

Minnesota Governor's Council on GIS

Impact: Carol Mathews attended the Minnesota Governor's Council on GIS. This council meets quarterly to discuss GIS applications in Minnesota and strategic initiatives for GIS development. The development of a central state GIS office for data coordination, data services, web services was discussed. This office would provide guidance for agencies beginning their process and direction of GIS us. GeoTech Center was introduced to the Council. Victoria Reinhardt, Ramsey County Commissioner advocated for the Council to participate in collaboration with Century College with the Council participating as a community stakeholder.

Mar 13, 2009, Boston MA

Academy of Criminal Justice Sciences National Conference

Impact: Presented at the Academy of Criminal Justice Sciences National Conference in Boston on technological gaps in evidence and GIS will be one of the forensic gaps that is discussed, i.e. symbol repository.

GIS Workshop, Inc. (John Johnson, researcher)

Overview: as the Center's DACUM Facilitator & Curriculum Consultant my primary responsibility is to identify the tasks and duties being performed by GIS Technicians throughout the United States. This information will serve as 'ground truth' in the development of a comprehensive set of core competencies for this occupation.

1. DACUM Panel Selection: prior to conducting the DACUM workshops I assisted CoPI's Mike Rudibaugh from Lake Land College and Chris Semerjian from Gainesville State College with the recruitment, assessment and selection of their panels of 'expert workers'. Each college selected a panel of 12 individuals who were chosen as a representative sample of GIS Technicians in rural, Southern Illinois as well as the urban Atlanta metro area. A limited number of GIS supervisors with recent practitioner-level experience were also included to help provide insight and a 'reality-check' on the process. Both panels were also made up of diverse groups of individuals based upon their gender and racial characteristics, their years of experience and employment as well as their educational levels.

1. DACUM Workshopsùdirected each panel of expert workers for a period of two, eight-hour days, as they carefully identified and articulated the major tasks and duties involved in performing their jobs as GIS Technicians. This information was then organized into a DACUM Research Chart for GIS Technicians.
2. Validationùthe next step will be to validate the two resulting DACUM research charts using a much larger group of GIS professionals from the same region as the industry panel. This process involved the development and use of an on-line survey instrument.
3. Summary DACUMùin addition to the validation of these two DACUM charts, I will also collect and compile the results of all previously completed DACUM charts which have been developed for the job of GIS Technician or similar occupations. The purpose of this exercise is to try to develop a summary document, or a DACUM of DACUM's which would highlight common tasks and duties reoccurring in these charts. To date I have collected a total eight DACUM charts from throughout the US which will be included in this analysis. In addition, I will also be conducting two additional GIS related DACUM workshops for C3GIS in early June which will be included as well.
4. National Core Skill Set for GIS Technicianùfollowing this, I will begin working with David DiBiase to evaluate this data, along with other resources such as workforce surveys and job descriptions. Our goal will be to identify a national core skill set for GIS Technicians that is applicable across the wide range of geospatial occupations. These skills will be validated using a nationwide industry panel convened by the Center. Once validated, the results will then be aligned with learning objectives in the UCGIS Body of Knowledge and vetted through other Geospatial professional organizations and industry groups. This process will help facilitate the standardization of Community College GIS curriculum nationwide.

Activities Planned for fourth quarter (Jun09-Aug09)

Del Mar College (Phillip Davis, PI)

1. Corpus Christi ISD High School GIS Summer Academy June 8-12, 2009. 10 AM- 2 PM. 15 seats, juniors and seniors 2009-2010 schedule. Produced concept, plan and curriculum. Roy Miller High School GIS lab 189. Developed 1000 brochures and 10 large banners for distribution to the CCISD 5 high school campuses.

Gainesville State College (Chris Semerjian, CoPI)

1. Summer 2009 Workshop Preparation: Ongoing work is being performed for the summer 2009 training workshops. Georgia Magnet High Schools and Middle Schools as well as faculty from 2-year and technical colleges have been solicited for summer training. Solicitations have been sent out in both electronic and standard mail form.
2. Academic Partnership with the Georgia Institute of Technology (GaTech): The Center for GIS at Georgia Tech has officially signed on as the first academic partner of the GeoTech Center Southeast. Georgia Tech was instrumental in facilitating the metro-Atlanta DACUM workshop. They have also offered to co-host the GeoTech National Visiting Committee in February of 2010 in conjunction with the GIS in Georgia Teaching and Research Conference. This will allow the NVC to see presentations first-hand from students and faculty involved in geospatial education. Other academic partnerships are in the works with Ogeechee Technical College, Central Georgia Technical College and Middle Georgia College.
3. Academic Partnerships with HBCUs through the Savannah River Environmental Sciences Field Station (SRESFS): The SRESFS is designed to provide field-oriented experiences in the environmental sciences for students from HBCUs and minority serving institutions. Gainesville State College is one of 30 member institutions of the station. Several years ago, the College submitted a proposal to NSF to provide geospatial training to faculty members at HBCU's. As part of the proposal process, we solicited the HBCUs for interest. We received responses from over 75 faculty members who indicated that they would attend summer workshops at Gainesville State College. Unfortunately, a major disagreement between GSC and the SRESFS over the nature and structure of the proposal led to a change in project partners between the preliminary and final NSF proposals. The loss of the SRESFS partnership was likely the reason the project was not funded. However, the field station is now under new leadership from Denise Grant at South Carolina State University. Gainesville State is once again participating with the station and talks have resurfaced about how GSC and the GeoTech Center might partner to provide a geospatial component to their field courses. Gainesville State will be presenting the opportunities of a GeoTech Academic Partnership, including training opportunities for HBCU faculty, during the March 20th, 2009 SRESFS meeting.
4. Government Partnership with the United States Forest Service (USFS): Gainesville State College has a long-standing MOU with the USFS Chattahoochee-Oconee National Forest Office. The MOU was designed to provide GSC GIS students with real-world projects, study sites and access to working scientists. In return, the College provides training for Forest employees. Discussions are currently underway to develop an MOU between the USFS Region 8 Office, which covers the Southeastern United States, and the GeoTech Center Southeast. This would essentially expand the current MOU to all Southeastern forests. Gainesville State has conducted many fee-based workshops and technical contracts with the USFS. It is anticipated that increasing these initiatives will assist with the ultimate sustainability of the GeoTech Center Southeast.

Kentucky Community & Technical College System (Vince DiNote, CoPI)

1. Will present at the New Horizon Conference ù May 2009.
2. Will present at the GeoEd'09 conference ù June 2009.
3. Will present at the Kentucky GIS Conference ù June 2009. Cancelled
4. Will present at the Kentucky Tech Ed Conference ù July 2009.
5. Hosting the first GeoEd conference at Jefferson Community and Technical College on the Southwest Campus in Louisville, KY ù June 2009. Co-Host includes, Kentucky Division of Geospatial Information, Kentucky Tech, University of Kentucky Tracey Farmer Center, Kentucky

Geographic Alliance, Kentucky Community and Technical College System, Kentucky Information Technology Center.
Southwestern College (Ken Yanow, CoPI)

1. Geospatial Technology Summer Workshop at SDSU.
2. Teaching a 'Chautauqua' online GIS course (for secondary and college faculty).
3. ESRI Conference in San Diego, CA.
4. Hi Tech 2009 Conference in Scottsdale, AZ.

San Diego State University (Ming-Hsiang Tsou, researcher)

1. Prepare a GIS training workshop (for community college teachers and high school teachers) in Summer 2009 funded by the Center. The GIS training workshop will be co-hosted by the Southwestern College and San Diego State University on July 8, 9, 10, 2009 at the Spatial Analysis Lab (SAL) at San Diego State University.
2. Attend the Annual Meeting of American Associate of Geography (March 23-26, 2009) in Las Vegas and promote the center's activities during the meeting.
3. Publication: Write one journal article or one book chapter for High School GIS education and the link to community college GIS education (to submit the paper by the end of summer 2009).
4. Recruit a Ph.D. student with a possible Ph.D. dissertation topic related to this center's work.
5. Collaborate with the UC-Santa Barbara Spatial@UCSB center (including NCGIA and CSISS) with Professor Mike Goodchild.
6. Attend the Hi-TEC conference on July 21-22, 2009 at Scottsdale, AZ and present a paper session, titled 'Introduction to Geospatial Technologies and GIS Education in Community Colleges' (90 minutes) with Ann Johnson.
7. Attend the ESRI Educational conference and International User conference on July 11-16, San Diego and present a paper on the Educational conference, titled 'Three Strategies for Raising Awareness of Geospatial Technology'
8. Continue to work with San Diego High Schools to create stronger partnerships between the Center and K-12 education institutes.

Lake Land College (Mike Rudibaugh, CoPI)

1. We are planning to have a summer workshop of 40 local high school teachers this summer. This workshop will focus on introducing GIS concepts and integrating GIS into existing curriculum. We plan on partnering and testing workshops developed by Lynn Songer and the NSF-G-ATE MAPPS Project.

Journal Publications

Books or Other One-time Publications

Web/Internet Site

URL(s):

www.geotechcenter.org

Description:

This is the public-facing website for the GeoTech Center.

Other Specific Products

Product Type:

Various media

Product Description:

The following are products and publications report by CoPIs to the PI during the first three quarters (Sep08-May09) of year one:
Kentucky Community & Technical College System (Vince DiNoto, CoPI)

1. Development work on ArcServer installation and operation.
2. Developed a definition Wiki that can be used in multiple GIS operations.
3. Author content for the GeoTech Blog.
4. In addition write a technology blog at <http://vinedinoto.blogspot.com/>.
5. Developing a modular approach that can be used in GIS courses for fractional credit.

6. Capstone Integrated Concepts has multiple geospatial applications in the form of energy maps, i.e. coal, solar, wind, etc. Gainesville State College Institute for Environmental & Spatial Analysis (Chris Semerjian, Co-PI)

1. Module Development through the Morocco Geospatial Initiative?Gainesville State College is working collaboratively with the University of Hassan II in Morocco to offer geospatial training and curricula development workshops. This is part of an initiative from the University System of Georgia to globalize the system?s curricula. Gainesville State will develop training and curriculum modules for Hassan II focused on a variety of topics (public health, sanitation services, water quality, etc.). These modules will be made available online through the GeoTech Center.

Lake Land College (Mike Rudibaugh, CoPI)

1. Worked with two GIS students at LLC in developing the Geospatial Workforce Portal. This portal will model the location of all of the community colleges in the United States. In addition, each college that has GIS technology will be identified. This information was generated from a partnership with ESRI. Specifically, ESRI committed to the NGTC their educational database of customers within the community system. Using this database, LLC?s team of Brooke Ferguson (GIS Specialist), Sammy Tyner (GIS Student and Work-study), and Cody Stewart (GIS Student) are researching each college?s website likely having GIS technology on campus. As a result, the NGTC will be able to measure, map, and classify critical factors profiling the current status of geospatial education at community college.

San Diego State University (Ming-Hsiang Tsou, researcher)

1. Revised the Web GIS career awareness learning modules for the new National GeoTech Center. The new version (4.0) is available now. http://geoinfo.sdsu.edu/hightech/GISCareerLearningModules_top.htm

2. Develop a new GIS learning module: Flat-Stanley web GIS application with Google Maps and Picasa web albums (Figure 1.). Survey the concept, technologies, and examples of online GIS gaming for this project study the technologies of ArcGIS Server 9.3, called Flex, to facilitate Flash into web GIS environment.

3. Created a new GIS movie for demonstrating mobile GIS devices (iPod Touch) and location-based services (LBS) on YouTube. <http://www.youtube.com/watch?v=4px4T4RN5Hk>

4. Revision of the GIS Career Awareness site that meets the web accessibility guidelines.

5. Studying ArcGIS Server 9.3 Flex API, and trying using FlexAPI to build up a web application for querying the area where maximum temperature is higher than the value user inputted. These technologies will be used for the future GIS learning modules developed for the National GeoTech Center. The URL for the website is : <http://geoinfo.sdsu.edu/flex/SanDiego/FirstApp.html>

Sharing Information:

Via the public-facing website located at <http://www.geotechcenter.org>.

Contributions

Contributions within Discipline:

Contributions to Other Disciplines:

Contributions to Human Resource Development:

Contributions to Resources for Research and Education:

Contributions Beyond Science and Engineering:

Conference Proceedings

Special Requirements

Special reporting requirements: None

Change in Objectives or Scope: None

Animal, Human Subjects, Biohazards: None

Categories for which nothing is reported:

Any Journal

Any Book

Contributions: To Any within Discipline

Contributions: To Any Other Disciplines

Contributions: To Any Human Resource Development

Contributions: To Any Resources for Research and Education

Contributions: To Any Beyond Science and Engineering

Any Conference

The Center is focused on five specific initiatives in order to meet its overall mission and goals.

1. Core Competency Initiative

This initiative is concerned with the major areas of a) articulation, b) industry & academic alignment, c) professional certification, and d) workforce need assessment. Led by CoPI David DiBiase, and assisted by researcher John Johnson, the goal of this initiative is to reach a national consensus on what precisely constitutes a set of common core competencies for a GIS Technician. To date, no nationally-recognized set of common competencies is available, despite many previous workforce studies, and even the current GIS&T Body of Knowledge, created by the UCGIS. The need for such a standard is well known in the areas of a) course articulation between colleges and schools and universities, b) aligning academic curriculum with current workforce needs, and c) certification of the geospatial workforce. To date, the Center has accomplished several major steps towards completing this initiative. In March, 2009 the Center established a working relationship with the Dept. of Labor's Business Relations Group (BRG), under Brad Wiggins. That meeting led to the BRG requesting our assistance in completing their stalled attempt at defining the geospatial industry profile. CoPI DiBiase is currently designing a research methodology that combines this request with our own GIS Technician occupation-specific common core competency initiative. In order to achieve a broad industry acceptance of this initiative, we have also established a significant working relationship with the GIS Certification Institute (GISCI). We have hosted several web-enhanced teleconferences with this nationally-dispersed group of industry professionals and created a Sharepoint web portal that serves as our working repository of documents and communications. Major findings presented in two white papers (one each DiBiase & Johnson) are expected by the end of July 2009.

2. National Resource Repository and Public-Facing Website

Following limited success in the initial development of the Center's website, the PI has selected a new contractor who has accelerated the development of a fully functional Web 2.0 site that will go live in early July 2009. This new site will incorporate the latest in social networking features, such as blogs, wikis, and connectors to Facebook, LinkedIn, and YouTube. The site will provide constant RSS newsfeeds of relevant news and features on the geospatial technology field. It will provide a central location for national events for training, conferences, and workshops. The contractor is well versed in search engine optimization (SEO) techniques which will benefit the site's wider exposure to our target audience of geospatial educators, learners, and industry professionals.

The site will also house the national resource repository of geospatial technology education material. The repository is being built on top of an open-source content

management system, DotNetNuke (DNN), which provides full SQL database management of these resources. Resources will be professionally reviewed for approval and inclusion in the site, with significant meta-data descriptions and indexes being added by the Center's team of partners and CoPIs. The site will be fully integrated with Google and other major search engines. It will also be linked with appropriate digital libraries throughout the ATE Centers network in order to provide maximum linkage to researchers and educators. The repository's earliest material will come from recently completed ATE projects from our collection of CoPIs, such as the iGETT project remote sensing learning units, the GIS-TECH project textbooks, the MAPPS GIS project K-12 learning modules, and the SDSU student recruitment material.

3. Minority & Underserved Recruitment Initiative

This effort is being led by CoPI Kenneth Yanow (Southwestern College). During this first year he has been collecting best practices from all of the partner institutions to develop a publishable report on recruitment and retention strategies of underserved and underrepresented population in geospatial fields. In addition, budget funds were allocated to hire a recruitment consultant (specifically, for the recruitment of women into geospatial fields). Diana Avila, presently serves as the Counselor and Coordinator of Southwestern College's Women's Resource Center and Center for Technical Education and Career Success. She has enthusiastically agreed to be a part of our team, providing her insight and experience into the recruitment and retention of women into technical fields. CoPI Yanow has attended a number of workshops and conferences specific to the recruitment and retention of underserved and underrepresented students into STEM fields. He will publish a white paper on the topic in June for presentation at two major conferences: the International ESRI User's Conference and the High Impact Technician and Technology Conference. His paper, along with the others, will be published widely once the website is functional.

In addition to Yanow's effort on the West Coast at recruiting women into the field, fellow CoPI Chris Semerjian and researcher Rodney Jackson are leading the effort at minority recruitment on the East Coast. Chris, at Gainesville State College (GA) and Rodney, at Central Piedmont Community College (NC) have extensive connections to HBCUs throughout the Southeast. They report several collaborations to explore grant funding through the Department of Labor to develop a series of environment technology training workshops for STEM faculty from partnering HBCUs to be conducted at the Savannah River Energy Center in South Carolina. It is anticipated this effort will lead to further collaboration with HBCU institutions throughout the remainder of the funding period.

The PI has been engaged with the American Indian Higher Education Consortium (AIHEC), based in Alexandria, VA to foster cooperation with this segment of the minority and underserved populations. The PI was pivotal in securing the services of North

Dakota State GIS educator, Angie Milakovic, to provide a weeklong GIS workshop to Native American instructors in June 2009 for AIHEC. Through collaboration with Al Kuslikis, vice president of AIHEC, the PI seeks to develop a more comprehensive program of training for Native American—serving colleges and schools throughout AIHEC's 36 member institutions. We will leverage our resources, such as Amy Ballard at Central New Mexico and Angie in North Dakota, to provide a cost-effective solution to colleges in those regions. This effort will require further grant development later in the Center's award period.

4. Leading Edge Technology Initiative

Led by CoPIs Vince Dinoto (KY) and Mike Rudibaugh (IL) and the PI, this effort has produced two successful ventures. CoPI DiNoto is launching an ArcGIS web server that will function to house the Center's main geospatial portal. We will publish maps and geospatial data through this ArcGIS server which provides a spatial interface for the data housed underneath. This portal will be prominently displayed on the landing page of the Center's main website to allow direct user interaction with the map and data. Besides demonstrating our geospatial technology front & center, the portal will also serve as a dissemination tool for data sets relevant to two year geospatial educators, as well as researchers at secondary schools and universities. The Kentucky Community & Technical College System also funded a major portion of the ArcGIS server hardware, as well as providing a matching 50% of the GIS technician's salary to support the portal server. Besides providing a geospatial interface for the Center, the server will also provide our experimental GIS application software as a service (SaaS). This research will seek to explore the potential to offer GIS application software to the learner's desktop, across the Internet cloud, without the complex process of a local software installation and maintenance. CoPI DiNoto is working with major software vendors, such as ESRI, Microsoft, and VM Ware, to seek preferential licensing necessary to make GIS SaaS possible for colleges and schools on limited technology budgets.

In conjunction with this initiative, CoPI Rudibaugh is building a multi-layer national map of geospatial education programs that will be the feature layer on the ArcGIS portal. This database of technical programs is being shared by the ATE Evalua | t | e Center, under PI Arlen Gullickson, to provide ATE-focused information to researchers and proposers at projects and Centers throughout ATE. We have held several webinars for the staff of Evalua | t | e in preparation for more extensive efforts during the summer and fall of 2009. We envision this map as housing many additional layers of information as Rudibaugh and his assistant, Brooke Ferguson; populate the database with information from ATE, AACC, and other sources.

The PI is conducting his own research into providing GIS as a service along a different paradigm. Recent conversation with a number of secondary school instructors, who were trained in GIS through the early GIS-TECH project, have expressed deep frustration

with the current method of locally installing and maintaining GIS software for their high school labs. Many are reaching a point of no return in frustration as they struggle to maintain the software with extremely limited technical assistance and support from their local schools. The PI envisions the creation of a GIS "appliance" device which would allow the teacher to simply plug the portable device (a powerful, but compact server) into their local area network and begin delivering GIS software with little to no local administration required. This device would most likely incorporate VM Ware virtual operating system with ESRI ArcGIS running in virtual partitions, one per student, to allow multiple users to access the software without fear of corrupting one another's work or the main server files. To enhance this device, the GeoTech Center could offer remote technical service through its staff technicians to teachers in the field, via remote connection and phone support. If successful, this demonstration project might be shared with commercial vendors, such as DigiQuest, ESRI, VM Ware, and others for replication. The PI will develop this package through 2009.

5. Professional Development Initiative

This initiative takes several approaches to serving the needs of the two year geospatial college educator specifically. It incorporates: a) workshops, b) webinars, c) conferences, d) white papers, and e) blogs and other Web 2.0 social networking, such as YouTube & Facebook. The initiative is shared by all of the CoPIs and senior researchers to varying extents, based upon their expertise and budgets and deliverables. Professional development also occurs in two realms: a) internally, for the Center partners and staff and b) externally, for our participants and educators. The workshops are being offered throughout the year at all our partner locations covering a variety of topics, from GIS software to remote sensing. Several of the workshops are actual semester-long courses and use both traditional campus, as well as hybrid Internet methods. A complete list of these workshops is provided in section four of this report. The webinars begin in May 2009 with our first one on Cartographic Best Practices being hosted by Chris Lewis and designed for our own internal consumption as we enforce quality assurance in all our mapping products produced by any of our partners. This is a critical need at the moment since we are preparing to deploy the national map via our ArcGIS portal this summer. We anticipate offering a series of webinars, one monthly, through our Adobe Connect server that has provided our internal collaboration backbone for the iGETT project since 2007. We will begin our second award year with a DACUM webinar by John Johnson in September 2009. Precise future topics will be evaluated this summer during the major ESRI and High Technology Conferences, along with an online survey to be conducted with all known 400 geospatial programs nationwide. It is necessary to plan this effort in close cooperation with our target audience's (geospatial educators) explicit needs. The Center will be hosting a number of conferences throughout 2009, beginning with the GeoED 2009 regional conference hosted by CoPI DiNoto at KCTCS Jefferson campus in

Louisville. This conference will serve both two year college and secondary educators. The GeoTech Northwest Conference will be hosted by Lane Community College in Eugene in October and feature keynote speaker, Dr. Dawn Wright of Oregon State University. This conference is being co-produced by Jane Benjamin and Lynn Songer of Lane Community College and will be attended by geospatial educators from Oregon, Washington, California and other states in the Pacific Northwest.

Section 1: Research and Education Activities

A. Executive Summary

Overview

The GeoTech Center began operation on September 1, 2008 under DUE #0801893, with a performance period of September 1, 2008 through August 31, 2012. The Center operates under the direction of NSF ATE program officer, Dr. David Campbell. The principle investigator, Dr. Phillip Davis, is responsible for the overall supervision of the Center and its partners, with guidance from the Chairperson of the National Advisory Board, Deidre Sullivan, Director and PI of the MATE Center, and the external evaluator, Elaine Craft of the SC ATE, Inc. Center.

The Center is based on a collaborative partnership, with Del Mar College as the lead institute and housing the Center's main office and central staff. Partners include two universities: San Diego State University (Dr. Ming-Hsiang Tsou) and Penn State University (David DiBiase). College partners include: Southwestern College, Chula Vista CA (Kenneth Yanow), Central New Mexico College, Albuquerque NM (Amy Ballard), Century College, St. Paul MN (Carol Mathews), Lake Land College, Mattoon IL (Dr. Mike Rudibaugh), Kentucky Technical and Community College System (Vince DiNoto), Central Piedmont Community College, Charlotte NC (Rodney Jackson), Gainesville State College, Gainesville GA (Chris Semerjian), and Cayuga Community College, Auburn NY (Amy Work), and. Contractors include Bear Mountain Consulting, Beatty NV (Ann Johnson), Chris Lewis, Chico CA, John Johnson, Encinitas CA, and VL Interactive (Ames, IA) to provide website development.

Major Accomplishments

The Center has five distinct initiatives ongoing to meet its five principal goals. These initiatives are led by one or more CoPIs, under the general direction of the PI. With a large number of active collaborators, it is most effective to match the interest, and expertise, of each CoPI to a specific initiative. The current initiatives include five major focus areas: 1) core competencies, 2) resource repository and website, 3) minority recruitment and retention, 4) leading edge geospatial technologies, and 5) professional development. The Center has made significant progress on each of these five areas:

1. Established working relationships with the Dept. of Labor, the GIS Certification Institute (USGIS), and the University Consortium of GIS (UCGIS) (1).
2. Completed two DACUM workshops and validated with more than 200 industry managers (1).
3. Completed meta-analysis of these DACUMs with 10 years worth of historical DACUMs (1).

4. Expanded our effort to include completion of the unfinished Dept. of Labor industry-wide matrix (1).
5. Redesigned our public-facing website with a new developer to include Web 2.0 tools (2).
6. Designed the national resource repository review & approval workflow and ontology (2).
7. Created white papers on core competencies, minority recruitment & retention, expanding GIS programs through GIS as a General Education course, and leading edge technologies incorporating GIS Software as a Service (SaaS) through desktop virtualization (1, 3 & 4).
8. Create an ArcWeb services portal hosting a new national map of GIS programs (4).
9. Established relationship with the ATE Evaluation Center to incorporate GIS into project and centers (4).
10. Presented two webinars on use of ArcWeb services and Best Practices in Cartography (5).

B. Proposed effort:

In the upcoming last quarter of our first award year (Jun09-Aug09), the Center will make its most significant impacts. The first two quarters (Sept08-Feb09) were consumed with establishing the Center's technology, partnership, and accounting infrastructure, and its third quarter (Mar09-May09) was spent fine tuning itself as a result of the national advisory board's visit and report. Now that the Center is on secure footing, and has reached its operational potential, the following will occur in the remaining 90 days of year one:

1. Attend UCGIS Summer Institute: Davis, Johnson, DiBiase (Jun09).
2. Publish DACUM & Core Competency white papers (Jun09).
3. Publish minority recruitment & retention white papers (Jun09).
4. Conduct two day workshops and one day conference, GeoED @ Kentucky (Jun09).
5. Conduct five day workshop @ Southwestern College—San Diego (Jun09).
6. Conduct one day workshop and host two exhibits at the 2009 High Technology Conference in Scottsdale (Jul09).
7. Conduct summer-long hybrid credit GIS course for educators at Central Piedmont Community College (Jun09-Aug09).
8. Conduct five day GIS workshop for educators and technicians at Lake Land College (Jun09).
9. Launch its new public-facing website and national resource repository (Jul0709).
10. Host two exhibits and six papers at the ESRI User's Conference (Jul07).
11. Conduct year-end CoPIs Summer Focus Group to plan year two activities (Jul07).

Looking forward to the first quarter (Sep09-Nov09) in year two, the following events are planned:

1. Two day GeoTech Conference & Workshop, hosted by Lane Community College and University of Oregon (Oct09).
2. Present GIS "Software as a Service" paper with CoPI DiNoto at the League of Innovations CIT Conference, Detroit (Oct09).
3. Present several workshops on GIS technology at the 2009 ATE PI Conference, DC (Oct09).