

Tribal College Forum V

Hosted by United Tribes Technical College

Enhancing Tribal College Science Education in Indian Country

*Bismarck, North Dakota
Bismarck Civic Center*

September 7-8, 2006



Tribal College Forum V
***“Enhancing Science Education and Natural
Resources in Indian Country”***

September 7-8, 2006

Hosted by

**United Tribes Technical College
Bismarck, North Dakota**

Sponsored by

**U.S. Geological Survey,
Federal Geographic Data Committee,
American Indian Higher Education Consortium, and United
Tribes Technical College**



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From the Executive Director:

This year marked a time of renewal, and transition for NativeView and the TCU Forum. We had a record turnout for the TCU Forum V, and for the first time we were part of a larger Tribal gathering; the Inter Tribal Summit X. The Summit is an annual gathering of Tribal programs and Tribal leaders from many of the Nations to showcase efforts, explore ideas, foster ideals, and pass resolutions that will sustain our communities into the coming years. The Forum was embedded in all these activities. The Summit culminated with the 37th United Tribes International Powwow, where many of our speakers and participants were introduced and recognized.

The Tribal Colleges renewed their support for **NativeView, Inc.** and the TCU Forum. This too was reflected in the commentary and the record turnout. The Forum theme focused on "Enhancing Tribal College Science Education in Indian Country." We are grateful to our presidents and our colleges that were present and continue to support the **NativeView, Inc.** effort. Many thanks to Mr. Thomas Dowd of the Department of the Interior for his words during the opening address. The ensuing commentary and discussions provided by our Tribal leaders and College Presidents set the tone for the remainder of the conference. Their vision and wisdom continue to guide the trajectory of **NativeView, Inc.** and TCU science efforts. We are also grateful to the many guests that contributed their expertise in taking the Forum to another level; NASA, AIHEC, USGS EROS, UMAC and many others joined USGS in supporting the Forum and **NativeView, Inc.** Their participation underscored the importance of developing and maintaining effective partnerships among the Federal agencies, Tribal Colleges and private industry. We are especially grateful to President Gipp and his staff at United Tribes Technical College for their tireless effort in welcoming the TCU Forum into the Summit and making the entire week a tremendous success.

NativeView, Inc. is pleased to announce the **NativeView, Inc.** Workforce Development Initiative resolution that was unanimously passed by the Inter Tribal Council during the Summit. The resolution formally recognized **NativeView, Inc.** as a leader in providing geospatial resources to our Tribal communities and our TCU campuses, supports the NativeView Workforce Development Initiative focused on producing a talented capable workforce to meet the needs of our Tribes, and recommends additional funding be added to the USGS fiscal budget to support **the NativeView, Inc.** effort. This resolution sends a clear message to all that **NativeView, Inc.** has been asked to step up and deliver viable, important resources to the Tribes and Tribal Colleges to make our Nations strong.

As we look ahead to 2007, we have many opportunities and activities in front of us that will assist in meeting our commitments to our campuses and communities. We anxiously await notice of pending NSF funding that will establish a geospatial network to ensure geospatial training and resources to many TCU's that require them. We anticipate releasing the **NativeView, Inc.** strategic plan that will outline the course for the next five years. And we anticipate growing our capacity, increasing our membership, expanding our partnerships and securing funding that will solidify our place among the TCU's and the geospatial world. Lastly, we look forward with enthusiasm to TCU Forum VI. We will attempt to capture lightning in a bottle a second time by kicking off the Forum in conjunction with the Inter Tribal Summit XI in Bismarck, ND during the first week of September 2007.

Our many thanks to those that support us, our endeavor, and contribute to the future of our Nations.

We la'lin!

T. M. Bull Bennett PhD
Executive Director; **NativeView, Inc.**

Introduction and Background Tribal College Forum V:

Tribal College Forum V was held in conjunction with the United Tribes Intertribal Council Summit X and United Tribes Technical College's 36th Annual International Powwow. United Tribes Technical College, located in Bismarck, ND, served as the host tribal college. The U.S. Geological Survey (USGS) and the Federal Geographic Data Committee (FGDC) co-sponsored the Forum.

The September 2006 Tribal College Forum was the fifth annual forum which built on previous Tribal College and University gatherings, promoting the establishment and functioning of a 501c3 nonprofit corporation, **NativeView, Inc.** The nonprofit corporation is a coordinated Tribal College geospatial science education initiative spearheaded by Sinte Gleska, Oglala Lakota, Little Priest, Lower Brule, Salish Kootenai, Diné, Southwest Indian Polytechnic Institute, United Tribes Technical College, the North Dakota Association of Tribal Colleges, the United States Geological Survey, and the Federal Geographic Data Committee. The focus of this initiative is to integrate earth science technologies to benefit Indian education, improve tribal land and resource management, enhance Indian self-determination, and significantly raise the quality of life in Indian Country. Driven by a multitude of needs in Indian Country, the **NativeView, Inc.** Initiative is an innovative approach to technology transfer and empowerment within Indian Country through access to geospatial/remote sensing data and existing earth science research. Tribal College Forum V included more than 100 attendees representing 25 Tribal Colleges and 11 Tribal College Presidents. Presentations and panel discussions focused on the theme, "Enhancing Tribal College Science Education in Indian Country." Forum presentations included topics such as: "Successful Partnerships," "Geoscience Tools," "Natural Resource Problem Solving," and the "**NativeView, Inc.** Initiative Updates."

The morning session of the Forum consisted of five presentations, including a keynote address by Thomas Dowd, Director, Office of Indian Education, U.S. Department of the Interior. Dr. Phil Baird, Vice President, Academic Affairs, United Tribes Technical College, served as facilitator. The speakers represented various Tribal Colleges and organizations including United Tribes Technical College, Sinte Gleska University, the USGS, and the America Indian Higher Education Consortium (AIHEC).

A more detailed abstract of each presentation is included as appendices to this report. These presentations were selected to show a broad and diverse use of geospatial and remote sensing technology on tribal lands across the United States.

NativeView, Inc. Vision

NativeView, Inc. is a consortium of tribal colleges working on behalf of all tribal colleges. With a motto of, "Our Land, Our People, Our Future" the vision of **NativeView, Inc.** is to protect and promote the resources and welfare of tribal nations and their people through focused collaborations.

NativeView, Inc. Mission

The **NativeView, Inc.** mission is to EMPOWER Tribal Colleges and Universities and tribal communities with education, integration and application of geospatial technology to meet the cultural, academic, scientific, policy and management needs of the people they serve.

NativeView, Inc. Leadership Board

- **Executive Director** – Dr. T.M. Bull Bennett, Tribal College Science Coordinator, North Dakota Association of Tribal Colleges. 701-223-4100 or badbull7@yahoo.com, bbennett@ndatc.org
- **Board Chairman** – James Rattling Leaf, Sicangu Policy Institute, Sinte Gleska University. 605-856-8100 or james.rattlingleaf@sinte.edu
- **Recording Secretary** – Judi Wood, Bison Project Coordinator, Lower Brule Community College. 605-629-6041 or Judi@lbcc.cc
- Jan Bingen, Computer Science Department Chair/Instructor, Director of Native IMAGE, Little Priest Tribal College. 402-878-3312 or jbingen@lptc.bia.edu
- Mike Collins, Tribal Environmental Science Instructor, United Tribes Technical College. 701-255-3285 or mcollins@uttc.edu
- Tammie Grant, GIS Instructor and Education Outreach Coordinator, Salish Kootenai College. 406-275-4800 or 415-380-8747 tamgrant@comcast.net
- Dr. Sylvio Mannel, Remote Sensing Manager, Oglala Lakota College. 605-455-6137 or smannel@olc.edu
- Gene Napier, Central Region Native American Liaison, U.S. Geological Survey. 605-594-6088 or enapier@usgs.gov
- Bonnie Gallahan, Geographic Information Office, U.S. Geological Survey, Federal Geographic Data Committee. 703-648-6084 or bgallahan@usgs.gov

The moderator for Tribal College Forum V was Dr. Phil Baird, United Tribes Technical College, Bismarck, ND

For more information about **NativeView, Inc.**, please visit www.nativeview.org

Morning presentations: Thursday, September 7, 2006

Dr. Phil Baird, Vice President, Academic Affairs, [United Tribes Technical College](#) - Opening Ceremony and Prayer

Dr. Phil Baird, Vice President, Academic Affairs, [United Tribes Technical College](#) -Introductory remarks

- What separates tribal colleges from mainstream institutions is that we embrace the culture of our ancestors; we're community oriented
- We face the challenge of how to walk in two worlds. How do we move forward in a technological world yet embrace our culture
- What is the role of [NativeView](#)?

James Rattling Leaf, [Sinte Gleska University](#) – President, NativeView, Inc.– Tribal College Forum V Theme: “Enhancing Tribal College Science Education in Indian Country”

- Birth of the NativeView concept occurred six years ago
- Sinte Gleska University and USGS signed an agreement in 2000 in an effort to strengthen their relationship
- “Remembering [Dr. Vine Deloria, Jr.](#)” – Effort is underway to establish a Tribal College Scholar Initiative next year in memory of Dr. Deloria, a renowned author and American Indian leader who died in 2006.

Forum Goal

- To build the necessary partnerships and strategies for strengthening the development of sustainable geospatial technology and programs at Tribal Colleges and Universities by:
 - Explore opportunities for funding curriculum development and research enhancements in geospatial technologies
 - Examine incentives to help reduce risk for geospatial development
 - Identify critical pathways to successful geospatial technologies
 - Accelerate geospatial development and applications in Indian Country

Desired Outcomes

- Defined role for **NativeView, Inc.** on each tribal college and university campus
- Broad support for **NativeView, Inc.** infrastructure
- Identify and engage existing geospatial training activities at federal agencies, such as the Federal Emergency Management Agency (FEMA), to include tribal colleges
- Define, engage and implement geospatial networks and coalitions that support tribal college geospatial programs
- Identify geospatial needs in Indian Country
- Develop study programs to address actual needs and create jobs

Our Vision and Mission

- "Our Land, Our People, Our Future." The vision of **NativeView, Inc.** will be to protect and promote the resources and welfare of tribal nations and their people through focused collaborations.
- The NativeView mission is to EMPOWER Tribal Colleges and Universities and tribal communities with education, integration and application of geospatial technology to meet the cultural, academic, scientific, policy and management needs of the people they serve.

- **What is NativeView, Inc.?**
- A Partnership-Tribal Colleges and Universities (TCU), USGS and Others
- Merge of Geosciences and Native Knowledge
- Technology Transfer and Economic Development
- Access to Data, Technology and relevant science
- An Integrator
- Vehicle for a National Geoscience Blueprint
- Sustainability through LEADERSHIP

- **Alliance**
- Create and sustain a unique and symbiotic alliance between NativeView and the TCU's
- Respond to the needs of the TCU Science agenda
- Seeks to build on existing strengths in order to nurture and enhance the TCU-NV alliance

- **Strengths of TCU's**
- They Work!
- Bi-Directional Contribution to Geosciences
- Untapped Intellectual Capital Resource
- Culture Resilience
- Human Dimension
- Success Stories

- **Directions**
- Use of geoscience in Education
- Promote Community Based Applications
- Create an inter-tribal college informational system that provides access system of geospatial data for American Indian peoples and their communities
- Promote geospatial technologies and derivative information with tribal wisdom, inter-generational knowledge, and ethno-scientists

- Facilitate cooperation between education and Tribal governments in remote sensing and digital mapping through cost sharing
- **Next Steps**
- Core Program Needs
- Mentoring and Professional Development
- Infrastructure
- Opportunity Funds
- Continuity of Strategic Planning
- University Governance

Summary

- Geoscience research, education, and practice is highly interwoven and requires increased emphasis on integrated, synthetic efforts
- Creative expertise from all relevant disciplines must be engaged to solve the common challenges facing geoscience research and education.
- Advancement depends on extensive cyber infrastructure, observing systems, a trained workforce, and coordinated community participation
- Effective partnerships and communication among academic, governmental, and private organizations are needed to address major geoscience challenges

Keynote Speaker: Thomas Dowd, Director of Bureau of Indian Education (BIE), Department of the Interior (DOI)

BIE brief background and introduction, Dr. Phil Baird

- Tribes control Indian education. The 'No child left behind' edict could use some radical changes.
- Bureau of Indian Education (BIE) is a newly formed bureau; Dowd has been the director of the program for just 12 weeks and has taken on the challenge of Indian education.
- Prior to this position he served with the Department of Labor for 12 years



Thomas Dowd, Bureau of Indian Education, DOI, provides a keynote address at Tribal College Forum V, September 7, 2006, Bismarck, ND

– **Keynote Address: “Tribal College Priorities”**

- **Message** BIE is designed and structured to communicate the importance of Indian education
- Secretary of the Interior is committed to Indian education and established the BIE in June (2006)
- Bureau of Indian Affairs (BIA) helps educate 10% of Indian students in K-12. The remaining 90% are enrolled in the Public School Systems.
- BIE core mission is to support pre-K to post secondary, and “lifelong learners”. TCU’s need to be engaged with the BIE mission
- Multi-tasking/Multi-stimulation is everywhere but we all have our limits
- We now have more information coming at us than at any time in history. But information is useless until you internalize it to what you know and put it to use
- So many devices are available today to give us that information. In geoscience, how do we take that information and combine it with all the other information we receive to make it useable
- Tribal lands are spread out and the people are often isolated. Roads are bad, communication systems are obsolete, infrastructure is falling apart, people are poor and unemployment is at 85% in some areas. This isolation can and has hindered development opportunities

- Most people only know what they've seen in the movies and do not understand Indian isolation. Indians are surrounded by the strongest nation in the world. How can they be isolated?
- Indians control a land base and control what goes into the reservation. Geospatial technology can bring in a huge amount of information and can help reverse the isolation of Indian people
- Indians can and should decide how to use and apply the information available through Geographic Information System (GIS) and Global Positioning Systems (GPS) on their lands
- High technology is all around us and Indian education needs to be updated as the technology evolves
- Nationwide, rural areas are losing population except in Indian Country. Indian communities are growing and what they are growing is the nation's workforce.
- Partnerships are key. Indian and non Indian people need to work together collectively. There must be a desire to collaborate.
- Making a commitment to getting something done gives purpose and meaning to your partnership
- Mindset and perspective about geographical location must be changed so we can determine how to develop opportunities with what is available
- A shared sense of direction and accountability can make things happen and TCU's are positioned in such a way to protect our homeland and develop opportunities through geospatial technologies
- Networks between the federal government and organizations (such as NativeView) need to be well maintained and it takes a lot of work to maintain those relationships
- Indian people bring a different perspective to the mainstream educational environment. Innately and historically, Indian people have a tremendous opportunity to unlock their ancestral, traditional knowledge and explore the many fields in science and technology
- There needs to be more of a desire to support and conduct research. It should not be just an academic exercise. Research must be put to practical use
- Look to the Department of Labor (DOL) for training and for funding. The DOL's job is to create jobs and they are always looking for training and career opportunities to pursue.
- The United States is a small community and we all have to live together and get along. Our actions and especially our words are very important to developing relationships and partnerships. What we say and how we say it determines the outcome of partnerships

Q & A answers (paraphrased):

- I am the only one at the BIE at this time but I would like to hire seven people with one position being an Associate Director for post-secondary education. I need someone to fill that senior executive

position and I'm asking you to encourage people you know to apply for the job.

- I don't think training programs should just produce workers based on what the trainees or students want. From my experience with DOL it is more efficient to focus on the demand side. We need to learn what the employer wants and then build training programs to develop skills to meet the needs of employers. Regardless of the training program, it is vital that trainees have language and writing skills in addition to problem solving skills.

Dr. David Gipp, President, [United Tribes Technical College](#) – Welcome and Remarks

- 51% of the Indian population in North Dakota is under the age of 25.
- TCU's accept non-Indian students and lose money on those students.
- TCU's receive no state support but they need partnerships and need to work with the states and the non-tribal universities.
- Issues of science and math are quite critical to the future of Indian Country.
- Gipp served as a member of the "P-16 Taskforce" for the state of North Dakota. ("P-16" meaning learners from pre-school through post-secondary).
- The P-16 Taskforce will soon make recommendations to the four major boards of education in the state.
- Recommendations may include a "curriculum of rigor" in math, science and language arts, with emphasis on "special populations" of students.
- According to Dr. Gipp, 10% of all children who attend public schools in North Dakota are Native American.
- There is much work to do at every level of education.
- Skills in math, science and language arts are crucial to tribal peoples' success, survival, quality of life, sovereignty and all other issues that relate to tribal nations.
- United Tribes Technical College (UTTC) in Bismarck has seen tremendous growth in enrollment. Three years ago there were 375 students. Now there are over 1,100 students enrolled. UTTC has actually had to cap enrollment this year.
- Resources of federal agencies are critical for the future of tribal colleges.
- North Dakota tribal colleges have approached the state six times for financial support. Each time the colleges have been unsuccessful in securing funding.
- New partnerships need to be created to strengthen Tribal Colleges and Universities.
- When forming such partnerships, it is critical that people in Indian Country directly benefit from them.

- Mainstream institutions are the worst abusers of that. (This may be in reference to research that is simply an academic exercise.)
- There must be better recognition of traditional or Indian tribal scholars

Presentation: “Our Land and Our People,” Dr. Lionel Bordeaux, President, [Sinte Gleska University](#)

- Indians and non-Indians are coming together to explore the potential of new technologies, and are mapping out a “blueprint for our future”
- The land is the “blood and the bones of our ancestry.”
- Land and people and science and technology go together. “It’s the future.”
- Native peoples have always been a part of nature and have a responsibility to the natural world.
- Economics and education should be brought together.
- Tribal colleges cannot rely on “soft money” to fund facilities and programs.
- Federal priorities are not on Indian higher education at this time and programs are being cut.
- We need to develop partnerships, collaborations and our own resources with what we have at home.
- Dr. Bordeaux wants to build an alliance of all stakeholders for a National Indian Education Institute.
- Sinte Gleska University (SGU) joined the International Education Institute at the invitation of New Zealand’s native people.
- Indian sovereignty is misunderstood. Encourages a “Sovereignty March” and 4 days of prayer in Washington, D.C. to bring attention to the issue.
- TCU’s originally focused on teaching teachers and built credibility by succeeding. TCU’s now shifting focus to the sciences.
- TCU’s couldn’t get federal support in their early years (30+ years ago) and the movement was perceived as a threat and met with resistance.
- TCU’s were told to seek support from Indian organizations and they were told by government agencies to stick with arts and crafts and agriculture.
- TCU’s can provide financial development through economic development.
- Last year, Dr. Vine Deloria, Jr. asked Lionel to stand in for him at a speaking engagement on the subject of sovereignty. They made a video to help him stand in.
- The Tribal College Forum participants were shown a 5-minute video with comments from Dr. Vine Deloria, Jr.:
- Indian people are heavily influenced by spiritual values, as shown in Deloria’s wise words.
- We are devoted to knowledge about our environment.
- The Black Hills are a holy land to the Lakota and many other tribes.

- Dr. Bordeaux shared a Lakota story on creation of Bear Lodge and Devil's Tower.
- There are many sacred places in and around the Black Hills and many unusual geologic formations.
- Something very big happened in the Black Hills, some kind of major disaster, something so big it changed the constellations in the sky.
- Elders know these stories and research of these stories will answer, "What happened?"

Afternoon session: Thursday, September 7: Tribal College Consortium presentations.

Opening remarks: Dr. Phil Baird, TCU Forum V Moderator

- **NativeView, Inc.** is now at a turning point
- Why are we here?
 - Community Service
 - Rebuild Indian Nations and Sovereignty
 - Bring technology to Tribes through collaborations

Presentation: "Leveraging Tribal College Education and USGS Research," Dr. Thomas Casadevall, Director, USGS Central Region

- Five disciplines of USGS
 - Geospatial Information
 - Geology
 - Geography
 - Water Resources
 - Biology
- The USGS is the second oldest agency within the Department of the Interior (BIA 1st).
- Approximately 10,000 people employed by USGS.
- Three Regions: Eastern, Central, and Western
 - Eastern Region is comprised of land east of the Mississippi River
 - Western Region is comprised of land west of the Continental Divide
 - The area in between is the Central Region. Most Tribal land is located in the Central Region
- USGS is a science agency and has offices in every state.
- Sue Marcus (Washington, D.C.) is the agency's National Native American Liaison.
- Gene Napier, Center for Earth Resources Observation and Science (EROS), Sioux Falls, South Dakota, is Native American Liaison for the Central Region and his primary responsibility is the facilitation of USGS activities involving Native Americans.
- USGS interest in **NativeView, Inc.** stems from the agency's focus on the wise management of *all* lands.

- Because of this directive, there is no specific focus on certain private land holdings, or segments of U.S. managed lands such as National Park Service or Forest Service.
- Tribal land holdings, in the lower 48 states as well as Alaska, rival the Bureau of Land Management and the U.S. Forest Service in breadth and scope.
- Overriding theme is to reach out and be proactive and work in a collaborative way.
- USGS doesn't have an Education Department but it does have education programs.
- USGS signed a Memorandum of Understanding (MOU) with Sinte Gleska University in 2000.
- The vows of partnership and collaboration agreed to in 2000 were renewed with a new MOU signed in 2006.
- Overriding theme is to reach out and be proactive and work in a collaborative way.
- USGS is working with Tribes and TCU's on watershed and water quality issues
 - Provides assessment of issues and funding
 - Provides Hydrotech training
 - Is actively involved in the actual work

“One Landscape, Two Cultures”

- Native peoples value historic traditions.
- We must blend Western science perspectives with traditional indigenous perspectives and values.
- Native American people have an integrated, holistic view of the natural environment whereas non-Indian people see the land as “partitioned.”

USGS areas of education

- Hydrotech training (a collaborative effort with the Bureau of Indian Affairs).
- Encourage the direct involvement of tribal colleges with USGS research.
- Provide funding for studies that directly involve Native American students.

Introduction: “Tribal College Presidents Panel,” Cheryl Crazy Bull, President, Northwest Indian College; President, American Indian Higher Education Consortium

Panel:

Dr. Kim Winkleman, President, [Comanche Nation College](#), Lawton, OK
 Dr. Laurel Vermillion, President, [Sitting Bull College](#), Fort Yates, ND

Dr. Jeffrey Hamley, President, [Southwestern Indian Polytechnic Institute \(SIPI\)](#), Albuquerque, NM

Dr. Cynthia Linquist Mala, President, [Cankdeska Cikana Community College \(Little Hoop\)](#), Fort Totten, ND

Dr. Jim Davis, President, [Turtle Mountain Community College](#), Belcourt, ND

Dr. Winkleman

- Comanche Nation College is a new tribal college with 400 students
- There are 39 tribal nations in Oklahoma

Education and Culture – Shifting the Paradigm

- We, as a tribal college movement, need to get our Indian students involved in science.
- We must instill in our students the need to take a leadership role, take responsibility, stand up and move forward.
- “Know who you are” and instill that in the next seven generations.
- People keep saying, “We have to get more Indians involved in science. But we *already are involved* in science!”
- Our Earth-based knowledge is already there. There’s another way to look at science.
- Our creation stories and oral traditions are science-based, and are being validated today (example: the planting and harvesting of crops).
- We all have to be ambassadors to shift the mindset in science and methodology.
- Mainstream universities, like Berkeley, etc., and the western culture should learn about and interpret indigenous knowledge.
- Tribal colleges should also push tribal leadership to develop a greater understanding of our education system.
- Promote the “NativeView” of who and what we are (in reference to the name of the intertribal geospatial technology initiative).
- The methodology of Indian people is different. We are all stewards of this planet.

Dr. Vermillion

Facilities

- With the help of grant funding, Sitting Bull College in Fort Yates, ND now has two new facilities.
- One is the Science Department, which has moved up from a double-wide trailer to a new building with three labs and classroom space.
- Although the college has newer facilities, there is a continuing need for funding and training of faculty and staff.
- Partnerships to facilitate that training must be pursued.

Preparing for the future

- Young learners must prepare now for the more difficult science and math courses they will need to take later in their educational career.

Program offerings

- Sitting Bull College offers two 4-year programs in Education and Business Administration.
- The college would like to offer an Environmental Science program as well.

Dr. Hamley

- Southwestern Indian Polytechnic Institute, or SIPI (pronounced SIP'-EE), offers an Associate of Applied Science degree in Geospatial Technology.
- 10 students are in the program right now.

“Relevant Curriculum”

- SIPI partnered with one of the region’s Pueblos. Residents of the Pueblo wanted to map out their village for emergency response services (fire and police protection).
- Students from the Institute mapped the village.
- SIPI wants a *relevant curriculum* involving internships and partnerships like the mapping project mentioned above; also would like to partner with government agencies, etc.
- SIPI wants to engage students at an early age to develop an interest and a background in science.
- SIPI also wants to pursue high school outreach programs that offer pre-college-age students credit in subjects like engineering.
- The programs must be grounded in tribal culture.
- Institute also wants to increase outreach to tribes with a “visibility project” in a four-state region including New Mexico, Arizona, Oklahoma and Colorado.

Dr. Linquist Mala

- Described STEM: Science, Technology, Education and Math
- Cankdeska Cikana Community College (CCCC, formerly Little Hoop) had problems with its accreditation and spent 18 months on probation.
- CCCC emerged from probation with 10 year accreditation from NCA
- CCCC presently has 50 employees, 16 faculty and 240 students, including 50 new students this year.
- Last year, the average educational aptitude of 56 students was at the 7th and 8th grade level.

- Others tested at the 2nd and 3rd grade levels.
- The community college grapples with the varying skill levels of students, but knows the students have talents and abilities that just need to be cultivated.
- The mission of the college is to preserve native culture and language.
- CCCC doesn't care what the big universities (such as the University of North Dakota and Massachusetts Institute of Technology) think about them. CCCC cares about what is happening with CCCC.
- TCU's need to share resources and better align and connect themselves to other Tribal Colleges and Universities instead of reinventing the wheel.
- Tribal colleges need to better educate tribal leaders about what we do in education in general.
- In turn, tribal leaders must better understand education issues, which ultimately impact funding and policy decisions.
- Connections and relationships are culturally based.
- GPS is an example of a tool that is "connecting" us.
- Technology will help us in our planning activities.
- Wants her staff to tell her what they think the college should be doing and be specific about their needs but don't dwell on money issues.
- Wants to stay informed regarding **NativeView, Inc.**'s activities and progress.
- What is **NativeView, Inc.** doing to communicate with TCU leaders?

Dr. Davis

- Outlined a strategic 10-year plan on the part of the Turtle Mountain Band of Chippewa to reduce poverty on the reservation
 - *Inclusion*: Involve *everyone* on the reservation, from youngsters to the elders, in this initiative
 - *Infrastructure*: for our community and our reservation
 - *Economic Development*
- Turtle Mountain tribe is one of three tribes to receive a \$10-million grant over 10 years from the [Northwest Area Foundation](#).
- The Department of Housing and Urban Development designated the reservation a "renewal community" in 2002.
- Davis notes seeing some "exclusion" in how tribal colleges operate, in particular Turtle Mountain.
- There hasn't been enough sharing of resources between the college and other groups. Partnerships and a good collaborative effort between the college and other entities need to improve.
- Briefly mentioned the American Indian Higher Education Consortium.

Research

- Turtle Mountain Community College is one of the few tribal colleges involved in medical research.
- Focus is on pre-natal research.
- The college is also involved in mosquito research and has identified 26 different species of mosquitoes on the Turtle Mountain Reservation, which could be important in disease control and management. There are 160 species of mosquitoes in the U.S.; 40-plus species have tested positive for the West Nile virus.
- Turtle Mountain Community College students were also involved in research this past spring in developing a space flight suit.

Research grants and protocol issues

- Large universities have access to huge amounts of research money.
- University of North Dakota has been able to acquire \$350-million in research, including some studies on reservations.
- Major universities in North Dakota such as the University of North Dakota and North Dakota State University often come to the TCU's and tribes for help with grant proposals because Native American involvement may improve the chance of a proposal being funded.
- Tribal entities are often asked at the last minute to help support these research efforts.
- There are no protocols in place for research on the reservation.
- Sometimes the large universities play the tribe off the TCU.
- We need to set some protocols and insist that the researchers involved, (staff, faculty, students) are Native Americans themselves.
- Our culturally-based science degree programs are as good as or better than mainstream education programs.
- The Office of Homeland Security should include TCU's, Tribes and tribal agencies in their meetings and plans.

Presentation: "AIHEC STEM Strategic Plan," Carrie Billy, Deputy Director, American Indian Higher Education Consortium

American Indian Higher Education Consortium: Collective Voice and Spirit of TCU's...

- 35 members
- 13 states
- Federal Agency Partners
- National Education Partners
- International Partners

Policy Development

- U.S. Congress

- Executive Branch
- National Education Organizations
 - Networking
 - Mentoring
 - Kinship
 - Sharing

New Initiatives

- Based on TCU needs as defined in Strategic Plan

Member Services

- Workshops
- Institutional Development
- New Institution Support

Key AIHEC Initiatives for Institutional Support

- Land-grant Title III HHS legislation
- Indigenous Evaluation Initiative
- AIMS Data Collection
- Leadership Development
- Culture and Language
- Health and Community Service
- Technology and Science Technology Education and Math
- Capacity Building
- Facilities
- International
- Policy Development

Policy

- FY 2007 and FY 2008 Appropriation Processes
- *Need:* Major Energy (DOE) Initiative
- *Need:* TCU Cyber infrastructure Initiative
- **Tribal College Technology Enhancement Act**
- National Science Foundation (NSF) TCUP Changes (5 + 5)
- Universal Services Participation
- TCU Technology Endowment
- Indians into Technology Program
- **Farm Bill Reauthorization: 2007**

Resource Development

NASA-AIHEC: Planning and Capacity Building: \$7.5 M (5 years)

NSF-TCUP: \$60 M from FY01-05; \$13 M in FY07

Department of Defense: Equipment & Experimentation: \$23 M

Infrastructure

- Sustainable Funding:
Department of the Interior Budget and Appropriations

- Title III Changes!
Formula w/base levels

- **Research and Development**
- NASA-AIHEC Summer Research Experience
- Year-round, Campus-based Research
- Faculty Development
- *Practice, Training & Mentors, Key & Emerging Issues*
- NSF: Broadening TCU Participation in Computing
- NSF CI-TEAM: Cyber Infrastructure Institute (w/Alliance)
- NASA Engineering Strategic Planning
- AIHEC Virtual Library:
 - *Moving to integrated Library, Archives, and Museum Services*

Education and Human Resources

- AIHEC Indigenous STEM
- Evaluation Project
- Annual AIHEC STEM Institute
- NSF-TCU Program: Basic STEM programs
- AIHEC STEM Portal

International Initiatives

Environmental Protection Agency: Indigenous Environmental Higher Education Network of the Americas

Kellogg Foundation:

WIPCE 2005: Kellogg-AIHEC Delegates

WINHEC-USA: Accreditation, Portal, Outreach

NMAI: Indigenous Knowledge Management Project

Through a Multi-year, Coordinated, & Collaborative Effort, TCU's are Leading Their Communities with Innovative & Cost-Effective Use of Technologies

Policy & Resource Development:

- Human and Infrastructure
- Capacity Building
- Coordination and Partnering
- Research and Development
- Culture and Language
- International Outreach

- Indigenous STEM Evaluation

Student Engagement

- Identify Student Success Factors
- Disseminate Best Practices and Encourage Sharing
- Inclusion in TCU STEM Proposals:
 - *Best Practice Templates*
- Professional Development
 - *Program Design, Best Practices*

Coordination, Communication, Leadership, & Policy Development

- AIHEC STEM Portal: *Expansion and Use*
- Enable efficient communication
 - *Among TCU's and with partners*
- Encourage broad-based collaboration
- Expand participation in AIHEC STEM Committee
- Native Leadership Development Program
- Legislative Strategy to Expand STEM

STEM Research

- **Undergraduate Research Experience:**
 - *Summer Research Experience (NASA)*
 - *Year-round, Campus-based Research*
- **Cyber infrastructure Initiative for TCU's**
- **Professional Development in Research:**
 - *Design, Practice, Key & Emerging Issues*
- **Multi-Campus Research Collaborations**

AIHEC STEM:

The Need to Coordinate...

- **NativeView, Inc.**
- FALCON
- TCU Faculty
- Alliance
- AIHEC AIMS
- Student Support Services

AIHEC STEM:

A Strategy... AIHEC STEM Committee

- **NativeView, Inc.**
- FALCON
- TCU Faculty
- Alliance
- AIHEC AIMS

- Student Support Services

AIHEC Philosophy

“It’s All of Us, or None of Us”

Dr. Lionel Bordeaux, Sinte Gleska University

Carrie Billy Remarks:

- Budget decisions for Indian education and AIHEC have been deferred by Congress until after the November 7th (2006) elections.
- In 1999 most TCU’s were using dial-up internet connections. The STEM Institute’s first goal in 1999 was to get T1 connections to the TCU’s. In the past 6 years there has been a great deal of progress on that goal.
- “It’s critical to keep (TCU) Presidents engaged, informed and involved!” They need to understand what **NativeView, Inc.** and AIHEC are doing so they (the Presidents) can be our advocates.
- **NativeView, Inc’s** board members are encouraged to attend the AIHEC Presidents board meetings. Meetings are open and everyone gets to vote.
- There are for-profit contract opportunities with federal land agencies out there...How do TCU’s get involved?
- Suggests TCU’s form a coalition to monitor opportunities. A coalition is more effective than working alone.
- Every federal agency has a different paperwork system and (Indian) students trained in dealing with that would have an advantage in being hired. TCU’s could provide that training.
- A degree in Environmental Science and/or Business Management will be helpful to Indian students seeking employment at federal agencies.

(Carrie Billy concluded by providing AIHEC contact information, which is included at the end of this report.)

Closing comments for the day: Dr. Phil Baird, Moderator

- **NativeView, Inc.** needs to do briefings. Briefings are key to soliciting support.
- FALCON is way ahead of **NativeView, Inc.** on this.
- **NativeView, Inc.** has to step up and begin doing this.
- 1 or 2 pages (Monthly? Quarterly?) will keep TCU Presidents informed on the issues and what’s needed.
- TCU Presidents are experts at raising funds.

Dr. Lionel Bordeaux, President, [Sinte Gleska University](#) - Closing Prayer

Poster Session and Reception – Tribal College Students and Faculty
Second Floor Atrium of Bismarck Convention Center

Grand Entry: United Tribes 37th International Pow Wow
United Tribes Technical College Lonestar Arena, UTTC Campus

Morning Presentations: Friday, September 8, 2006

Dr. Phil Baird, Vice President, Academic Affairs, [United Tribes Technical College](#) - Opening Prayer

Overview of what NativeView has done this year

Dr. Bull Bennett – [North Dakota Association of Tribal Colleges](#), Executive Director of NativeView Inc., Bismarck, ND

- Within the next few days NativeView will be officially incorporated
- NativeView was recognized by industry at the Environmental Systems Research Institute ([ESRI](#)) conference.
- ESRI presented NativeView with the “Making a Difference” award for 2006.
- Goals for **NativeView, Inc.** include: funding and expanding partnerships, developing science agendas to support tribal colleges, providing research opportunities for TCU students, supporting TCU faculty research endeavors, developing geospatial curriculum, and providing geospatial training for Tribal communities.

Keynote: Global Change Impacts in Indian Country

Dr. Dan Wildcat – [Haskell Indian Nations University](#), Lawrence, KS

- Dr. Wildcat was one of the last students of Vine Deloria, Jr.
- Deloria is considered the “dean” of American Indian critical thinking.
- Deloria authored a book titled “God is Red” in 1973.
- From chapter 5 to chapter 8 of “God is Red” Deloria writes about space and time and the indigenous paradigm.
- Deloria pointed out there is a big difference between the way European immigrants and Indian people view history.
- Non-Indians think of time while Indians think of space.
- Wildcat believes Indian people have an opportunity in the next few years to make important changes in societies that have serious challenges ahead of them; the most serious challenge being global warming.

Three Myths about Climate Impacts

- ***Indigenous traditions and relationships with nature are “romantic”***
 - Native people must adamantly challenge that label.
 - Native culture reflects the landscapes.
 - Make no apologies for doing science indigenously.
 - Take seriously the past knowledge of our ancestors.
- ***Native traditions are relevant to the present***
 - There are lessons to be learned from our ancestors.
 - Look at the customs and habits that allowed our ancestors to live in places for long periods of time without exhausting resources.
 - Example: our [National] corporate agricultural system is “living on chemotherapy” and is unsustainable.
 - Our [National] economy largely runs on a “bank account of fossil fuels.”
 - We are living in ways that have deadly consequences for our life systems.
 - Technology won’t solve all of our problems.
- ***Native people lack formal institutions of education***
 - That can be viewed as a positive because indigenous people learn through custom, habit and ceremony.

How Society Views Nature

- Non-native people see “resources” when they look at nature.
- Today’s society has an “Automatic Teller Machine” view of nature; just push a button to get a resource on demand.
- We need to start thinking in ways where we don’t separate economic issues from environmental issues.

GIS – Generative Indigenous Systems

- An indigenous spin on geographic information systems.
- Remote sensing can inspire our young people.
- GIS can be used to reengage how indigenous people live.
 - Material culture
 - Symbiotic interaction with landscapes
 - Lead to indigenous sovereignty

American Indian Alaska Native Working Group

- Seeking volunteers who recognize the application of indigenous knowledge today.

- If there is going to be hope for the future, indigenous people will play a role.

Climate Change *is* Happening

- Quoting [Dr. Oscar Kawagley](#), Associate Professor of Education at the University of Alaska Fairbanks College of Liberal Arts and author of [“A Yupiaq Worldview: A Pathway to Ecology and Spirit:”](#)
- “The cold is what gave us identity and helped us to know place...”
- “Connections to our ancestors, flora, fauna, and place serve as memory devices to tell us who we are...”
- “Nature speaks in wholes...”There’s nothing abstract about climate change.
- We need to start thinking about models of *adaptation*.
- Global climate change is happening no matter what landscape you live in; the Plains, the Gulf Coast, etc.
- Ecological environmental niches are changing.
- The science journal *Nature* will publish an article in mid-September about permafrost melting five times faster than anticipated.
- We need *old ways* of approaching things; taking insights from how our ancestors lived and applying that knowledge today.

Panel Discussion

Building on Geospatial Collaboration: Examples of Tribal College Initiatives

- Gene Napier, [USGS Central Region and Geography Discipline: American Indian/Alaska Native Liaison, USGS Center for EROS](#)
- Ione Quigley, [Lakota Studies Chair, Sinte Gleska University, Mission, SD](#)
- Maury Estes, Project Manager; [National Space Science and Technology Center](#)
- Dr. John Phillips, Executive Director of [First Nations Land Grant Colleges Organizational Network \(FALCON\)](#)
- Terry Tatsey, [Blackfeet Community College, Browning, MT](#)
- Phyllis Howard, [North Dakota Association of Tribal Colleges \(NDATC\)](#)
- Dr. T.M. Bull Bennett, [North Dakota Association of Tribal Colleges, NativeView Inc.](#)

Group Lunch at Minerva’s sponsored by USGS

Afternoon Presentations: Friday, September 8, 2006

Presentation: “Indigenous Knowledge Center for Education (IKCE – SI)” Ione Quigley, Anthropologist, and Sarah Wolfe, USGS Intern, [Sinte Gleska University, Mission, SD](#)

Sinte Gleska University laid the groundwork for the Indigenous Knowledge Center for Education. Lone plans to do a seminar on this topic. Check the website for more information. <http://www.sinte.edu/ls/>

- Lone plans to integrate this information into SGU's curriculum

Q & A answers and remarks (paraphrased)

- Big ethics problem for Native American educators and students: How to deal with indigenous knowledge that has the potential for exploitation?
 - Sue Marcus and Gene Napier are looking to indigenous knowledge to improve USGS science—not to exploit it
 - Sage is only one of many plants that can be exploited and maybe destroyed.
 - Need to view plant groups as families, not clusters. Don't pick the biggest, that is the Grandfather and the large Grandfather plants put out the most toxins to ward off weed invasion.
 - **Jim Garrett:** not in favor of selling plants and animals. Suggests using a barter system. Look at economics in new way. Don't put monetary value on resources, instead put value on the overall health of the resource community.
 - **Dan Wildcat:** Indian Nations have a democracy based on respect and tolerance. The Sioux Nation doesn't go around telling the Cherokee Nation how to do things. They have their own way.

Presentation: “Accessing, Processing, and Applying Geospatial Data for the Indian Classroom and Research” Jennifer Brennan, NASA Earth Observing System Data and Information System (EOSDIS); [Goddard Space Flight Center](#), Greenbelt, MD and Roger Oleson, Land Processes Distributive Active Archive Center (LP DAAC) [USGS Center for EROS](#), Sioux Falls, SD

Jennifer Brennan:

- Has an open phone and open e-mail policy. If you have questions, just ask. “Willie Wonka of NASA”
- NASA maintains a Global Change Master Directory
 - concentrates on earth science data and services
 - can interface one data page with links to specific database information sites
 - people can post their data at this site also, such as the plant data being collected by Sarah Wolfe

Earth Observing System (EOS) is the Data Gateway

- Keyword based
- Online tutorials for navigating data sets

Who we are: Data centers and their disciplines

ASF DAAC -Alaska Satellite Facility DAAC

Fairbanks, Alaska

Synthetic Aperture Radar (SAR), Sea Ice, Polar Processes, Geophysics

GES DISC DAAC- GSFC Earth Sciences DAAC

Greenbelt, MD

Upper Atmosphere, Atmospheric Dynamics, Global Precipitation, Ocean Biology, Ocean Dynamics and Solar Irradiance

GHRC- Global Hydrology Resource Center

Huntsville, AL

Lightning, Hydrologic Cycle, Severe Weather Interactions,, Convection

LaRC DAAC- Langley Research Center DAAC

Hampton, VA

Radiation Budget, Clouds, Aerosols, Tropospheric Chemistry

LP DAAC- Land Processes DAAC

Sioux Falls, SD

Land Processes

NSIDC DAAC- National Snow and Ice Data Center DAAC

Boulder, CO

Snow and Ice, Cryosphere and Climate

ORNL DAAC- Oak Ridge National Laboratory DAAC

Oak Ridge, TN

Biogeochemical Dynamics, Ecological Data, Environmental Processes

PO.DAAC-Physical Oceanography DAAC

Pasadena, CA

Oceanic Processes, Air-Sea Interactions

SEDAC- Socioeconomic Data and Applications Data Center

Palisades, NY

Population, Sustainability, Geospatial Data, Multilateral Environmental Agreements

What we do

NASA's Earth Observing System is one of the agency's most complex projects.

- Earth Observing Satellites
- Science
- Data collection and management system known as EOSDIS.
 - EOSDIS has nine discipline-specific data centers that process, manage, document, archive, and distribute a variety of Earth system science data.

- The data centers provide an assortment of services to their data users via their User Services Offices (USO's). (e.g., on-demand data products, subsetting, visualization and data manipulation tools, etc.) The USO is each data center's interface to the public.
- Support the daily production of more than three terabytes of interdisciplinary Earth system science data
 - EOS missions
 - Pre-EOS missions
 - NASA funded field-campaigns and other Earth system and human dimension research activities.
- In FY 2005 alone, over 60 million data products and information were distributed to over 2.5 million distinct users within the science, government, industry, educational and policy maker communities.

Our data: some basics

- Earth system science data range from airborne sensor data, to remotely sensed Earth observation satellite data to validation data sets.
- Spatial and temporal resolutions can and do vary by platform, sensor and data product.
- Online access to EOSDIS data available through multiple search and order interfaces.
- Tools for processing and translating data into GIS formats are available.
- Each User Services Office has experts available to help customers with data product, data information and data tools inquiries.

Types of Data (A few examples)

- Data are primarily observations of Earth from satellites.
- For example: vegetation indices, topography, thermal anomaly fire, land cover characterization, daily/weekly rainfall data, snow cover/snow depth data, aerosol optical depth, air temperature
- Field campaign data and in situ measurements
- For example: soil moisture, leaf area index, canopy height
- Human Dimensions related data
 - For example: Gridded population, Global Rural-Urban Mapping Project,
- Airborne data
 - For example: CAMEX hurricane experiments

Available data services

- Expert assistance in selecting and obtaining data
- Online data order and access
- Professional, knowledgeable, and timely service

- Thorough data set documentation
- Current data-related news
- Referrals to other data resources
- Hands-on training and assistance
- Support of data-handling and visualization tools

Accessing Data

- Global Change Master Directory (GCMD)
 - A comprehensive database of interdisciplinary earth science data and services from NASA centers, other federal agencies, institutions and universities.
- The GCMD database contains more than 16,400 Earth science data set descriptions, and more than 1,400 Earth science services (e.g., software, analytical tools, educational resources, etc.)

For more information about the Global Change Master Directory see, <http://gcmd.nasa.gov>

Features of GCMD

- Data sets can be searched by platform, spacecraft, instrument, data center, geographic location, or project.
- If a dataset exists in the EOS Data Gateway (EDG), a special link will connect the user directly from the description to the EDG so that the data can be browsed or ordered.
- Specialized list of earth science related services are searchable
 - Examples range from specialized tools for browsing, manipulating, and visualizing EOS data products to Earth science educational products and environmental hazard advisory services.

How to find and get your data

- EOS Data Gateway
- <http://eos.nasa.gov/imswelcome>
 - Primary access point to EOSDIS and other NASA Earth system science data holdings archived at the 9 EOSDIS data centers.
 - Search-and-order tool allows users, including those without specific knowledge of the data to:
 - Search science data holdings (variety of search methods available-[e.g. geographical, parameter, temporal, etc.]
 - Retrieve high-level descriptions of data sets
 - Retrieve detailed descriptions of the data inventory
 - View browse images
 - Place orders for data products

Discover Data at Your Desk EOS Data Gateway

- Search
 - Primary
 - Instrument/Data Set
 - By Discipline
 - By Categories/Attributes
 - Cloud cover
 - Band availability

Discover Data at Your Desk EOS Data Gateway

- Spatial
 - Draw area of interest on map
 - Global Search
 - Enter latitude/longitude
 - Enter path and row

Discover Data at Your Desk EOS Data Gateway

- Temporal
 - Standard year/month/day range
 - Julian date range
 - Annually repeating range (currently not working)

EOS Data Gateway Features

- Guide documentation
 - Enables user to search archive centers online document servers for information on datasets, platforms, instruments, etc. associated with the catalogued data.
- Browse Capability
 - Allows user to explore a list of data sets or granules returned by a search by viewing:
 - Temporal coverage
 - Spatial coverage
 - Attributes(metadata)
 - Related documents(guide search)
 - Browse Images
- Order function
 - Allows user to :
 - Select data for ordering
 - In some cases, customize the individual order [for example: subsets, Digital Elevation Model (DEM), choose data output – geotiff when available]
 - Choose packaging information
 - Enter ordering information (such as shipping information)
 - Place an order

Roger Oleson:

- Has been involved with **NativeView, Inc.** since 2001
- Gave an AmericaView workshop at SGU around the time that **NativeView, Inc.** evolved into more than a concept

DAAC Data Search and Order

- The data centers have individual online systems that allow them to provide unique services for users of a particular type of data. The specific systems emphasize data products, services, and data-handling tools unique to the data center.
- Member data centers are distinguished from one another by their specific earth science discipline.

LP DAAC Data Access

- Global Visualization (GloVis)
 - <http://glovis.usgs.gov/>
 - Available Data
 - Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) L1A and ASTER L1B
 - Selected Moderate Resolution Imaging Spectroradiometer (MODIS)
 - Point and click clients (vs. search and order, for example EDG)
 - 3 clicks to data ordering
 - Browser based

Discover Data at Your Desk GloVis

- ASTER/MODIS GloVis
 - <http://glovis.usgs.gov>

LP DAAC Data Access

- LP DAAC Data Pool*
 - <http://edcdaac.usgs.gov/datapool/datapool.asp>
 - Available Data
 - ASTER L1B over U.S. and it's territories
 - Selected MODIS
 - A large disk cache (currently 58TB) of selected data
 - Monitoring distribution to ensure the right data is available.
 - Accessible as anonymous FTP for people and software.
 - Search capabilities exist, along with simple folder based directory structure.
 - Tools accessible to reproject or reformat data based on user input.

Discover Data at Your Desk LP DAAC Data Pool

- Drill down search
<http://LPDAAC.usgs.gov/datapool/datapool.asp>

Discover Data at Your Desk LP DAAC Data Pool

- FTP Directory Search
 - Browse for data through a series of directories
 - Data Group:
 - FTP ASTER
 - FTP MODIS Aqua
 - FTP MODIS Terra
 - FTP MODIS Combined
 - Dataset
 - Date
 - Data Granules
 - Data is only available as uncompressed file in HDF-EOS format

Using NASA data: Tools to help you

NASA's EOSDIS Data Centers provide tools for image processing and analysis, and for searching and subsetting data. These tools have been created by the Data Centers, NASA support staff, or external software developers.

A few examples:

- HDF-EOS Tools
 - Download tools to read, visualize, and analyze data.
 - Tools designed for data in HDF and HDF-EOS formats.
- Subsetting and Reprojection Tools
 - Product-specific data subsetting and reprojection available.
 - Subsetting by spatial coverage, temporal coverage, and data-specific variables.
- Geographical Information System (GIS) Capabilities
 - Data Centers offer data and tools for utilizing GIS functionality.
 - Some products are available in standard GIS formats.

NASA Earth Science Data Applications

Potential areas of science investigation include:

- Land use, land cover change
- Agricultural efficiency
- Wildland fire risk mitigation and wildland fire management
- Water resource management
- Wetlands preservation and restoration

- Tracking of invasive species
- Visualization

NASA Earth Science Data Applications

Wildland Fire Management

Wildland Fire Management in Pre and Post environment

- Monitoring and Forecasting Fire Danger
 - Greenness mapping estimates live vs. dead fuel ratio
 - Coupled with rainfall information
- Fire Fuels Mapping and Characterization
 - Vegetation types
 - Post-fire assessment
 - Burn severity mapping
 - Monitoring re-growth

NASA Earth Science Data Applications

Vegetation Classification

- Identifies invasive species
- Tracks vegetative growth over time

NASA Earth Science Data Applications

Wide and varied availability of study options

- Earth
- Vegetation
- Water

All of MODIS data are available at no charge.

ASTER over the United States is offered at no charge (past 2 years).

Remarks from R. J. Thompson, Director, [USGS Center for EROS](#)

- Impressed with this gathering and the things that are being said.
- Example: Dr. Winkelman, “We can do this; we don’t need your help.”
- Sees tribal educational institutions connecting more with the real issues in the community.
- To attain diversity goals, we (Federal agencies) should not be dictating objectives or doing the work.
- The Federal agency’s responsibility is to help TCU's and Tribal governments find the resources that are available and to assist you in utilizing those resources.

Presentation: “Emergency Planning in Indian Country,” Dr. T.M. Bull Bennett, Executive Director, NativeView, Inc., [North Dakota Association of Tribal Colleges](#), Bismarck, ND gave a presentation on behalf of Sophi Beym, Emergency Management Coordinator, Environmental Management Office, Bishop Paiute Tribe

Introduction

Ya'ah'teh,
shi ya Dine', Sophi Beym

My background is in Environmental Geography and American Indian Studies and GIS. I graduated (2004) and now I handle Emergency Management (EM) for the Bishop Paiute Tribe in Bishop, CA

Introduction to Emergency Management (EM)

- EM is Emergency Management.
- EM requires being light on your feet.
- EM teaches you to multi-task.
- EM teaches you emotional intelligence.
- EM is new.
- EM is required.
- EM is a perfect marriage with GIS.

Introduction to the Challenge

Objective:

Using GIS and geospatial technology for the framework to **create, implement, maintain** and **sustain** a unique and progressive Tribal Emergency Management system

Challenge

Outcome:

- An arduous academic Tribal Emergency Management program that critically challenges future Tribal leaders and critical decision makers.
- An accredited academic program in Tribal Emergency Management.
- Create confident and strong future Tribal leaders.

Pre-requisites

- Incident Command System certificate
 - (ICS100)
- National Incident Management System (NIMS) certificate
 - (ISC200, 300, 400)
- Knowledge of mapping/GIS/GPS

Curriculum Suggestions

- Basic GIS
- Aerial Photo Analysis
- Remote Sensing
 - Pre Disaster Analysis
 - Post Disaster Analysis

- GPS
- Data Administration
- HAZUS – MH
 - Basic
 - Intermediate
- Grants
- EM Policy
- Natural Disasters

Basic GIS

- ESRI provides many basic training programs online, this should be utilized to keep the costs of the program lower.
- ESRI provides industry respected certificates.
- ESRI provides software, training and support to Tribal governments.

Aerial Photography Analysis

- Utilize both before and after a disaster.
- Utilize to assist in building geographically specific EM.
- Utilize to critically analyze new infrastructure locations.
- Image interpretation
 - Size, Shape, Shadow, Tone & Color, Texture, Height and Depth, Site, Situation and Association

Remote Sensing

- Utilize both before and after a disaster.
- Utilize to assist in building geographically specific EM.
- Utilize to critically analyze biomass and non-biomass debris in specific locations.
- Long term studies
 - Mold, Insect Infestation, Chemical or Biological Contamination

EM Policy

- Multi-disciplinary approach
- American Indian Studies Component
- Tribal Business Law
 - Economics
 - Fiscal Administration
 - Political Science
 - Continuity of Government
 - Tribal Resolutions for EM plan
 - Tribal Ordinances
 - Mutual Aid Agreements
 - State, County, Local & Vendors
 - Technical writing
 - Communications

- Public Information
 - Tribally specific

Grants

- Technical and metadata writing skills
 - DHS Geospatial Data Model (2006)
- Grant proposals
- Financial Administration
- Post Award
 - Plans v. Project
 - Planning
 - Milestones
 - Risks and Issues

HAZUS–MH(I)

Introduction to HAZUS-MH

- Using projects and skills from previous courses the baseline data sets should be appropriate.
- Hazard Vulnerability Analysis
 - Geographically specific analysis
- Critical Resource Analysis
 - Utilities, Potable Water, Wastewater....
- Historic Preservation
 - Tribally critical areas
- Debris Management

HAZUS–MH(II)

Applied HAZUS-MH

- BIT-MH
 - Building Import Tool for HAZUS-MH
- INCAST
 - Inventory Collection and Survey Tool
- AEBM
 - Advanced Engineering Building Module
- Model: Communications, Bridges, Pipelines, Socio-Economic, Mitigation, Benefit/Cost Simulation, Response & Recovery

Natural Disasters

- Environmental Geography/Geology
 - Hazards
 - Resource utilization and disposal
 - Intelligent environmental planning
- Examine normal processes of the Earth that concentrate energies and express heavy tolls to humans and human structures.

Data Administration

- Metadata
 - Department of Homeland Security Geospatial Data Model, released 7.31.06
 - Post Disaster
 - Resource replenishment
 - Requirements for FEMA reimbursement

Other considerations

- Response Coordination Strategies
 - CAMEO/ALOHA for HAZMAT
 - Evacuation? Shelter in Place?
- Media 101
- Basic First Aid/CPR
- Volunteer Coordination
 - Citizens Emergency Response Teams (CERT)
 - American Red Cross Shelters
- Special Needs Population
 - Elders
 - Handicapped populations

Conclusion

“Using GIS and geospatial technology as foundation, our Tribal Emergency Management Degree program can be a progressive and unique approach to ensuring the survival of our people....”

Ahe’he

Contact Information

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Presentation: “**Geospatial Tools at Your Fingertips: Examples of Applications in Indian Country,**” Patrick Kozak, Research Scientist, [South Dakota School of Mines and Technology](#), Rapid City, SD

Google Earth

- Combines satellite imagery, maps and Google Search.
- Allows for tilt and rotate the view to see 3-D terrain and buildings.

- Add your own annotations.
- Large group of developers.
- Open well populated user forums.
- Opportunities to “Tie In” are growing rapidly
<http://earth.google.com/>

NASA World Wind

- Easy to use interface.
- Uses Landsat satellite imagery and Shuttle Radar Topography Mission data.
- 3-D visual Experience.
- Integrates science with visualization
 - MODIS fire data
 - NASA (Goddard Space Flight Center) animations
 - Global temperatures
 - Allows for customizable datasets
- Also Planetary viewer (Moon, Mars, Jupiter, Venus).
<http://worldwind.arc.nasa.gov/>

Microsoft/USGS Terraserver

- TerraServer-USA Web site is one of the world's largest online databases.
- Free public access to a vast data store of maps and aerial photographs of the United States.
- Designed to work with commonly available computer systems and Web browsers over slow speed communications links.
- One of the original online spatial databases.
- <http://terraserver.microsoft.com/>

Prairie to Mountain Explorer

- Prairie to Mountain Explorer (PTME) is set of Geographic Information Systems (GIS) data.
- The GIS data have been assembled for ID, MT, ND, SD, and WY for such themes as:
 - bedrock geology, roads, boundaries, cities, demographics, climate, land cover, land ownership, species occurrences or habitats, rivers, watersheds and elevation.
 - One can explore these data layers close up (large scale) or from a regional perspective (small scale).
- <http://windy.wygisc.uwyo.edu/natrona12/ptme/>

Coeur d’Alene Tribal GIS

- Examples of online tribal GIS resources.
- Can develop some online maps.
- Data relevant to the Coeur d’Alene Tribe.

- Good guide for the potential of online data sources
<http://gis.cdatribe-nsn.gov/>

Fair Data

- Community-based Mapping and Data Solutions for Education, Environment, Housing, and Poverty-related Issues.
- Have tribal specific data.
- Develop online maps
<http://www.fairdata2000.com/>

Digital Great Plains Network (DGNP)

- Digital-NGP or DNGP is an online GIS database system.
- Accesses archived and delivers remotely sensed images and derived products Northern Great Plains.
- Developed by the [Upper Midwest Aerospace Consortium](http://www.umac.org/) at the [University of North Dakota](http://www.umac.org/)
<http://dngp.umac.org/>

Seamless Dataset

- One stop site for downloading mosaic and matched data for the U.S. and some international data.
- Has variety of datasets
 - National Elevation Dataset (NED)
 - Hydrography
 - Shuttle Radar Topography Mission (SRTM)
 - Transportation, civil boundaries
 - Digital Orthophotoquads
 - Etc.

<http://seamless.usgs.gov/>

National Atlas

- Another one-stop shop.
- Can make maps and download data.
- Synthesis of most governmental agencies' data
 - Biology, Agricultural
 - Geology, Hydrology
 - Civil (Boundaries)
 - Transportation

<http://www.nationalatlas.gov/index.html>

Geodata

- **National**
 - <http://www.geodata.gov/> Federal one-stop shop

- **World**
 - <http://www.geographynetwork.com/> Worldwide data guide from ESRI (some free)

State Level Data

- State Geological Surveys
 - <http://www.sdgs.usd.edu/>
- State Universities
 - <http://www.sdvc.uwyo.edu/clearinghouse/>
- State Government
 - <http://www.nd.gov/gis/>

Okay how to view this stuff

- <http://grass.itc.it/> - Grass (open source GIS)
- <http://www.esri.com/software/arcexplorer> - ArcExplorer--GIS Data Viewer
- <http://www.bluemarblegeo.com/appexpl.htm> - Geographic Explorer, GIS Data Format Translator
- http://www.intergraph.com/gis/new_free.asp - Intergraph's GeoMedia Viewer
- <http://www.pcigeomatics.com/freeware/freeware.html> -Viewer from PCI
- <http://www.microimages.com/tntlite> - TNTlite, free version of TNTmips GIS package
- <http://www.lizardtech.com/> - Mr. SID viewer for Digital Orthoimage Quarter Quadrangle (DOQQ's)

Initial list of GIS/Remote Sensing data websites

USGS Data Sources

- <http://nationalmap.usgs.gov/> - The National Map (digital atlas)
- <http://seamless.usgs.gov/> - USGS Data download by region (ArcIMS)
- <http://glovis.usgs.gov/> - USGS Imagery (for example, Landsat) download
- <http://geode.usgs.gov/> - USGS worldwide data
- <http://earthexplorer.usgs.gov/> -USGS Global Land Information System (GLIS)
- <http://landcover.usgs.gov/> - USGS Land Cover Characterization Program
- <http://nhd.usgs.gov/> - National Hydrography Dataset
- <http://water.usgs.gov/nwis/> - National Water Information System

GIS/Remote Sensing Data Sources

- One-Stop shops
 - <http://www.geodata.gov> – Federal one-stop shop for spatial data (US)
 - <http://www.fedstats.gov> – Federal Statistical Data Sources (US)
- Other Countries
 - http://ccrs.nrcan.gc.ca/index_e.php - Canada Centre for Remote Sensing
 - <http://www.esrin.esa.it/> - European Space Agency
 - <http://eros.usgs.gov> – USGS Earth Resources Observation and Science (EROS) Center
 - <http://ned.usgs.gov/> - National Elevation Dataset (NED)
 - <http://edc.usgs.gov/products/elevation/gtopo30/gtopo30.html> - Worldwide equivalent of NED
 - http://lpdaac.usgs.gov/aster/dem_map.asp - Worldwide DEM from ASTER satellite

National Oceanographic and Atmospheric Administration (NOAA)

- <http://www.ngs.noaa.gov/> - National Geodetic Survey
- <http://www.nndc.noaa.gov/> - National Oceanographic and Atmospheric Administration (NOAA) Data Centers
- <http://www.nesdis.noaa.gov/> - NOAA National Environmental, Satellite, Data and Information Services
- <http://www.ngdc.noaa.gov/> - NOAA National Geophysical Data Center
- <http://www.nodc.noaa.gov/> NOAA National Oceanographic Data Center
- <http://www.ncdc.noaa.gov/> NOAA National Climatic Data Center

U.S. Census Data

- <http://www.census.gov> – U.S. Bureau of the Census
- <http://factfinder.census.gov> – Census Data Access
- <http://www.census.gov/geo/www/tiger/> - Census Tiger Files Home Page
- <http://www.census.gov/geo/www/cob> - Downloadable Boundary Files from Census Bureau

Other federal agencies

- <http://www.nga.mil> – National Geospatial Intelligence Agency
- <http://www.bts.gov/> - U.S. Bureau of Transportation Statistics
- <http://transtats.bts.gov> – U.S. Transportation data
- <http://www.apta.com/research/stats/> - Public Transit data
- <http://www.epa.gov/enviro/> - Environmental Data Warehouse

- <http://www.blm.gov/gis/> - Bureau of Land Management Geospatial Homepage
- <http://www.fws.gov/> - U.S. Fish and Wildlife
- <http://www.nrcs.usda.gov/technical/maps.html> - USDA Natural Resource Conservation Service
- <http://soils.usda.gov/> - Soil Surveys
- <http://www.nps.gov/gis/> - National Park Service GIS

Presentation: “Tribal Science Technology Engineering and Math (STEM) Research Initiatives: Internships and Research That Works”

Janie Nall – [NASA](#), Goddard Space Center; Tammie Grant - [Salish Kootenai College](#), Pablo, MT; Jan Bingen-[Little Priest Tribal College](#), Winnebago, NE

Mentor programs need:

- TCU teacher who is interested in the student.
- Scientist who is interested in proposed project.
- Mediator to coordinate logistics and housekeeping issues between the TCU and the Scientist.

TCU Internship program with NASA not really an internship.

- Better defined as a “Summer Research Experience.”
- Goddard willing to be flexible with TCU’s.
- Sometimes 1 week, sometimes, 3 weeks, seldom the standard 10 weeks.
- Families need to be comfortable when they enroll their kids (students) in the program.
- Flexible system was developed over the past 14 months.
- When programs are doable and available, “Students will attend!”

Tribal College Forum V Wrap-up: Moderated by Dr. Phil Baird, Vice President Academic Affairs - [United Tribes Technical College](#), Bismarck, ND

Remarks, comments and suggestions:

- **NativeView, Inc.** should develop a relationship with Bureau of Land Management (BLM).
- AIHEC should develop a “resource map” of GIS resources and community services.
- Student Exchange Programs needed.
- TCU representatives should take the ideas presented at this TCU Forum back to their presidents.
- The public education system is failing—2/3rds of students going on to TCU’s need remedial classes.
- How can TCU’s help students prepare for college?
- South Dakota State University’s (SDSU) 2+2+2 Program was deemed a failure (by SDSU) because no Indian students went on to SDSU as a result of the 5-year program.

- SDSU conclusion too shortsighted, program shouldn't have been dropped so soon.
- USGS (Center for EROS via R.J Thompson) willing to support the STEM Initiative with financial scholarships.
- Little Priest Tribal College has a brochure that outlines their GIS related programs that can be used as a model.
- **NativeView, Inc.** has involved TCU Presidents in GIS, NEXT it needs to involve members of Tribal Governments.
- **NativeView, Inc.** should develop workshops that are relevant to tribal communities.
- **NativeView, Inc.** needs a newsletter and a system for getting interested people on the mailing list.
- To save time and resources in the upcoming year, the **NativeView, Inc.** board of directors should plan to hold next year's Forum in Bismarck, ND in conjunction with the UTTC Intertribal Summit.

Dr. Lionel Bordeaux, President, [Sinte Gleska University](#) - Thank you and Closing Ceremony for Tribal College Forum V

Special Thanks to the Tribal College Forum Leadership Group, sponsors, presenters, and attendees for a successful event. Tribal College Forum VI is tentatively planned for September of 2007 again in Bismarck, ND.

Tribal Colleges and Universities

Bay Mills Community College
 12214 West Lakeshore Drive
 Brimley, MI 49715
 906-248-3354
 fax: 906-248-3351
www.bmcc.org

Blackfeet Community College
 P. O. Box 819
 Browning, MT 59417
 406-338-7755
 fax: 406-338-3272
www.bfcc.org/c

Cankdeska Cikana Community College
 P. O. Box 269
 Fort Totten, ND 58335
 701-766-4415
 fax: 701-766-4077
www.littlehoop.edu/

Chief Dull Knife College
 P. O. Box 98
 Lame Deer, MT 59043
 406-477-6215
 fax: 406-477-6219
www.cdkc.edu/

College of Menominee Nation
 P. O. Box 1179
 Keshena, WI 54135
 715-799-5600
 fax: 715-799-1308

Comanche Nation College
 1608 SW 9th St.
 Lawton, OK 73501
 580-591-0203
 fax: 580-353-7075

www.menominee.edu

Crownpoint Institute of Technology

P. O. Box 849
Crownpoint, NM 87313
505-786-4100
fax: 505-786-5644
www.cit.cc.nm.us/home.html

www.cnc.cc.ok.us

Diné College

P. O. Box 126
Tsaile, AZ 86556
928-724-6671
fax: 928-724-3327
www.dinecollege.edu

**Fond du Lac Tribal and
Community College**

2101 14th Street
Cloquet, MN 55720-2964
218-879-0800
fax: 218-879-0814
www.fdl.cc.mn.us

Fort Belknap College

P. O. Box 159
Harlem, MT 59526
406-353-2607
fax: 406-353-2898
www.fbcc.edu/

Fort Berthold Community College

220 Eighth Avenue North
P. O. Box 490
New Town, ND 58763
701-627-4738
fax: 701-627-3609
www.fbcc.bia.edu

Fort Peck Community College

P. O. Box 398
Poplar, MT 59255
406-768-6300
fax: 406-768-5552
www.wolfpoint.com/college.htm

Haskell Indian Nations University

155 Indian Avenue
P. O. Box 5030
Lawrence, KS 66046-4800
785-749-8479
fax: 785-749-8411
www.haskell.edu

Institute of American Indian Arts

83 Avan Nu Po Road
Santa Fe, NM 87505
505-424-2300
fax: 505-424-0050
www.iaiancad.org

**Keweenaw Bay Ojibwa Community
College**

409 Superior Avenue
P.O. Box 519
Baraga, MI 49908
906-353-8161
fax: 906-353-8107
www.kbocc.org/

Little Priest Tribal College

P. O. Box 270
Winnebago, NE 68071
402-878-2380
fax: 402-878-2355
www.lptc.bia.edu/

**Lac Courte Oreilles Ojibwa
Community College**

13466 West Trepania Rd
Hayward, WI 54843
715-634 4790
fax: 715-634-5049
www.lco.edu

Little Big Horn College

P. O. Box 370
Crow Agency, MT 59022
406-638-3100 (main number)
fax: 406-638-3169
www.lbhc.cc.mt.us

Lower Brule Community College
P. O. Box 230
Lower Brule, SD 57548
605-473-9232
fax: 605-473-5462
www.lbcc.cc

Nebraska Indian Community College
College Hill
P. O. Box 428
Macy, NE 68039
402-837-5078
fax: 402-837-4183
www.thenicc.edu

Northwest Indian College
2522 Kwina Road
Bellingham, WA 98226
360-676-2772
fax: 360-738-0136
www.nwic.edu

Oglala Lakota Community College
490 Piya Wiconi Road
Kyle, SD 57752
605-455-6022
fax: 605-455-6023
www.olc.edu

Saginaw Chippewa Tribal College
2284 Enterprise Drive
Mount Pleasant, MI 48858
989-775-4123
fax: 989-772-4528
www.sagchip.org/tribalcollege

Salish Kootenai College
P. O. Box 117
Pablo, MT 59855
406-275-4800
fax: 406-275-4801
www.skcc.edu

Sinte Gleska University
P. O. Box 409
Rosebud, SD 57570
605-856-5880
fax: 605-856-5401
sinte.indian.com

Sisseton Wahpeton College
P. O. Box 689
Sisseton, SD 57262
605/698-3966
fax: 605/698-3132
www.swcc.cc.sd.us

Si Tanka University
P. O. Box 220
435 North Elm Street
Eagle Butte, SD 57625
605-964-6044
fax: 605-964-1144
www.sioux.org/sitankauniv.html

Sitting Bull College
1341 92nd Street
Fort Yates, ND 58538
701-854-3861
fax: 701-854-3403
www.sittingbull.edu

Southwestern Indian Polytechnic Institute
P. O. Box 10146
9169 Coors Road, NW
Albuquerque, NM 87184
505-346 2347
fax: 505-346-2343
www.sipi.bia.edu

Stone Child College
RR1, Box 1082
Box Elder, MT 59521
406-395-4875
fax: 406-395-4836
www.montana.edu/wwwsccl/

Tohono O'odham Community College
P.O. Box 3129

Turtle Mountain Community College
P. O. Box 340
Belcourt, ND 58316

Sells, AZ 85634
520-383-8401
fax: 520-383-8403
www.tocc.cc.az.us

701-477-7862
fax: 701-477-7807
www.turtle-mountain.cc.nd.us

United Tribes Technical College
3315 University Drive
Bismarck, ND 58504
701-255-3285
fax: 701-530-0605
www.uttc.edu

White Earth Tribal and Community College
210 Main Street South, P. O. Box 478
Mahnomen, MN 56557
218-935-0417
fax: 218-935-0423
www.wetcc.org

Wind River Tribal College
P. Box 8300, 533 Ethete Road
Ethete, WY 82520
307-335-8243
fax: 307-335-8148
<http://www.wrtribalcollege.com>

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**Bismarck, North Dakota
September 7-8, 2006**

Speakers are to provide opportunities for group discussion during their presentations.

Thursday, September 7, 2006

(Bismarck Civic Center (BCC), 601 E. Sweet Ave., Bismarck, ND)

PLENARY SESSIONS in BCC (Room to be Determined)

7:30a.m. – 5:00 p.m.	Registration	
8:00 – 8:45	Breakfast/Opening Ceremony/Welcome	General Assembly Area BCC
8:30 – 8:45	Tribal College Forum V	Dr. David Gipp, President,
UTTC	Welcome & Logistics	
8:45 - 9:15	NativeView: Tribal College	Dr. Phil Baird, Vice Pres.,
	Academic Affairs, UTTC	
	Geospatial Initiative	James Rattling Leaf, Sinte
	Gleska University	
9:15 – 10:00	Keynote Address: DOI	Thomas Dowd, Director/Office
of Indian Education,	Tribal College Priorities	Department of the Interior
10:00 – 10:15	BREAK	
10:15 – 10:35	Tribal Colleges: Our Land	Dr. Lionel Bordeaux,
	President,	Sinte Gleska University,
	and Our People	
10:35 – 10:55	Leveraging Tribal College	Dr. Thomas Casadevall,
	Central Region Director,	
	Education and USGS Research	U.S. Geological Survey
10:55 -11:15	TCU STEM Institute	Carrie Billy, Deputy Director
		America Indian Higher
	Education Consortium	
11:15 – 12:15	Open Panel	Director Dowd, Dr. Gipp, Dr.
Casadevall,		Chairman His Horse Is
		Thunder, representing White
		House Initiative on Tribal
		Colleges and Universities

12:15 – 1:30	LUNCH	(Provided) General Summit
	Assembly Area	
1:30 – 3:40	Tribal College Presidents Panel	Dr. Phil Baird (Facilitating)
	<ul style="list-style-type: none"> ▪ Role of NativeView in Tribal Colleges ▪ Geospatial Education Needs ▪ Faculty and student interns programs ▪ Training opportunities 	
3:40 – 4:00	Break	
4:00 – 4:30	Review of Panel Discussions	Dr. Phil Baird Dr. David M. Gipp James Rattling Leaf
4:30 – 4:45	Review of Day One Day Two Agenda	Dr. Phil Baird
4:45 - 5:00	Closing Ceremony	UTTC Drum Group
5:00 – 6:00	Poster Session and Reception	BCC General Assembly Area
	(Refreshments Provided)	
	Tribal College Students and Faculty	
6:00	Adjourn Dinner (on your own)	
7:00	Grand Entry: United Tribes 37th	UTTC Lonestar Arena, UTTC
Campus	International Pow Wow	

Friday, September 8, 2006

7:30 – 8:00	Registration	
8:00 – 8:30	Opening Ceremony	Dr. Phil Baird, Facilitator,
UTTC	UTTC Drum Group	
8:30 – 8:45	Opening Remarks & Logistics	Dr. David Gipp, President,
UTTC		
8:45 – 9:15	Keynote: Global Change Impacts in Indian Country	Dr. Dan Wildcat, Haskell Indian Nations
University		
9:15 – 10:30	Panel: Building on Geospatial Collaboration: Examples of Tribal College Initiatives	
	North Dakota Association of Bennett (NDATC)	Phyllis Howard, Dr. Bull

Tribal Colleges (NDATC)

Bennett	NativeView Initiative	James Rattling Leaf, Dr. Bull
Community College, Director (FALCON)	FALCON (First Nations Land-Grant Colleges Organizational Network)	Terry Tatsey, Blackfeet Dr. John Phillips;
Quigley (SGU)	SGU/USGS Memorandum of Understanding	Gene Napier, USGS, Ione
Manager; National Space Flight Center	Tribal Earth Science and Science and Technology Center	Maury Estes, Project Technology Education NASA/Marshall Space
10:30 – 10:45	Break	
10:45 – 12:00	Building on Collaboration Panel	Continued
12:00 – 1:30	Lunch	Minerva's
1:30 – 1:50 Specialist,	Emergency Planning in Indian Country	Sophi Beym, Environmental Bishop Paiute Tribe
1:50 – 2:20 EOSDIS; GSFC	Accessing, Processing, and Applying Geospatial Data USGS EROS for the Indian Classroom And Research	Jennifer Brennan, NASA Roger Oleson, LP DAAC,
2:20 – 2:40 Wolfe, SGU	Indigenous Knowledge Center for Education (IKCE – SI)	Ione Quigley, and Sarah
2:40 – 3:00	Break	
3:00 – 3:20 NASA	Tribal STEM Research Initiatives: Internships and Research Kootenai College That Works	Dr. Bull Bennett, Janie Nall, Tammie Grant, Salish

3:20 – 3:40 Dakota School	Geospatial Tools at Your Fingertips: Examples of Applications in Indian Country	Patrick Kozak, South Mines and Technology
3:40 – 4:00	Tribal College Forum V Wrap-up: Outcomes and Tribal College Forum VI	Dr. Phil Baird Dr. David M. Gipp
4:10 – 4:30	Closing Ceremony	UTTC Drum Group



This report was compiled by the **NativeView, Inc.** staff and Board of Directors. For additional information about the Tribal College Forum or **NativeView, Inc.**, please visit www.nativeview.org

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