Statement of
Rebecca L. Dodge, PhD
Outreach Director for AmericaView
Before the
Natural Resources Committee Energy and Minerals Subcommittee
Hearing on HR 2489
AmericaView Geospatial Imagery Mapping Program Act
U.S. House of Representatives
July 23, 2009

I would like to thank Chairman Costa and the committee members for giving me the opportunity to testify with respect to the AmericaView Geospatial Imagery Mapping Program Act. My name is Rebecca L. Dodge and I teach Geology and Environmental Science at Midwestern State University in Wichita Falls, Texas. I have been actively involved in the development and leadership of AmericaView for the past seven years.

Today I would like to add a few remarks to Acting Director Kimball's comments about AmericaView's history, from the AmericaView members' perspective, and then to explain how the activities to be supported by HR 2489 will sustain and expand the benefits provided by AmericaView.

As described earlier, OhioView was the pilot for a planned nationwide program, designed to prove the concept that a statewide network of universities and their partners involved in applied research could develop new scientific, educational, and practical applications for geospatial data to improve the lives of citizens of their state. OhioView, comprised of 10 Ohio Universities in partnership with the U.S. Geological Survey, provided very solid proof of this concept.

This pilot focused on education and on applied research emphasizing solutions to state needs. To date, OhioView partners have educated thousands of students at both the university and K-12 levels, while also providing training for hundreds of K-12 teachers and university faculty. OhioView's applied research concerning natural resource management has set the standard for new StateView efforts across the nation, providing new ways to solve problems in forestry, agriculture, city planning, and water quality. Within two years OhioView's successes led to planning for the national AmericaView Program; recruitment was (and still is) facilitated by the focus on addressing individual state needs.

The AmericaView consortium has been in development since 2000, incorporating as a 501c3 non-profit educational organization in 2003 with 10 founding members (OH, SD, AK, KS, TX, AR, MS, GA, WV, and WY). Since officially "going national" in 2003, steady growth of new StateViews each year has brought membership to the current level of 36 StateViews.

With this organic growth across the country, the time has come for HR 2489. Thanks to the leadership of Representatives Regula and Herseth Sandlin in the previous Congress as well

as Representatives Herseth Sandlin and LaTourette in this Congress, HR 2489 was introduced in the House in May; a companion bill, S 1078 was introduced in the Senate by Senators Johnson and Voinovich. The bill is designed to authorize a comprehensive national program and set of activities that will promote the application of geospatial imagery for a broad range of mapping purposes, through education, workforce training and development, and applied research. AmericaView is already engaged in activities prescribed in HR 2489 in 36 states, and this Act will ensure the program's activities and impact will spread within each member state and to all 50 states and the Territories.

As you read the legislation you saw this set of activities listed. These *activities* are the heart of this legislation and they are keyed to the existing strengths and contributions of AmericaView; at least several of these activities are going on in each state now. HR 2489 activities that are designed to promote imagery mapping applications begin with 1) *the development of geospatial mapping applications, education and training infrastructure* in each state. Applications and education and training infrastructure development have gone hand in hand, as new applications technologies and tools that are developed for applied research are transformed into classroom and laboratory teaching instruments and then become available for training the existing workforce to apply the new tools and technologies.

CaliforniaView's applications-oriented Remote Sensing Certificate Program, under development with support from **GeorgiaView, VirginiaView, IowaView, and TexasView**, will serve not only undergraduates at the University and College level, but also returning students and others already in the workforce. **AlaskaView** makes its training infrastructure available to private companies that train the Alaskan workforce. Peter Hickman, CEO and Principal GIS/GPS Consultant for **GeoApps, Inc.** stated that

> Providing training has been fundamental to the success of GeoApps as a startup small business. In the past year alone, 83 students from across the academic, government, and private sectors in and around Fairbanks have successfully completed our ESRI Authorized training in the GINA RS Lab. The continued use of the GINA RS Lab for instruction is an integral part of accomplishing our goals. (2007)

The addition of geospatial student internships as part of the educational infrastructure in many states has created positive effects, as indicated by Dawn Liverman, undergraduate Geosciences major at the University of West Georgia. She participated in a **GeorgiaView** internship for rural **Carroll County, Georgia** and studied the impact of historical tree canopy changes to establish baseline maps prior to extensive proposed residential development.

> This internship has given me a new way of looking at the environment, invaluable experience with geospatial software, self-confidence in speaking publicly about the findings of my research, and professional skills that will be a definite help in my future professional life. This experience will be very important to me when looking for employment after graduation when so many companies want an employee with previous experience in the geospatial field. (2006)

Existing educational infrastructure has benefitted from **South DakotaView**'s efforts according to MaryJo Benton Lee, Diversity Coordinator for **South Dakota State University** College of Engineering, who complements them for reaching 200 American Indian high school students participating in a college preparatory program in a 2007 SDSU-Flandreau Indian School Success Academy students.

> Your presentations were hands-on, interactive, and highly successful in interesting and exciting freshman high school students in your discipline. I especially appreciate the many ways you made your workshop culturally relevant, starting with the title "Technology and Tradition: New and Old Ways of Viewing Mother Earth". Also I commend you for employing two of our Native SDSU engineering students to assist you.... these Native American college students were strong positive role models of American Indian professionals. Your excellent workshops are truly models for all of us who try through our work to attract minority students to science, math, engineering and technology disciplines. (2007)

K-12 teacher training infrastructure is broadly enhanced and supported by StateViews. Todd Ensign from the **NASA IV&V Facility Educator Resource Center** (ERC) complements **West VirginiaView** for its support, saying that

> the ERC has received assistance in downloading and using geo-referenced imagery, developing and delivering teacher workshops, producing educational podcasts, and in the successful bid for educational grants to expand the program. The ERC greatly appreciates the services of West VirginiaView and hopes to continue our strong partnership into the future. (2006)

West VirginiaView also received kudos for its support of K-12 pre-service education. According to Dr. James A. Rye, **West Virginia University** Interim Associate Dean for Research and Technology:

> We have begun to integrate global positioning (GPS), geographic information systems (GIS), and remote sensing into our undergraduate and graduate science methods course for pre-service and in-service teachers. West ViginaView has provided an invaluable expert resource..... they have also developed and provided an extended RS/GPS/GIS experience that integrated a project GLOBE hydrology application in our undergraduate science methods course. Geospatial science and technology are integral with such 21st Century content as "global awareness" and the skill area of "information and communication technology" literacy. Dr. Landenberger's assistance and associated West VirginiaView projects are critical to integrating into our methods courses experiences that prepare teachers to facilitate 21st Century learning in their future and current classrooms.

Dave Varner, an Extension Educator with the University of Nebraska - Lincoln Extension Service, reported that 4-H youth and leaders at the 2006 **National 4-H** Science and Technology Conference presentation were impressed with **NebraskaView**'s presentation

> regarding capabilities and exploration into future applications of remote sensing technologies that took this session to a whole new level. Participants were impressed with both the technology and applications discussed. Your Google Earth demonstration provided participants more hands-on experience using imagery collected via remote sensing technologies. The group connected well with this topic and will certainly share their experiences with their communities which represent approximately 20 states. We appreciated NebraskaView helping enhance the knowledge and skills of the outstanding 4-H audience that UNL had the opportunity to host in July. (2007)

AmericaView members have all benefitted as new applications as well as training programs for K-12 teachers, University faculty, youth groups, state and local government employees, and private industry are developed, refined, and shared among our membership. We are also *expanding geospatial imagery mapping courses* and provide training, remote sensing data, and teaching tools to educators. Expanding courses and curriculum has been the goal of John C. Kostelnick, GIS Instructor in the Department of Natural and Social Sciences at **Haskell Indian Nations University** who states that

> This letter comes in support of the **KansasView** Program. Haskell Indian Nations University (HINU), a four year university that serves students from federally recognized Indian Tribes in the United States, is among the many institutions that have benefited greatly from the services and data sources provided by KansasView. In recent years, HINU has worked to develop a program in Geographic Information Systems (GIS) and related remote sensing applications to support the environmental science curriculum as well as in response to the growing need for geospatial technology in tribal lands. The KansasView Program has provided numerous benefits to this endeavor by providing HINU students with internship opportunities and allowing HINU faculty to collaborate with faculty and staff at the Kansas Applied Remote Sensing (KARS) Program at the University of Kansas. The continued involvement of HINU in programs such as KansasView is key to ensuring that HINU is successful in its efforts to sustain and to expand the existing GIS program. (2006)

StateViews are all working to *expand geospatial imagery mapping research at research educational institutions*. Dr. Sylvio Mannel, GIS/Remote Sensing Manager at **Oglala Lakota College**, recognized **South DakotaView**'s provision of Landsat imagery that

> enabled us to map possible Mountain Lion habitat on the Pine Ridge Reservation. In addition, the Landsat imagery archive is a very user friendly source of data. Before it became available we had to contact other researchers and other institutions to ask for any data they might have available. This was not very efficient and often

> unsuccessful. I hope the Landsat depository will be available in the future to conduct Remote Sensing education and research at Oglala Lakota in an efficient way. (2006)

Russ Brinsfield, Executive Director of the Harry R. Hughes Center for Agro-Ecology at the **University of Maryland**, praises **MarylandView**'s assistance

> in developing geospatial approaches to a more accurate understanding of agriculture and its environmental implications and for providing a more precise agricultural cropland data layer for our area and for assisting us in researching innovative geospatial methods for cropping practices, nutrient applications, pesticide usages and other significant agricultural characteristics of interest to our program. (2009)

Gregory S. Vandeberg, Assistant Professor of Geography at **University of North Dakota** reports that he is

> currently overseeing a grant from the **North DakotaView** program: Geographic Variables Affecting Bald Eagle Nest Locations in the Red River Valley of ND and MN. This grant has provided the funding for Josh Johnston, MS Candidate in geography, to investigate the distribution of bald eagle nests. The grant covers both his graduate research assistantship as well as costs for an aerial survey of the northern part of the Red River Valley. The information gathered in his study will be very useful to federal, state and local conservation officials, as well as for the completion of his thesis. This project would have been severely limited without the North DakotaView grant. I strongly urge the managers of the AmericaView Program to continue funding to state programs such as North DakotaView. (2006)

AmericaView is also *expanding the knowledge and use of geospatial imagery map products through outreach programs* to diverse groups ranging from USDA extension agents to the National Forest and National Park Services, and including emergency management and natural resource management personnel as well as State and National Guard troops. **MinnesotaView**'s outreach to natural resource managers has provided new data and tools for lake clarity analysis, as reported by Bruce Wilson, the program manager at the **Minnesota Pollution Control Agency**:

> We have used every trick of the trade, with a large body of volunteers and lab tests, but the truth is we can only monitor about 1,200 lakes a year. And now, out of the sky - literally - has come this opportunity to help provide the information we are asked for thousands of times a year by citizens, business owners, and local units of government. (2009)

AlabamaView has been coordinating statewide conferences as part of its outreach effort. H. Craig Seaver, **U.S. Geological Survey** Liaison to Alabama, thanks them for their

> efforts in organizing training and presentations at the 3rd annual GIS meetings at Auburn this year..... Based on my observations, the participation level was

> significant, with representation from federal, state/local and private sector entities..... The wide scope of geospatial topics presented allowed one to choose both professionally related training and presentations and intriguing new ones as well. I look forward to getting involved with AlabamaView and promoting it within the state with USGS partners. (2006).

WyomingView's outreach presentations at workshops for farmers and ranchers have expanded applications across the state. Chuck Duncan, an Agriculturist for **Wyoming Sugar Company** who councils growers about how to raise a better crop, attended a workshop put on by WyomingView in cooperation with the University of Wyoming County Agent and with farmers and scientists from North Dakota. There he was introduced to the remote sensing technology and its applications for agriculture. He indicates that

> I was pleased that they brought to this workshop some sugar beet farmers from ND who have used this technology. They actually did most of the training and were able to answer questions from their own experiences. I believe that this technology could be useful in managing farm land through out my district. I believe that the activities of WyomingView (workshops and image distribution) are the wave of the future in farming and therefore should be used the best we can. They can assist growers to do a better job on their own farms and increase production, therefore keeping their viability in coming years. (2006)

Another private sector client impacted by **WyomingView**'s outreach effort, Chris Jesson, P.G., Geologist/GIS Analyst with **States West Water Resources Corporation**, states that

> I would like to express my support for the services provided by WyomingView. It has been extremely beneficial to our efforts to serve our clients (with oftentimes much needed efficiency) with readily available satellite imagery. We have used WyomingView Services to assist a number of irrigation districts in Wyoming, the State of Wyoming, and many individual land owners with documentation of historical irrigation. Access to this information serves to dispel much doubt from proceedings that may otherwise lead to burdensome, expensive legal ventures for Wyoming and its citizens. It is my belief that this provision of taxpayer-funded information enables simple evenhandedness in the face of litigious issues. Moreover, it speaks to responsible and efficient utilization of taxpayer resources to serve information that provides for a basis of truth (that has already been funded by taxpayers) for the equal benefit of all citizens. States West endorses continued funding for Wyoming View Services.

StateViews are *building partnerships with governments* to carry out pilot mapping projects concerning coastal erosion, invasive species, wildfire prevention, volcanic hazards, drought extent and impact, to name a few. John F. Fry, the **National Park Service**'s Chief of Resources Management the Cumberland Island National Seashore in Georgia, reported on a pilot project supported by **GeorgiaView** and performed by University of Georgia graduate student C.J. Jackson:

> Back-barrier shoreline erosion is a highly critical issue on Cumberland Island, as it threatens significant natural and cultural resources. C.J.'s final report, maps, and graphics provide exactly the sort of information the park staff needs in addressing the erosion problem. His research indicates the scope of the problem over the entire expanse of the Cumberland Island back-barrier, where critical hot spots are, how the issue has developed over an extensive (145 year) period, and what potential agents are for the erosion. C.J. went well above and beyond what was anticipated. He has provided us with an extremely valuable tool that is remarkably thorough and technically sound. The Park Service is most fortunate to have had C.J. working on this project…. In my twelve years of NPS Science and Resource Management experience I cannot recall being more impressed with the quality and thoroughness of a research project than what C.J. has completed for the park. (2006)

C.J. Jackson won the Georgia URISA Thomas Mettille Student Achievement Award, for this work on the "Assessment of Back-Barrier Shoreline Erosion for Resource Management: Cumberland Island National Seashore, Georgia". This technique has wide applications for barrier islands managed by both Federal and State agencies. While mapping applications development has focused on addressing each state's unique needs, applied researchers have found solutions that cross borders to meet regional and national needs.

The national AmericaView leadership, in concert with working groups composed of StateView members, is *promoting cooperation and sharing of data, expertise, techniques, and tools regarding geospatial imagery among and within participating States.* Individual StateViews are sharing data among diverse users. Sandy M. Ebersole, a geologist with the Mapping and Hazards Section of the **Geological Survey of Alabama**, informed the **AlabamaView** Director that

> We currently have a number of Landsat scenes and will likely be acquiring MODIS and other satellite data in the near future for some of our research here at the survey. AlabamaView is a very impressive website, and a wonderful tool for researchers. I was wondering if you would accept other satellite imagery to be posted to your site as well so that it can also be shared with others. The data we have was not purchased through the AlabamaView project, but we would like to make it available for download for public use. (2009)

Dr. A. Kim Ludeke, **Texas Parks and Wildlife Department** GIS Lab Manager expressed strong support for **TexasView** as a

> valuable source of statewide datasets at no cost to the Texas Parks and Wildlife Department (TPWD) and the Texas Natural Resources Information System (TNRIS). Moreover, this updated imagery has allowed TPWD scientists and planners to document change in the natural and cultural environment of Texas. In addition, the TPWD game wardens have found these products to be invaluable, whether in investigations of environmental crimes, in prosecuting game and fish law violations,

> or in planning and executing Homeland Security exercises along the border with Mexico. This includes both training and real-life situations. Finally, the TexasView scientists have always been available for technical assistance and advice. It would be a major loss to Texas to lose the services of TexasView. This imagery provides a very important base for work on TPWD properties as well as with private landowners with whom TPWD field biologists are developing Wildlife Management Plans. These plans benefit private land owners as well as the natural resources of Texas for all Texans.

Consortium members in each StateView are active in state-level geospatial planning activities to promote cooperation and sharing, establishing strong contacts with State agency personnel. John Ellison, Agency Technology Officer for the **California Resources Agency**, commented in 2007 that the CRA

> looks to projects such as **CaliforniaView** to provide outreach and educational materials to ensure that geospatial data are utilized to their fullest extent. We also look to CaliforniaView to provide expertise and support in incorporating these data into a working environment. (2007)

Steve Bauserman, Chair of the **Northern Shenandoah Valley Regional Commission** whose responsibilities span the Virginia/West Virginia border, reports the approval of a cross-border cooperative study in which **VirginiaView** and **West VirginiaView** will

> prepare a pilot project for the Shenandoah Valley, VA- WV which is an historical land cover/land use view of the Shenandoah Valley footprint. A compilation of 1930 USDA aerials, more recent photography or Landsat imagery, would give a base from which to analyze land cover and land use change over the last 75 years for the region, counties and municipalities. This would serve as a base for future monitoring for drought onset, water quality, movement of pollutants in the air, comparison of small watersheds for runoff after rain, and other analysis. (2006)

James P. Verdin, Manager of the **U.S. Geological Survey** Early Warning and Environmental Monitoring team, wrote that

> As the lead of the Early Warning and Environmental Monitoring team at the U.S. Geological Survey's Center for Earth Resources and Science, I would like to express our appreciation to the Kansas Applied Remote Sensing (KARS) Program and **KansasView** in this letter.... During the last six months, KARS provided a valuable remote sensing data set to us and to our collaborators at the National Drought Mitigation Center. This data consisted of preprocessed (mosaicked and projected) MODIS Vegetation Index data covering the entire North American Continent. The work performed by KARS ....probably saved our organization approximately 120 person hours of labor..... we look forward to investigating the future potential to partner further in remote sensing research and applications with KARS. (2007)

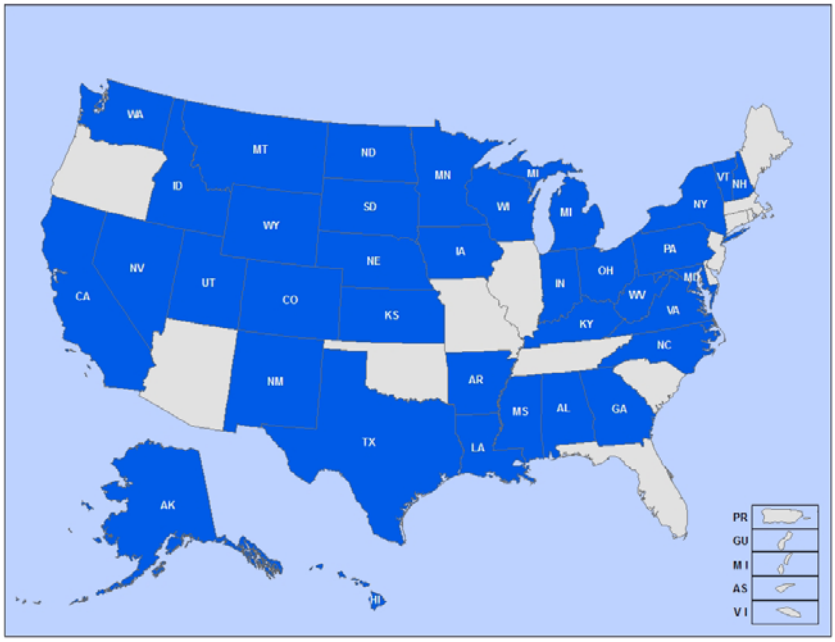
HR 2489, the AmericaView Geospatial Imagery Mapping Program Act, would enable AmericaView to expand activities such as these to all 50 states and the U.S. Territories, addressing each state's unique needs by educating and training educators and professionals who will perform applied Earth observations. StateViews will also be instrumental in developing key applications that serve educators and transferring the technologies and tools developed to a wide range of state and federal agencies, private industry, and the general public.

As Acting Director Kimball has pointed out, the USGS is continually increasing the breadth and volume of geospatial imagery available to the public for education, research, assessment and monitoring at the State level. HR 2489 will ensure that the workforce is provided with the ability to apply remote sensing data and technology towards effective decision making in each state. In fact, the AmericaView Program is built on the precept that there are remote sensing needs that are best understood and addressed at the state level, while other aspects are best addressed at the national level. Operating satellites and maintaining centralized global data archives are critical national priorities well handled by USGS. Education, emergency response, and support of local natural resource managers are local issues that are well handled by a workforce that has acquired local knowledge and the skills to select and apply the appropriate data and technology.

The National Research Council's Strategy for Earth Science Applications from Space (2007) recognized that *a robust program to train users on the use of these observations will result in a wide range of societal benefits ranging from improved weather forecasts to more effective emergency management to better land-use planning.* The report recommended that the *USGS should pursue innovative approaches to educate and train scientists and users of Earth observations and applications.* At the time of these recommendations, the USGS had already been involved in developing and expanding the AmericaView program for over 10 years. I would like to echo Acting Director Kimball's sentiments that ours is a great partnership. The cooperation within each state has benefitted the American public, as has the cooperation among states and between both the government and non-profit sides of the AmericaView Program. We look forward to welcoming the remaining states and territories into the family.

Thank you again for your consideration and attention, Mr. Chairman and Committee members. My Outreach Committee members and I will be happy to answer any questions you and other members may have.

STATEVIEW CONSORTIA SUMMARIES



AMERICAVIEW MEMBER STATES AND LEAD INSTITUTIONS

ALABAMA
Auburn University

ALASKA
University of Alaska—Fairbanks

ARKANSAS
University of Arkansas—Fayetteville

CALIFORNIA
University of California—Davis

COLORADOVIEW
Colorado State University

GEORGIA
University of West Georgia

HAWAII
University of Hawaii

IDAHO
University of Idaho

INDIANA
Purdue University

IOWA
University of Northern Iowa

KANSAS
University of Kansas

KENTUCKY
Morehead State University

LOUISIANA
University of Louisiana—Lafayette

MARYLAND
Towson University

MICHIGAN
Michigan Tech Research Institute

MINNESOTA
University of Minnesota

MISSISSIPPI
University of Mississippi

MONTANA
Montana State University

NEBRASKA
University of Nebraska—Lincoln

NEVADA
University of Nevada - Reno

NEW HAMPSHIRE
University of New Hampshire

NEW MEXICO
New Mexico State University

NEW YORK
SUNY Syracuse

NORTH CAROLINA
East Carolina University

NORTH DAKOTA
University of North Dakota

OHIO
Cleveland State University

PENNSYLVANIA
California University of Pennsylvania

SOUTH DAKOTA
South Dakota State University

TEXAS
Stephen F. Austin University

UTAHVIEW
Utah State University

VERMONT
University of Vermont

VIRGINIA
Virginia Tech

WASHINGTON
Washington State University

WEST VIRGINIA
West Virginia University

WISCONSIN
University of Wisconsin--Madison

WYOMING
University of Wyoming

STATEVIEW CONSORTIA SUMMARIES

The **AlabamaView** vision is to benefit the economic development of the state through the use of satellite and aircraft remote sensing information and technologies and their application to pressing issues in the state. AlabamaView is working with state agencies on to save dollars and insure homogeneous airborne coverage of all areas of the state with full high resolution coverage of the state every four years. It is also working with the Alabama Cooperative Extension Service in training Extension agents together with farmers in the use of geospatial technologies in general and remote sensing in particular. It is supporting workforce development through scholarships for undergraduate students at the partner universities and colleges. It is supporting K-12 learning experiences in collaboration with the Alabama Science in Motion (ASIM) program and begun development of a program that will utilize satellite imagery in modules developed for ASIM. It is posting surface temperature and biomass information from MODIS updated weekly on its website, and developing products from RS data such as an improved drought index based on surface temperature. AlabamaView also recently partnered with a private firm named Galileo in a pilot research study to map invasive species utilizing hyperspectral imagery.

AlaskaView is the leading source of satellite imagery and geographic data for Alaska. Implemented through the University of Alaska's Geographic Information Network of Alaska AlaskaView captures and distributes real-time satellite imagery to emergency responders, operational agencies, and the general public. A key element is an ongoing collaboration with USGS EROS to receive Landsat 5 data at FCDAS. This data will populate the National archive, covering currently unserved areas of Alaska. This data will also be available in less than 24 hours for emergency response, including wildfire and volcano hazard management. AlaskaView also houses the most comprehensive collection of high-resolution imagery for Alaska and is the top distribution site for the state. Frequent users include wildfire fighters tracking smoke and hot spots, meteorologists forecasting weather, flooding, and sea ice, and marine operators transiting the sea ice. AlaskaView also plays an important role supporting the training needs of Alaskan users by hosting of university and professional training courses in our training facility.

The **ArkansasView** consortium includes universities, the EAST initiative, state and federal agencies, and non-profit organizations that continue to build Arkansas' remote sensing community. We 1) develop and distribute online satellite and airborne remote sensor data products of significance to Arkansans; 2) transfer remote sensing technology to education, government, and the private sectors; 3) create and maintain remote sensing-related public outreach; and 4) build Arkansas' capacity for near real-time remote sensor data products and autonomous online remote sensor data processing. In the long term the ArkansasView consortium seeks to encourage cooperation and collaboration among its state members and across borders to other "StateView" programs. Our members cooperate regularly on educational and outreach activities such as sponsoring informational seminars, developing appropriate curricula for K-12 education, and offering professional short courses on user-recommended remote sensing topics. Our members collaborate on identifying and obtaining funding and publication opportunities. Through cooperation, collaboration, and the effective leveraging of existing resources within and between "Stateview" programs, we will best accomplish AmericaView's mission to build a stronger and more viable remote sensing community in Arkansas and America.

The main emphasis of **CaliforniaView** is on higher education, workforce development and outreach in the field of remote sensing. We are currently developing a remote sensing certificate program to become the online intersection of education and internships for remote sensing career development in California. CalView is supported by partnerships with the Space Grant Consortium, University of Berkeley, the California Community College and Economic Workforce Development (CCCEWD) as well as the California Community Colleges Geospatial Information Support (C3GIS). The Baseline Remote Sensing Certificate is offered at no cost to each AmericaView State Member. Additionally CalView is developing certificates at the intermediate and advanced levels to enhance workforce retraining.

ColoradoView recently attained status as a full member of the AmericaView consortium of states and is excited to join the mission of individually, and collectively, promoting remote sensing and GIS. Colorado is a hot-bed of geospatial science and technology, and boasts many world class academic, governmental, and private entities. We will draw upon this expertise to incrementally build a vibrant and useful resource for all Coloradoans involved with remote sensing and GIS. Our first goal is to leverage expertise and resources provided by AmericaView to develop a web portal that will facilitate the dissemination and exchange of Colorado-specific remote sensing and GIS data, information, and educational materials.

The **GeorgiaView** consortium has played very important roles in serving the citizens of Georgia since 2003, by 1) setting up the framework of sharing mid-resolution satellite imagery, 2) preparing Georgians for the geospatial information technology careers, and 3) by applications focused on local and regional issues. Projects have included Georgia 2007 wildfire mapping and analysis, urban sprawl, land cover change impacts on drinking water reservoirs, and Georgia shoreline changes. We have constantly supported and promoted internships for students, workshops for faculty in K-12 and higher education, and top-level satellite image data sharing mechanisms. GeorgiaView will continue to help more Georgians prepare their careers in the geospatial technology fields and to research Georgia's environmental issues with satellite and other remotely-sensed images. Finally, one of GeorgiaView's goals is to help disaster responses (ex. wildfire, hurricane, flooding, etc.) in Georgia using timely satellite imagery.

HawaiiView's activities continue to focus on educational outreach, training, and research.
Learning more about the local environment, including the link between the terrestrial and coastal ocean systems, is of great interest to Hawaii's middle and high school students. HawaiiView engages in numerous activities as conduits for introducing and connecting local students to remote sensing technologies and science. The PI will present a workshop activity at the School of Ocean, Earth Science, and Technology's bi-annual Open House event (16-17 October 2009). The workshop will use the PI's FLIR thermal imaging camera to demonstrate thermal imaging applications of remote sensing. In January 2009 the PI has been invited to teach on the subject "Thermal remote sensing of volcanoes" at an NSF funded workshop in Costa Rica, which will focus on training students and professionals from North, South, and Central America in the use of remote sensing for hazard mitigation. We will also continue to make remote sensing data available via the HawaiiView website.

IdahoView's goals establish IdahoView as the primary coordinating entity for remote sensing data management, training, and applications for Idaho. The AmericaView and IdahoView programs have stimulated active communication in the state of Idaho as well as coordination that has already led to significant success in building the cyber infrastructure critical for remote sensing data management in the state. Other activities include enabling both national participation as well as state participation across our diverse geographic regions that encompass a wide variety of biophysical settings, land management entities, and environmental monitoring needs. A strong focus will remain on establishing communication and coordination of activities being funded from a variety of sources. IdahoView will develop coordinator tasks and means for leveraging in-state initiatives with those underway across the AmericaView program. A final goal for the coming year will be to become more active in service to the national AmericaView program through attendance at the meetings, outreach, and participation in AV working committees. IdahoView is committed to the collective vision of the AmericaView program and active participation.

IndianaView is a state-wide consortium of 14 universities and institutions in Indiana. IndianaView facilitates and promotes the sharing and use of public domain remotely sensed image data (from both aerial and satellite platforms) by Indiana universities, four-year colleges, community colleges, K-12 institutions, libraries, museums, government agencies and the private sector through tutorials and training. IndianaView provides mini-grants to support research and technology education to member institutions and provides free access to near real-time

satellite images to the community. We also promote the use of remote sensing data to monitor statewide issues such as crop development, water quality, urban development, and flooding.

IowaView is presently working with several federal, state, local and tribal agencies in Iowa on remote sensing related research, education and outreach activities. The main goal is to continue to build partnerships and infrastructure to conduct remote sensing education, research, and outreach activities in the State of Iowa with the following goals and objectives: 1) continue to develop advanced remote sensing education and training programs that are tailored to the needs of academic staff, local and state government agencies and private sectors, 2) to promote and support collaborative remote sensing application research effort, develop techniques and tools for local as well as state government agencies, 3) to transfer remote sensing data to educational institutions, local and state agencies, and the private sector in Iowa, 4) to provide remote sensing research opportunities for students, and finally 5) to establish a synergistic relationship with other AmericaView states on educational and research activities.

The overarching goal of **KansasView** is to advance the availability, timely distribution, and widespread use of remotely sensed data and geospatial technologies to support the needs of the state's public agencies, research and education communities, tribal colleges, private enterprise, and the general public.
KansasView has helped create and maintain several key imagery databases, and has customized all imagery data sets to correspond with other geospatial databases; data sets are available without charge. KansasView also continues to support the training and education of undergraduate and graduate students, consistently funding graduate students and providing data to numerous research projects. We have reached out to K-12 educators by working cooperatively with programs that bring together networks of teachers in both science and geography that have allowed us to capitalize on their interest in introducing new technology to their students.

The primary focus of **KentuckyView** is on the use of images collected from satellites and aircraft, as well as other geospatial technologies, to support K-16 education, public outreach, applied research, and data distribution. The KentuckyView consortium currently comprises six universities and two state agencies in Kentucky. Via its mini-grant program for students and faculty at member universities, KentuckyView strives to bring remote sensing materials to formal and informal educational curricula at all levels through workshops and student projects; reaches out to the public via presentations and our website; and distributes and applies remote sensing data and technology to help solve pressing environmental (e.g., forest health) and societal (e.g., water quality) issues in the Commonwealth. Particular emphasis is placed on providing students (the future workforce) with training and research opportunities.

LouisianaView is a state consortium of geospatial science, education, and natural resource management organizations that work together to advance remote sensing and related geospatial technologies in ways that leverage federal and private investment in remote sensing instruments and data. Louisiana View activities are designed to: 1) strengthen a Louisiana consortium of data users, 2) actively build an archive of multi-sensor satellite imagery, aerial photography, etc. and a user-friendly dissemination mechanism, 3) provide continuing education opportunities at the University of Louisiana at Lafayette for end users, 4) collaborate in remote sensing research, and 5) provide technological support and technology transfer to data users. LouisianaView serves Louisiana by working in Natural Disaster Response and Training. We also work to develop and apply Imagery and Geospatial technologies with the USGS-National Wetlands Research Center, the Louisiana National Guard, the Governors Office of Homeland Security, FEMA, the State of Texas, and many of our local Parish Governments.

The mission of the **MarylandView** Consortium is to ensure that educational institutions, government agencies, non-government organizations, and businesses in Maryland make the fullest use of remotely sensed imagery and other digital geospatial data and technologies. The goals of the MarylandView Consortium are to 1) serve as a

Consortium of users and suppliers of remotely sensed data in the State of Maryland; 2) serve as a remote sensing education and outreach program for the State of Maryland; 3) make appropriate data, software, and pedagogical materials on remote sensing and digital image processing available for use by K-16 teachers; 4) serve as a conduit for research into new applications of remotely sensed data in academia, government, and business; 5) develop pilot projects in cooperation with the U.S. Geological Survey and other end users to demonstrate the application and benefits of remotely sensed data; and 6) facilitate the use of remote sensing data to monitor statewide issues such as urban sprawl and forest fragmentation.

MichiganView seeks to provide needed resources for building a workforce that is more skilled in science and technology. The purpose of MichiganView is to promote the use of remote sensing technology in Michigan by supporting research, education, workforce development, and technology transfer. The consortium consists of academic, non-profit, and government organizations that are involved in remote sensing and are interested in the public sharing of educational resources, research activities, and dataset sharing. Activities for the MichiganView consortium that will further promote the use of remote sensing technologies in Michigan include 1) expanding the membership of MichiganView to other organizations within Michigan, 2) provide IT infrastructure to enable collaboration among members within Michigan, and support collaboration among AmericaView members, 3) maintain a no-cost publicly accessible data archive of remote sensing data for Michigan, focusing on providing easy to user data formats and access protocols, and 4) developing web-based tutorials for processing and distributing remote sensing data.

MinnesotaView was approved for funding by AmericaView for 2008. Its vision is to work with state agencies and universities in Minnesota to advance remote sensing research, education and outreach. The consortium, led by the University of Minnesota, includes the Minnesota Land Management Information Center, Minnesota Department of Natural Resources, and Minnesota State University – Mankato. Its goals include 1) Increased access to and application of remote sensing data and imagery by agencies, schools and colleges, and citizens, 2) Enhanced understanding of the characteristics and uses of remote sensing data with information on its website, 3) linking potential users to remote sensing specialists so that sensors and data are well matched to user needs and applications, 4) development of improved linkages between remote sensing and GIS to make the best use of geospatial data, 5) promotion of collaboration among agencies for development and application of remote sensing, and 6) participation in and support AmericaView activities and program.

MississippiView, in combination with other Mississippi educational institutions, provides support and resources to further remote sensing and GIS activities throughout the state. MississippiView works with partners in Mississippi to support a high school outreach project in which partner educational institutions work with local high schools to introduce students to remote sensing and geospatial concepts and to complete geospatial projects of benefit to the local community. Through this program, MississippiView and its partners have introduced more than 100 high school students to potential careers in the geospatial industry. MississippiView provides support across all aspects of the geospatial community in Mississippi by supporting training courses, summer camps, after school programs, and other activities.

MontanaView is a state-wide consortium of 9 universities, non-profit organizations and government agencies working within Montana to advance the availability and timely distribution of remotely sensed data. MontanaView works with farmers and ranchers on applying sight-specific agriculture techniques to reduce environmental impacts and economic outputs. We support wildfire management by applying innovative science and technology to on-the-ground natural resource incidents. MontanaView is also establishing a network of geospatial professionals and resources to respond during emergency disasters. Working with our partners, we support geospatial education and workforce development including training and geospatial resources for K-12 school teachers, agencies, and other professionals as well as support to tribal collages in meeting their geospatial needs and course offerings.

NebraskaView works to ensure that Nebraskans make full use of satellite imagery, geospatial data and technologies such as geographic information systems (GIS) and remote sensing for mapping, monitoring and managing our cities and rural lands, and protecting our natural resources. NebraskaView collaborates with the Nebraska GIS Council and the Nebraska GIS/LIS Association to coordinate the implementation of geospatial technologies by state and local governments in Nebraska. We also promote the use of geospatial technologies to the general public through community outreach activities and museum displays. We work with our partners at all of Nebraska's state colleges and universities to support geospatial education and workforce development. Our educational activities have included training and geospatial resources for K-16 school teachers, Nebraska 4H educators, and the state's Science Olympiad.

NevadaView will ensure ongoing, readily available, access to a growing amount of remote sensing and other geospatial data sets. Educational outreach programs in remote sensing and geospatial analysis will increase as will the variety of web enabled remote sensing tools that will become available to the States data users. NevadaView will allow us to bring more remote sensing resources online, continue the growth and development of the Keck state geospatial data set repository web site, allow for remote sensing outreach workshops for a variety of government and public entities, and help support teaching and research labs by insuring access to up-to-date image processing and GIS software. These goals, implemented together, will increase the availability and use of remote sensing data and technology throughout Nevada to an ever growing list of users and applications. In accomplishing these goals NevadaView will be implementing the its mission to provide to all levels of government and the private sector increased access to training, remote sensing data, and imagery applications. This will allow greater integration of the geospatial data and technology into everyday decision making.

New Hampshire View provides a means to bring many groups that use remotely sensed imagery and other geospatial data together in a formal way to aid communication and sharing of resources. In addition, the consortium provides a single point of access for anyone in the state needing imagery or wishing to learn more about geospatial technology resources within New Hampshire. For its members, the consortium provides networking and collaboration infrastructure, educational support and outreach. The ongoing goal of New Hampshire View is to continue to develop and expand activities that will increase awareness among and collaboration between users of remotely sensed and other geospatial information in New Hampshire. We will continue to document and demonstrate the benefits of remote sensing education, outreach, and research activities throughout the state. We propose to achieve the following outcomes:
(1) bring together all those in New Hampshire interested in using remotely sensed data to solve real problems, (2) develop a collaborative relationship between all academic institutions in the state that can then benefit state and local agencies, the private sector, and the public, (3) increase awareness and foster opportunities to work together among all remotely sensed data stakeholders in New Hampshire, and (4) expose those who may not know about the uses of remote sensing and other geospatial technologies to their many benefits and possibilities.

New Mexico View, a consortium of 11 institutions including universities and public agencies, is committed to expanding the knowledge and use of remote sensing data and technologies through outreach programs. These programs are designed to facilitate the training of the existing and future high tech workforce of New Mexico. Our sponsored workshops and online tutorials are designed to educate and train a wide variety of users in remote sensing and geospatial concepts, data use, and applications of advanced technologies. In the 3 years since New Mexico view was established, we have successfully conducted educational training events to communities, public agencies, and students throughout the state. New Mexico View mini-grant funds have allowed member institutions to develop educational materials and demonstrations on a range of geospatial concepts that support technology careers within the state.

New YorkView joined in our AmericaView consortium in 2009. New YorkView focuses on two major activities: 1) establishing strong research groups in diverse applications of remote sensing particularly focusing on urban landscape and terrestrial ecology, and 2) promoting the use of remote sensing in academia and user communities by facilitating education as well as access to remote sensing data and products. New YorkView also plans to provide education and training opportunities to non-professionals and K-12 students. These activities will provide great benefit to various levels of the remote sensing user communities by improving remote sensing infrastructure of the state and nurturing good quality remote sensing scientists of the future.

The objective for the **North Carolina View** consortium is to remove barriers between willing cooperating providers and users, to promote and expand the further development of applied remote sensing for local issues and problems, to cooperatively nurture the intellectual and technical capacity of users through higher education and outreach, and to engage with and educate the public about remote sensing through outreach and educational activities. North Carolina View's participation as a full member in the national AmericaView will enable remote sensing data users in North Carolina to 1) utilize a more efficient and effective means to locate, access, and retrieve existing and future remotely sensed data and applications statewide, 2) develop and enhance collaborative relationships of academic, federal, state, county, city, and public and private sector users, and 3) further the use of remote sensing in North Carolina to address critical issues the State faces, with emphasis on land use and land cover type change, and environmental and coastal resources.

The **North DakotaView** consortium continues to focus on work with geospatial technology educators at tribal colleges serving American Indian groups with land holdings in North Dakota. In 2008, for example, we received an NSF Advanced Technology Education grant to work with educators at Turtle Mountain Community College that will ramp up geospatial technology education at that school. We continue to work to raise awareness about remote sensing and geospatial technologies among the general citizenry of North Dakota through various outreach and training efforts. In 2008 we awarded four $500 scholarships to students using geospatial technologies in their research. Many of those students completed their work successfully and presented results at regional and/or national conferences (duly acknowledging their funding from AmericaView). North DakotaView purchased an ERDAS Imagine HEAK license that will be shared among consortium members involved in higher education. In Fall 2009, North DakotaView will co-sponsor the North Dakota GIS Users' Conference in Grand Forks. We have seen an increased demand in the state for people trained in geospatial technologies and spatial reasoning, and we are pleased that AV funding helps us to fill that need.

The goals of **PennsylvaniaView** are to 1) build partnerships within the Commonwealth to support interests in satellite remotely sensed data, 2) create resources for K-12 teachers to utilize in their classrooms to educate students about satellite imagery, 3) promote the sharing of data through connections with existing resources and acquisition of new data resources, 4) promote the annual Pennsylvania Workshop on Remote Sensing, and 5) work with undergraduate educators and institutions through the Commonwealth to enhance access to satellite data and encourage its use in their courses. The current economic situation has precluded many organizations from moving forward in their development and deployment of educational and training resources. The strong history of California University of Pennsylvania's role in such activities will allow CUP as the principal organization to provide leadership in this area. In addition, members of the PennsylvaniaView team have also led the way in developing and providing access to LIDAR data for Pennsylvania.

In Ohio, **OhioView** is contributing to economic development and redevelopment of the economy through remote sensing and geospatial technology. Ohio's manufacturing base has shrunk considerably and Ohio is one of the hardest hit states due to the recession. Training of workers, teachers and students is an important step in preparing workers for the new economy. In Ohio, OhioView is also contributing to detection of water contamination through algal bloom detection in drinking water supplies and farmland/urban analysis. OhioView is contributing to disaster preparedness from oil spills on Lake Erie to installation security.

The strength that has emerged from the **South Dakota View** program is its education, training and outreach activities. South DakotaView annually sponsors a *Geospatial Technology for Educators* workshop for K-12 teachers, hosted at the USGS Center for Earth Observation and Science (EROS). At this workshop, and at other similar training and outreach events, educators learn how to incorporate remote sensing and related geospatial technologies into their classroom curriculum. South DakotaView's educational efforts also extend to the university classroom and to various user communities such as extension educators and agricultural producers. The extensive archive of remotely sensed imagery maintained by South DakotaView is utilized by a wide variety of users in South Dakota and beyond, including students, researchers, farmers and ranchers, and natural resource managers.

As a founding member of the AmericaView Consortium, **TexasView** has a long and well established record of leadership and accomplishment. TexasView is patterned after the OhioView model. It is a consortium of universities, federal, state and local entities, dedicated to promoting remote sensing through a comprehensive program of research, education and outreach activities. This mission is closely aligned with the mission of TexasView host institution, the Columbia Regional Geospatial Service Center
System, housed at Stephen F. Austin State University. TexasView is the remote sensing arm of the Columbia Center System. TexasView now includes 14 university members as well as an assortment of state and local agency affiliates. TexasView provides a remote sensing voice for the strong GIS community in Texas. TexasView provides strong support for state, regional and local agencies through data buys, archiving and distribution services. An on-going program of education and outreach is helping prepare a new generation of technologically savvy leaders. Finally, TexasView supports research by providing seed grants to member institutions.

UtahView has developed *Virtual Utah* (http://earth.gis.usu.edu/utah/), which was designed so that the public could appreciate changes in the Utah landscape through multi-temporal digital aerial photography. The map server provides users with aerial imagery (photography) for most of the state from 1993/97, 2003, 2004 and 2006. In addition it provides an easy-to-use interface for other forms of satellite imagery for the state, such as MODIS and Landsat. The Intermountain Region Digital Image Archive Center (IRDIAC; http://earth.gis.usu.edu/) is a user-friendly website designed to assist research, land management and educational institutions with the development of tools and decision support systems for natural resource management using remote sensing. The archive also stores, processes, and disseminates, through the Internet, remotely sensed information to state and federal collaborators and the public within the Intermountain Region.

Although **VermontView** has not been funded yet our AmericaView consortium has been actively involved in insuring a return on investment on the high resolution imagery and LiDAR datasets that exist by 1) making them publically accessible and 2) generating usable products such as high resolution land cover. With funding we would really like to become more involved in disaster response. There is no agency in the state that has robust image exploitation capabilities. As a result imagery has not been used extensively for disaster response in the past.

VirginiaView's goals are to distribute Landsat and related geospatial data to a broad spectrum of users; cultivate the user community through informational programs, workshops, development of educational resources and Landsat-related products; and strengthen and enlarge the coalition of VirginiaView partners through sharing of goals, mutual support, and close communication. Current topics for Virginia include applications of geospatial data to (a) improve understanding environmental implications of the karst landscapes of the Shenandoah Valley and neighboring West Virginia, (b) work with the Virginia Department of Health to investigate relationships between landscapes and occurrence of Lyme Disease, and (c) develop applications of night-time imagery to improve safety and community planning. Current activities are focused on delivering materials that support educational activities in K-12 classrooms and Virginia's Community Colleges. These activities are designed to exploit developments that

permit data streaming in precollege educational institutions and the capabilities of Enterprise GIS capabilities to greatly increase the availability of these resources to middle and high school educators, among others.

WashingtonView is the most recent affiliate member consortium of AmericaView. While a young program, WashingtonView has been active in developing educational materials for K-12 education and in linking remote sensing professionals and services throughout the state of Washington. We plan to provide quality materials to educators throughout the state by collaborating with school districts and educational non-profit groups. WashingtonView also functions as a networking community to connect researchers for the purpose of developing grants of all sizes related to regional remote sensing applications.

West Virginia View's emphasis has been on supporting and strengthening K-12 and higher education throughout the state. Over the past five years, working with five academic institutions and numerous K-12 science teachers, West Virginia View has supported the development of new college courses, leveraged lab resources and software licenses, supported dozens of graduate students in remote sensing, and trained over 100 K-12 science teachers in geospatial science and technology. We are currently developing a new two-course sequence at West Virginia University for pre-service science teachers, focusing on geospatial technology and Earth system science applications. Our emphasis on science and technology education is paying dividends in schools, colleges, and in the state's technology workforce.

The overall vision of **WisconsinView** has been to build and grow a remote sensing community in Wisconsin. WisconsinView adds remote sensing imagery to our online archive on a daily basis with the near real-time MODIS acquisitions that we clip and process to conform to our standard state projection. WisconsinView continues to develop and distribute GIS/RS instructions for educators that can be used in curricula to teach at the K-12 level. We have developed “How-To” instructions to accompany MODIS imagery available through WisconsinView and companion websites. Three of WisconsinView’s best success stories involve 1) technology transfer that has resulted in the operational use of remote sensing by our Wisconsin DNR, 2) facilitating growth in the applications of RS data by making remote sensing data and imagery available for free download, and 3) support of Wisconsin emergency management for the flooding of 2008 that demonstrated the value of AmericaView and WisconsinView and the application of remote sensing data.

WyomingView promotes the use of remote sensing technology for mapping and monitoring Wyoming's wildlands, rangelands, croplands and water resources. WyomingView also collaborates with federal, state, and tribal (Wind River Environmental Quality Commission) government agencies, with participation from the University of Wyoming (UW) students, for incorporating satellite images for natural resource management issues. Every year UW students receive internships to work on Wyoming's natural resource monitoring and mapping issues that are of interest to federal and state government agencies. Since 2003, more than 15 UW undergraduate and graduate students have been trained in the use of satellite images for natural resource management issues. WyomingView continues to provide technical support to governmental agencies, private companies and UW students and faculty in the use of remote sensing technology.

DISTRIBUTION OF EFFORTS WITHIN ACTIVITY CATEGORIES PROPOSED BY STATEVIEWS FOR FY2009 CONSORTIUM STATEMENTS OF WORK