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The Federation of Earth Science Information Partners gratefully acknowledges NASA and NOAA for their generous support. We also thank our cluster leads, technical leads, speakers, and countless volunteers that continue to contribute their time and talents that makes our organization great.
Technical Track Overviews & Descriptions

The ESIP Federation Winter 2007 meeting structure continues to reflect the technical focus of previous Winter meetings, but with an explicit emphasis on identifying specific technical capabilities within the Federation that may be applied to clearly defined problems developed by the Federation's Application clusters.

The featured technology tracks for the meeting consist of:
- Metadata Requirements
- Semantic Technologies
- User Interface/Visualization
- Web Services Chaining.

Potential applications of these technologies will be identified for the following application areas:
- Air Quality
- Coastal Management
- Disaster Management
- Ecological Forecasting
- Water Management

The general structure for the technical breakouts is as follows:

Wed. 1/3/2007, 4:00-6:00. Demonstrate existing state-of-the-art of technology teams within the Federation. Engage in discussion among application cluster and technology track attendees to begin the process of linking technical capabilities with identified high-priority science/application needs. The demonstrations will be brief, and leave sufficient time for dialog about future potential deployment of technologies into application areas. (Parallel Sessions)

Thurs. 1/4/2007, 11:15-12:45. Define areas of collaboration and action items for after the meeting. The final technical plenary will be on Thursday afternoon from 3:30-5:30 and will focus on any gaps in the technical or application areas covered in the meeting and seek to identify any additional factors that might prevent the development and deployment of successful solutions to the problems identified by the application clusters.
Technical Track Descriptions

**Metadata Requirements**  
*Co-chaired by Bruce Barkstrom and Rob Raskin*

The Metadata Requirements track will focus on the following during the meeting:

- GCMD, ECHO, and GOS metadata tools for entry and search
- Data quality measures and requirements
- Search terms for application areas (joint session with Semantic Technologies)

**Semantic Technologies**  
*Co-chaired by Peter Fox and Rob Raskin*

The Semantic Technologies track will provide a broad overview of available semantic technologies. As defined at www.semanticweb.org, the Semantic Web is: “An extension of the current web in which information is given well-defined meaning, better enabling computers and people to work in cooperation.”

During the meeting, the Semantic Technologies track will offer the following:

- Tutorial on Semantic Web and Technologies
  - Introduce the topic of semantic web and present examples of present application along with the tools and technologies being utilized.

- Presentation of NASA TIWG semantic web technical infusion roadmap Version 0.4 - see http://teambps.mywsssite.com/seeds/wg/infusion/Semantic%20Web%20Documents/semanticwebinfusionroadmap0.4.ppt

- Demonstrations
  - NOESIS - Helen Conover and Rahul Ramachandran (UAH/ITSC)

- Joint meeting with the metadata requirements group
  - Identification of common needs with web services
User Interface/Visualization  
Co-chaired by Karl Benedict and Bruce Caron

This track will concentrate on the emerging user interface technologies that are available for presenting data, data services, and information derived from those data and services to end users. Technologies to be considered and demonstrated include:

- Lightweight web-based interfaces
  - "Development of a 'Slippy-map' interface for OGC WMS services" Karl Benedict.
  - In this demonstration I will discuss a new lightweight mapping client that supports the display of OGC WMS provided by multiple service providers/servers. This client makes use of current web development models to provide a responsive user experience without the requirement of software installation or configuration on the client machine (beyond a modern web browser and an internet connection).

- Heavy web-based interfaces
  - Customized COTS desktop applications
  - "Announcing the DIAL ACCESS authoring tools: Making data-rich user applications the quick and easy way." Bruce Caron
  - "Introducing the Matlab GUI suite for satellite-derived surface oceanographic data sets via OPeNDAP." Peter Cornillon. These GUIs are designed to expose complicated data sets such as the Pathfinder 4km SST, dramatically facilitating access to the data. The GUIs all have a similar look and feel and return the variables in similar structures. To date, GUIs have been developed for the following. SST: Pathfinder 4km, MODIS and GOES. Winds: QuikSCAT and SeaWinds. Model (OK, not really satellite-derived, but still of interest): HYCOM. Over the next year we will add GUIs for ocean color, sea surface height and precipitation. We will also port some (or all) of these to IDL.

- Custom desktop applications
  - “REACT – An Application for Integration of Multiple Data Streams for Desktop Decision Support” Erick Malaret
Web Services Chaining
Co-chaired by Rudy Husar and Brian Wilson

The Web Services Chaining track will offer:
  • Service Chain Demonstrations
  • Working Session to "brainstorm" NEW Application Chains
    - Identify data sources & services, determine feasibility, construct a chain, etc.
    - Please come prepared with scenarios, ideas, or wish lists.
  • Live Construction of new service chains
Air Quality
Co-chaired by Stefan Falke and Rudy Husar

The air quality session will focus on laying out the air quality web "landscape." The availability of data services, catalogs, portals, and analysis tools by a diverse group of organizations make this a good time to see how the various components can be linked to form air quality information systems. A goal will be to identify available web entities, understand their respective roles, and make connections among them to form networks of services. Possible "mini-networks" will be identified for demonstration/implementation by participants.

The air quality demo will present the use of interoperable web services to aid decision support pertaining to air quality events. The current challenges for air quality information systems include: delivery of air quality data in real time; characterization of air pollution through the integration of multi-sensory data and providing agile support to regulatory air quality management. The demo presents how an interoperable web service architecture using standards based data access and processing can support air quality management. The demo highlights two use cases: 1) monitoring and analysis of a wildfire smoke event and 2) use of OMI NO2 in analyzing an anthropogenic air pollution event.

The wildfire use case is focused on major forest fires in Manitoba, Canada in late June and early July 2006 when smoke was transported eastward and south over the Northern Plains. The demo shows how an air quality analyst might use distributed data access, processing and analysis services to understand the impact of smoke on surface air quality.

Data used in the analysis include surface air quality and weather monitors, satellite observations and model forecast output. Data are used from:

- NOAA (Fire occurrence, smoke plumes)
- NASA (aerosol model, satellite observations of aerosol optical thickness and NO2)
- EPA (air pollution concentrations)
- and others.
All datasets are accessible through web interfaces; in some cases through Open Geospatial Consortium (OGC) specifications. DataFed is used for data visualization, integration, processing and analysis. A “third-party” GoogleMaps mashup will be shown to illustrate how open, standard data access interfaces allow these data to be broadly used in a variety of tools and applications.

The demo will present processing services for data analysis. Spatial and temporal aggregation services allow pattern and trend analysis comparisons among data sources. A grid processing service is used to calculate ratios for analyzing differences between model forecasts and satellite observations.

The demo is intended as a starting point for future expansion with other data providers, mediators and users. The hope is that it serves as a foundation for creating more advanced demonstrations and implementations of interoperable web services supporting air quality research and management.

**Coastal Management**
*Co-chaired by Sara Graves and Jim Closs*

The Federation Coastal Management Cluster is comprised of a broad cross-section of government, industry, and academia with mutual vested interest in coastal processes. After the second cluster meeting since its inception in July, 2006, the group is still exchanging information on respective resources, needs, issues, and partners. However, a common focus topic of harmful algal blooms has been decided on to develop processes to work together. In addition, recent discussions with the Ecological Forecasting cluster have revealed other common themes and potential leveraging opportunities for respective interests and resources. The clusters have identified four joint focus areas: harmful algal blooms, fisheries management, coastal habitats, and sea level rise. Cluster members are in the process of populating Integrated System Solutions ‘Triangle Charts’ highlighting data observations and model output, partners, DSSs, and societal outcomes for these four focus areas. These diagrams will guide the work of the clusters in future Federation activities, and become the basis for an interactive interface on the Federation portal.

In addition, there is interest in the Federation for making use of the Earth-Sun Science System Components (Coin Chart) for tracking NASA science resources as they apply to Federation member and partner decision support systems. The use of the coin chart and underlying Earth Science Knowledge Base will be discussed, along with the Rapid Prototyping Capability, at the Federation meeting in January, 2007.
Disaster Management
Co-chaired by Chris Chiesa and Vince Ambrosia

The Disaster Management Cluster seeks to evolve and demonstrate ESIP-shared technologies related to disaster monitoring and observations. The cluster further seeks to marry those technologies with the appropriate community partners to enable improved and more rapid decision-making tools and processes for mitigating disaster loss by the community. The development of these tools by the cluster will also allow the greater “disaster-interested” community to have an easy mechanism to visualize disaster related data and information. The goal is to organize and showcase the capabilities of the ESIP disaster cluster and partners and facilitate their data and information exchange through the ESIP portal mechanism.

ESIP partners, interested in evolving technologies or data utility for improved disaster monitoring are welcome to participate and share their developed or developing products and information. Other ESIP partners, working in the disaster management community also are welcome to share their needs and requirements with the cluster community to ensure that the information and products developed by the cluster can be effective and useful.

A decision support tool and mechanism for the disaster community that integrates COTS visualization software and multi-point source disaster related data will be showcased. Discussion of possible use by the cluster to serve the ESIP community and the disaster community will ensue. Maturation of these technologies and information will be a major objective of the cluster and hopefully lead to increased utility by the ESIP community and others involved in Earth Science and Disaster Management.

Education: A Cross-cutting Community
Chaired by Tamara Ledley; Other Education points of contact are working with individual clusters

Most funded scientific research activities require an educational component that gets the data collected and the knowledge developed by scientists, used by students and teachers in a meaningful way. In this demonstration we will show how educational applications can be built from the scientific and applications work of the thematic clusters. In particular we will show how data similar to that used in the demonstration by the Air Quality Cluster (location of fires, atmospheric particulate matter, visibility, and winds) can be incorporated into the USGS Data Map Viewer, and then through either directed or open ended investigations help students deepen their understanding of Earth system science by examining the relationships between these variables. While the
development of this demonstration is at a very early stage we hope to show that this can provide a beneficial exchange not only between the clusters and the education community but also between all of the clusters.

**Ecological Forecasting**  
*Co-chaired by Paul Davis and Danny Hardin*

The Ecological Forecasting cluster is focused on helping to monitor, assess and predict ecosystem dynamics by giving policy makers, resource managers and regulators comprehensive information based on sound science. The cluster has chosen four topics of concern with which activities should begin: harmful algal blooms (HAB), environmental and sustainable development, marine fisheries, and protected area management. There is much potential for overlap with other clusters on topics of ecological forecasting in general and these four topics in particular. We are working with the Coastal Management cluster in addressing harmful algal blooms.

The issue of harmful algal blooms has impacts at many levels of government, the business community, wildlife protection, and health concerns for the general public. Tools are available from multiple sources which allow some insight into the location, severity, duration and response to HAB. We have put together a group of these resources as an example of how the Federation can serve as a focal point as well as an integrator of materials and services.

Existing tools may be suitable for many answers to predicting HAB events, but it is also our goal to connect with all other relevant services within reach of the cluster. Many members of the Federation have products and services that can be considered relevant to Ecological Forecasting. We expect to reach out and cultivate these resources so that users can depend upon the Federation as a location for Earth science inputs to these issues, but also as an arena to achieve new science outputs.

The Ecological Forecasting demo will cover the following:

1. Specifying the problem - using the HAB scenario;
2. Current capabilities - HAB scenario - and accomplishments by the HAB scenario; and
3. Discussion of what gaps may exist, including what ESIP Federation partner technologies may help facilitate.
**Water Management**

The Water Management Cluster is concerned about inland water supplies and their continued availability and quality. Existing water management activities through the NASA-funded WaterNet and the EPA-funded Midwest Spatial Decision Support Systems Partnership (http://www.epa.gov/waterspace/) will be central to the work of this cluster.

The Water Management Cluster has focused its initial activities on inland basin water pollution and on drought and its impacts. Of special interest to the cluster is the NOAA National Integrated Drought Information System (NIDIS, http://usgeo.gov/docs/nto/NIDIS_NTO_2006-0925.pdf) portal being developed, in conjunction with the US Group on Earth Observations. The NIDIS effort is a federal inter-agency effort to provide users with drought information and forecasts to facilitate effective preparation for and management of the effects of drought. To date, NOAA, the Western Governors’ Association (WGA) and other partners (including the ESIP Federation) have provided leadership in preparing a plan for NIDIS implementation.

**NIDIS Drought Portal Demonstration**

The NIDIS vision is to be a dynamic and accessible drought information system that provides users with the ability to determine the potential impacts of drought and their associated risks, while also providing them with needed decision support tools. This vision is most directly supported though the proposed establishment of a U.S. Drought Portal (USDP). By definition, a portal is a site on the World Wide Web that typically provides personalized capabilities for visitors. The USDP will provide county, regional and national drought-related products (analysis, forecasts, and research-to-operations links) to a variety of users, ranging from individuals whose livelihood is impacted by drought to large corporations, water managers and the research community through a dynamic, Internet-based drought portal. For all of these users, access to a “drought early warning system” capable of providing accurate, timely, and integrated information describing drought conditions will be valuable.

The demonstration highlights the components of the USDP under development, emphasizing the existing GIS capabilities at NOAA's National Climatic Data Center (NCDC) and the United State Geological Survey (USGS) that will offer superb web services tools in support of NIDIS.
Building Bridges Between the Scientific and Educational Communities: The Earth Exploration Toolbook and Associated Spectrum of Education and Outreach Activities - Tamara S. Ledley, Carla McAuliffe, LuAnn Dahlman, Nick Haddad

Earth and space science research programs are mainly focused on increasing our scientific understanding of natural phenomena. They also provide the opportunity to engage the next generation of Earth scientists and socially responsible citizens. TERC and the Earth Exploration Toolbook (EET, http://serc.carleton.edu/eet) programs work to take advantage of that opportunity through a spectrum of activities designed to make Earth science knowledge and data more accessible and usable in educational contexts. The EET program’s spectrum of activities include 1) the development of new investigations that provide step-by-step instructions on how to access and analyze Earth science datasets to convey scientific concepts, and 2) teacher professional development activities to facilitate the effective use of this new scientific knowledge and data with students. We seek to work with ESIP Federation partners to increase the education and outreach efforts of their scientific research projects.

CREW - Debbie Belvedere

The Center for Research on Environment and Water (CREW) mission is to quantify and predict water cycle and environmental consequences of earth system variability and change through focused research investments in observation, modeling, and application. CREW integrates research across traditional disciplines to develop an end-to-end program that transitions theoretical research to academic/public education and real-world application, through partnerships with universities, the government, and international agencies. The center goal of improved and applicable predictions of the water and energy cycles will require decisive progression from observations to improved understanding and modeling, and eventually to better prediction and application. The center can not possibly hope to achieve this objective alone, but rather conducts focused activities aimed at improving existing partner capabilities. WaterNet is one of several projects at CREW. The projects success hinges on building a community of engaged research, end-users, industry, government, non-profit, networks, and academic partners. We are pleased to hold a 2-way partnership with the ESIP Federation.
Designing a Collaborative Cyberinfrastructure for Event-driven Coastal Hazard Prediction & Response - Joanne C. Bintz, Ph.D.

The SURA Coastal Ocean Observing & Prediction (SCOOP) program is building cyberinfrastructure (CI) to enable advanced real-time ensemble forecasting of the coastal impacts from storms and hurricanes. This prototype of a reliable, flexible, grid-enabled forecast system integrates real-time distributed data and computer models for the coasts of the southeastern United States. The SCOOP system employs a service-oriented architecture with archive and transport services, metadata catalog, resource management, and portal interfaces. Currently, the SCOOP system uses distributed HPC machines (SCOOP, SURAguid, others) to meet on-demand requirements. Geospatial web services disseminate the forecast results. We provide the architecture overview and describe the currently deployed system for Hurricane Season 2006 as an example in which a storm advisory automatically initiates a workflow that delivers timely forecasts. The system generates a wind-ensemble and then configures, deploys, and analyzes a variety of water level and wave models across distributed HPC resources to deliver timely forecasts.

ES3: Earth System Science Server – James Frew, Peter Slaughter

The Earth System Science Server (ES3) project is developing a local infrastructure for managing Earth science data products derived from satellite remote sensing. By local, we mean the infrastructure that a scientist uses to manage the creation and dissemination of her own data products, particularly those that are constantly incorporating corrections or improvements based on the scientist's own research. Therefore, in addition to being robust and capacious enough to support public access, ES3 is intended to be flexible enough to manage the idiosyncratic computing ensembles that typify scientific research.

EDDC ESIP - Bruce Caron

The Earth Data Discovery Consortium (EDDC) ESIP is a Type III ESIP specializing in building the tools that complete the end-to-end data chain. The EDDC focuses on forefront technology development of client-side software to bring data access to the wider public. The EDDC ESIP started with an ESIP cooperative agreement between NASA and Planet Earth Science, Inc. (C. Gautier, PI). By the time this project (Mission to Planet Earth Education Series) ended, the ESIP had grown to include the New Media Studio. It changed its name to reflect it's goals and brought a new partner on board. RSI, now ITTvis, provides the Federation with licenses for the development of educational products targeted to K-12, informal education and
community colleges. Another new partner, the Center for Image Processing in Education (CIPE), brings new capabilities and interests to the EDDC ESIP.

EPA’s Advanced Monitoring Initiative Supports GEOSS – Steve Young

The GEOSS vision reflects a global scientific and political consensus that assessing the state of the Earth will assist in making informed environmental and public health decisions on personal and global levels. The end result will be access to an unprecedented amount of environmental information, integrated into new data products and decision support tools that benefit societies and economies worldwide. Through the Advanced Monitoring Initiative (AMI), EPA is improving our understanding of how environmental factors affect human health and ecological well being. The AMI projects will enable a better understanding of how to provide improved data to support and enhance environmental policy, management, and decision making.

Federation of Earth Science Information Partners - Carol Meyer

The Federation of Earth Science Information Partners (ESIP Federation) is an independent consortium of nearly 100 environmental organizations, including Earth science data centers, research and educational groups, non-profits, private value-added enterprises, and others whose work centers on the generation, analysis, or application of Earth science information. The Federation is supported by government agencies (NOAA, NASA, EPA, USGS) and by its partner-members. Included in this network are all NOAA and NASA Earth data centers and other data providers.

Global Change Master Directory – Melanie Meaux

NASA’s Global Change Master Directory is a Type I ESIP that provides information to assist users in locating and obtaining access to Earth science data sets and services relevant to global change research. The GCMD holds more than 17,000 Earth science data set and over 1,500 service descriptions that provide vital information to help determine whether the data or service meets the user’s needs. Descriptions include information such as location of the data or service, associated investigators and other contacts, spatial and temporal coverage of the data, resolution of the data, and links to the actual data or service.
Global Land Cover Facility – Paul Davis

The Global Land Cover Facility is an established and successful science information center where land cover products and associated remotely sensed data collections are researched and made available for Earth science operations around the world. The GLCF is a primarily NASA funded facility located in the University of Maryland Institute for Advanced Computer Studies as well as the UMD Department of Geography. Success can be measured at the GLCF through its innovative and quality land cover science products, either through professional publications or output spatial data products. Success can also be measured by the volume and variety of data disseminated through the life of the GLCF. Over 570 terabytes of mostly Earth observation imagery and products have been distributed to date, with associated support materials and customer service. Future activities at the GLCF include continuity of current service, enhancing land cover science research, and developing innovative data discovery technologies.

MY NASA DATA – Lin Chambers; Susan Moore; Penny Oots and Denis Diones

The MY NASA DATA project is a collection of ideas and activities that will assist teachers, students, and citizen scientists in the gathering of authentic NASA Earth science data. A main goal of the MY NASA DATA project is to remove the barriers (such as file size and format, and complicated computer tools) that prevent the use of authentic NASA Earth System Science data in the classroom or by the interested public. A microset is a small amount of data - perhaps a single parameter for the whole globe; or a time series for a single location - extracted from a much larger data file. It is in a simple format, such as plain text, or accessible through a user-friendly tool.

NASA Earth Observations (NEO): Moving Data Access Forward for Outreach and Education – Kevin Ward

NASA Earth Observations (NEO) dramatically simplifies public access to georeferenced imagery of NASA remote sensing data. NEO targets the unsophisticated, non-traditional data users who are currently underserved by the existing data ordering systems. These users include formal and informal educators, museum and science center personnel, professional communicators, and citizen scientists and amateur Earth observers.
NEHEA/GeoBrain - Liping Di

The GeoBrain ESIP at the Center for Spatial Information Science and Systems (CSISS), George Mason University is a Type III ESIP specializing in making NASA EOS data easily accessible and usable by students and faculty in higher-education institutes through the development and use of standard-based geospatial Web service and knowledge management technologies. CSISS aims to develop new spatial information theory and technologies for automating the process from raw geospatial data to user-specific geospatial knowledge and decision makings. The GeoBrain ESIP started in Year 2004 when NASA REASoN program awarded an education and technology development project, called NASA EOS Higher-Education Alliance (NEHEA/GeoBrain) to CSISS. The project collaborates with more than ten universities to develop an online learning and research environment, to bring innovative ways to classroom teaching, and to improve long distance education. The GeoBrain ESIP intends to provide higher education institutes all over the world the technology solutions for teaching and research using large amounts of NASA EOS data.

Numerical Terradynamic Simulation Group - Saxon Holbrook

A sample of the products available from NTSG based on six years of the MODIS datastream and continued research and development including; Enhanced GPP/NPP, High Resolution GPP, ET, Seasonalities, Anomalies, a Disturbance Index and a Global Maximum LST.

OPeNDAP’s Server4: Building a High Performance Data Server for the DAP Using Existing Software - James Gallagher*, Nathan Potter*, Patrick West**, Jose Garcia** and Peter Fox** (*OPeNDAP, Inc., **NCAR/ESSL/HAO)

OPeNDAP has been working in conjunction with NCAR/ESSL/HAO to develop a modular, high performance data server that will be the successor to the current OPeNDAP data server. The new server, called Server4, is really two servers: A 'Back-End' data server which reads information from various types of data sources and packages the results in DAP objects; and A 'Front-End' which receives client DAP request and then decides how use features of the Back-End data server to build the correct responses. This architecture can be configured in several interesting ways: The Front- and Back-End components can be run on either the same or different machines, depending on security and performance needs, new Front-End software can be written to support other network data access protocols and local applications can interact directly with the Back-End data server.
This new server's Back-End component will use the server infrastructure developed by HAO for use with the Earth System Grid II project. Extensions needed to use it as part of the new OPeNDAP server were minimal. The HAO server was modified so that it loads 'data handlers' at run-time. Each data handler module only needs to satisfy a simple interface which both enables the previously existing data handlers written for the old OPeNDAP server to be used and also simplifies writing new handlers from scratch. The Back-End server leverages high-performance features developed for the ESG II project, so applications that can interact with it directly can read large volumes of data efficiently. The Front-End module of Server4 uses the Java Servlet system in place of the Common Gateway Interface (CGI) used in the past. New front-end modules can be written to support different network data access protocols, so that same server will ultimately be able to support more than the DAP/2.0 protocol. As an example, we will discuss a SOAP interface that's currently in development.

In addition to support for DAP/2.0 and support for a prototype SOAP interface, the new server includes support for the THREDDS cataloging protocol. THREDDS is tightly integrated into the Front-End of Server4. The Server4 Front-End can make full use of the advanced THREDDS features such as attribute specification and inheritance, custom catalogs which segue into automatically generated catalogs as well as providing a default behavior which requires almost no catalog configuration.

Science Approach - Steven Moore

Science Approach is a for-profit, limited-liability corporation (LLC) dedicated to making formal and informal education engaging, effective, and fun. In support of this vision, Science Approach develops educational materials, offers professional development workshops for teachers and other professionals, evaluates educational projects and products, and develops new technologies. Core competencies of the organization include making scientific research relevant to teachers, students, and the lay public; creating discovery-based educational experiences that engage and inform learners; translating cutting-edge research into educational explorations; simplifying the use of technology in formal and informal settings; empowering learners with tools that promote questioning, hypothesis-testing, communication, and understanding; and supporting educators with practical training and ready-to-use resources.

Science Education Resource Center (SERC) - Sean Fox

The Science Education Resource Center (SERC) works to improve undergraduate Science, Technology, Engineering, and Mathematics (STEM) education through projects that support educators. An office of
Carleton College, our work is funded primarily through National Science Foundation grants. The office has special expertise in effective pedagogies, geoscience education, community organization, workshop leadership, digital libraries, website development and program and website evaluation.

Space Science and Engineering Center - Tommy Jasmin

SSEC is a research and development center with primary focus on geophysical research and technology to enhance understanding of Earth, the other planets in our Solar System, and the cosmos.

The Earth Data Analysis Center (EDAC) – Karl Benedict

The Earth Data Analysis Center at the University of New Mexico is a service center of the University dedicated to the delivery of state-of-the-art geospatial technologies to a diverse collection of user communities that includes public health specialists, natural and cultural resource managers, transportation planners, researchers, educators, public servants, and the general public. For over 40 years EDAC has succeeded in this mission through continuously identifying emerging geospatial technology trends, evaluating those technologies, and bringing appropriate technologies to end users. EDAC's work with the ESIP Federation since its inception has greatly enhanced our ability to achieve these goals through providing exposure to new technologies, identifying new collaboration opportunities, and increasing our awareness of new application areas where we previously had not worked.

Wildfire Research and Applications Partnership – (WRAP Project) Vince Ambrosia

NASA-Ames and the US Forest Service are collaborating to explore cutting edge technologies in fire imaging, telemetry, data / information integration, and UAS platform demonstrations to facilitate a "technology adaptation" and integration mechanism into the fire management community. The collaborative effort involves the USFS-RSAC, NIFC, NASA and affiliated universities. The collaborative effort focuses on R&D, test and evaluations, and integration of new technologies into the remote sensing fire mapping community. The over-arching goal of the effort is to allow fire mitigation agencies to be on the forefront of developing technologies, to share expertise and knowledge, and to come to an improved understanding of fire imaging and data/information integration to allow a more rapid decision-making mechanism for the fire mitigation community. The expected outcomes of this collaborative effort are creation of improved tools for Wildfire Decision Support Systems within the US Forest Service and the other fire mitigation and management agencies.
Dr. Leonard J. Gaydos
Leonard J. Gaydos is a geographer with the US Geological Survey. Gaydos is presently Deputy Regional Geographer for Western Region in Menlo Park, California. In his early career, Gaydos developed methods for using Landsat data to map land cover over extensive areas, particularly in Alaska. He also began the USGS study of urban dynamics, mapping changes over decades to parameterize models for projecting the impacts of urbanization into the future. A continuing interest is in developing the integrated science approach within USGS for increasing the scientific understanding of complex processes and for improving the impact of USGS science for decision-making. He was the long time coordinator of the Recovery and Vulnerability of Desert Ecosystems project. Gaydos manages science programs for Western Region Geography. He and his staff are pursing initiatives in improving the societal impact of USGS science. Major activities include developing approaches for communities and individuals to assess risk to natural hazards as a function of hazard probability and societal vulnerability and to assist decision-makers in evaluating risks to ecosystems. He received a PhD in geography in 1991 from the University of California, Santa Barbara.

Dr. Chris L. Greer
Dr. Greer received his PhD degree in biochemistry from the University of California, Berkeley and did his postdoctoral work at CalTech. Dr. Greer was a member of the faculty at the University of California at Irvine in the Department of Biological Chemistry for approximately 18 years where his research on gene expression pathways was supported by grants from the NSF, NIH and the American Heart Association. During that time, he was founding Executive Officer of the RNA Society, an international professional organization with more than 700 members from 21 countries worldwide.

Dr. Greer has been a rotator and, more recently a member of the permanent staff at the National Science Foundation. He is currently Program Director with responsibility for digital data activities in the Office of Cyberinfrastructure. Previously, he has served as Program Director in the Division of Molecular and Cellular Biosciences, the Division of Biological Infrastructure, and the Emerging Frontiers Division. Dr. Greer recently served as Executive Secretary for the Long-lived Digital Data Collections Activities of the National Science Board and is currently Co-Chair of the Digital Data Interagency Working Group of the National Science and Technology Council’s Committee on Science.
Dr. Anthony Janetos
Dr. Anthony Janetos joined the Joint Global Change Research Institute as Director in October 2006. Previously, he served as Vice President and Director of the Global Change Program at the H. John Heinz III Center for Science, Economics and the Environment, Vice President for Science and Research at the World Resources Institute, and Senior Scientist for the Land-Cover and Land-Use Change Program in NASA’s Office of Earth Science. He also was Program Scientist for NASA’s Landsat 7 mission. Dr. Janetos has many years of experience in managing scientific and policy research programs on a variety of ecological and environmental topics, including air pollution effects on forests, climate change impacts, land-use change, ecosystem modeling, and the global carbon cycle. He was a co-chair of the US National Assessment of the Potential Consequences of Climate Variability and Change, and an author in the IPCC Special Report on Land-Use Change and Forestry, and the Global Biodiversity Assessment. Dr. Janetos has served on numerous NRC committees, and chaired the NASA-supported Landsat Global Data Working Group. He was a co-chair of the U.S. National Assessment of the Potential Consequences of Climate Variability and Change and an author of the IPCC Special Report on Land-Use Change and Forestry and the Global Biodiversity Assessment, and the Millennium Ecosystem Assessment. Most recently he has served on National Research Council Committees on Funding Scientific Research at the Smithsonian Institution, Reviewing the Bush Administration’s Climate Change Science Strategic Plan, and The Decadal Study for Earth Observations. At the Joint Global Change Research Institute, Dr. Janetos is responsible for new directions in global change issues, and overall program oversight. He has written and spoken widely on the needs for scientific input and scientific assessment in the policymaking process to policy, business, and scientific audiences. With many collaborators, Dr. Janetos has written and spoken about the need to understand the scientific, environmental, economic, and policy linkages among the major global environmental issues, and the need to keep basic human needs in the forefront of the thinking of the environmental science and policy communities. Dr. Janetos graduated Magna cum Laude from Harvard College with a bachelor’s degree in biology and earned a master’s degree and a Ph.D. in biology from Princeton University.