EROS DATA CENTER, SIOUX FALLS, SD

EROS DATA

U.S. GEOLOGICAL SURVEY, NATIONAL MAPPING DIVISION

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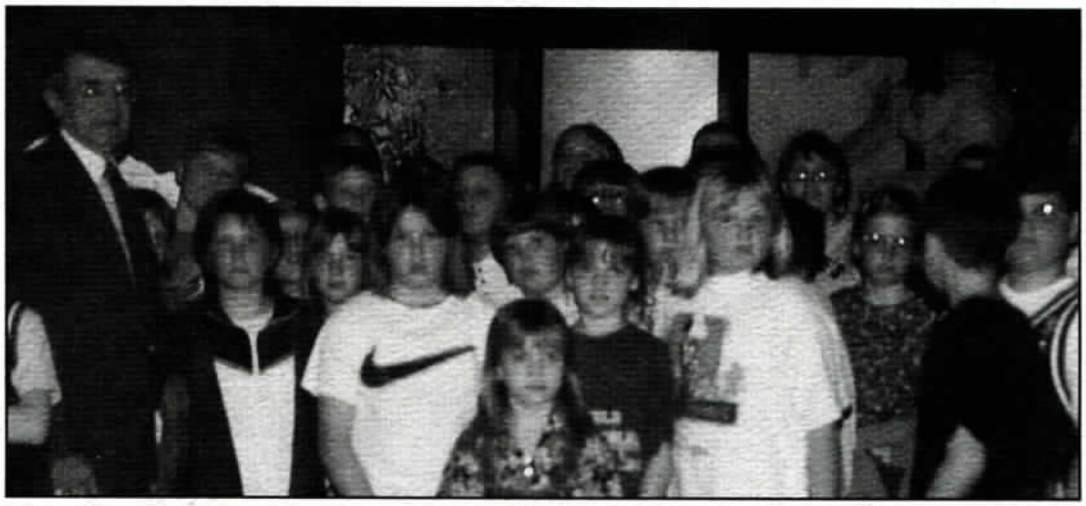
EROS Hosts South Dakota Space Day

Staff Provide Exhibits and Hands-on Demonstrations to 2,450 Students



***Dr. Gordon Eaton**, Director, U.S. Geological Survey, takes time out to pose with some of the 2,450 students who attended South Dakota Space Day activities at EROS April 24, 1997.*

Nearly 2,500 South Dakota elementary, middle, and high school students visited EROS April 24 to explore a diverse set of programs, exhibits, and displays as a part of South Dakota Space Day activities held at Augustana College and EROS. According to **Don Ohlen**, EROS Space Day Coordinator, Science and Application Branch (SAB), Space Day achieved three goals. "The South Dakota Space Grant Consortium sponsored Space Day to give hands-on interactive demonstrations to stimulate interest in the aerospace sciences, network local businesses and organizations who complement each others interests, and create an awareness in the community of the many resources available to support aerospace science."

Volunteers

Rhonda Ribstein-Newman, Program, Budget, and Administration (PBA), coordinated the efforts of more than 100 EROS volunteers, who gave demos, handed out literature, lectured on remote sensing, assisted visitors with disabilities, and helped with parking and crowd control.

Logistics

Chuck Wentler and **Mark Barber**, PBA, coordinated the logistics function for Space Day activities at EROS. Wentler and his volunteer staff coordinated school bus and other visitor parking, roped off restricted areas of the building, posted signs, and made certain the grounds could accommodate 2,450 children.

Exhibits

Rachel Clement, SAB and **Ron Beck**, PBA, planned and coordinated exhibitors and two dozen exhibits featuring the tools and data that fuel the Center's programs, services, and activities. Exhibits focussed on three primary themes: remotely sensed data, geography, and the function of maps. From 8:30 a.m. to 3 p.m., exhibit volunteers answered many children's questions concerning the what, why, and where of remote sensing.

Astronaut Mike Mullane

The highlights of the 1997 South Dakota Space Day event were keynote addresses NASA Astronaut **Mike Mullane** gave to three groups of school students the morning and afternoon of April 24 at Augustana College. Mullane's message to elementary, middle, and high school students was simple. He stressed that there are three things they need to do to make their dreams come true. "You need to take care

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INSIDE

UP FRONT

When we opened the new addition just over a year ago, there was a sense that the Center would be the site for quite a few conferences, workshops and technical meetings. As I have reported to you in the past, that anticipation was well realized. Hardly a week goes by when some group isn't visiting us. As I write this, representatives from all around the National Mapping Division are in the auditorium wrapping up 3 days of technical discussions on data collection and integration.

And a few days ago, I was showing a senior official from the Department of the Interior around the Center. Just down the hall from my office we observed a group of EDC staff taking DAAC operations training, several visiting scientists from Mongolia and Peoples Republic of China helping to validate the East-Asia portion of our 1-km global land cover characterization data set, and a workshop of leading academic researchers debating state-of-the-art land use modeling tools and techniques. Needless to say, our visitor was impressed (and so was I!).

Please keep in mind the reason why all of these groups are meeting here. Certainly we have a facility that merits some attention. However, the primary reason technical and management representatives come here is based on the quality of the work done by each of you. Our success is based on the dedication and performance, which is obvious to me and to the visitors, demonstrated on a daily basis by the EDC workforce.

That flow of visitors will not diminish in the near future. For example, in early September, the United Nations Environment Programme (UNEP)/Global Resource Information Database (GRID) office will be hosting 20-25 participants from 12 arctic countries for a series of technical meetings. The guests will expect to learn more about the excellent work being done here, and I suspect many of you will enjoy the opportunities for cross cultural exchanges. That same month, a group of scientists from several Latin American countries will be studying here, which will provide another opportunity for discussions and new friendships.

On a different subject, I occasionally get to announce very good news. One of our associates, **Dr. James Merchant**, will be receiving a major USGS tribute. Jim, who is affiliated with the Center for Advanced Land Management Information Technologies at the University of Nebraska-Lincoln, is an important partner in applications development and research which contribute to the USGS mission. He has worked closely with EDC staff on the Pecora conference series and is an active partner on EDC land cover characterization research projects. For his work and leadership, Jim will be presented with the USGS John Wesley Powell award. That award is given annually to an educator who shows unique leadership in expanding awareness of the work of the USGS. Fittingly, Jim will be given his award later this summer in a ceremony at the Center.

Donald T. Lauer

EROS Gets A Lift From Landsat 7 Antenna Installation

Pedestal and Reflector Raised Into Position

Nearly 25 years after EROS staff began acquiring, processing, storing, and distributing data from Landsat satellites, a major step to prepare the EDC to become the primary U.S. ground station for the data occurred Friday, June 6, 1997. After 5 hours, Datron engineers from Simi Valley, CA, with the help of 2 cranes and operators from Sioux Falls Construction, raised the pedestal and antenna on a reinforced cement pad northeast of the building a little after 1 p.m. to a smattering of applause from curious EROS employees.

EROS staff will use the 8,000-pound antenna, measuring 36 feet across, to receive images directly of the Earth's land cover from the seventh Landsat satellite, which is planned for launch from Vandenberg Air Force Base in mid 1998. For the past 25 years, EROS employees received satellite images from the Landsat series of satellites indirectly, via a satellite relay system.

A team of EROS staff, led by **Darla Werner**, worked closely with people from NASA and NOAA for a year to prepare for installing the Landsat 7 antenna. The systems that make up the rest of the Landsat 7 ground system at EROS will be installed throughout this summer. The entire Landsat 7 ground system is set for completion by the end of August. Full system integration and testing will continue until Landsat 7 is launched in mid 1998.

A crane used by Sioux Falls Construction employees rests the 8,000-pound Landsat 7 antenna atop its pedestal June 6, 1997 as Datron engineers from Simi Valley, CA, secure bolts from the fenced platform of a boom.

USGS Internet Experts Exchange Information at EROS During NetTEM'97

Three-day Workshop Draws Close to 200 People

The EROS Data Center hosted the first USGS Internet Workshop called, The 1997 Internet Services Technical Exchange Meeting (NetTEM'97), May 13-15, 1997. The workshop provided a forum for content providers, computer and data base specialists, webmasters, managers, and other professionals committed to creating and maintaining a high-quality, seamless USGS Internet interface for biological and earth science information services. Through individual and group presentations, discussions, and training sessions, attendees from divisions across the USGS exchanged ideas, tools, techniques and experiences to improve the use of Internet technology to better serve USGS customers.

Keynote Address & Vision

Connie McGregor, USGS associate director for programs, served as the keynote speaker for the workshop. McGregor told workshop participants that they are a vital link to the earth science information people want and need. "What a wonderful vehicle this (the worldwide web) is for getting other people to be aware of who we are, what we do, and why what we are providing is relevant to them."

Workshop Topics

Following McGregor's keynote address, participants experienced many individual and panel discussions, presentations, and training sessions that focussed on topics covering a wide range of Internet issues, tools, and techniques. The workshop offered sessions on the new USGS Visual Identity, web server technology, electronic publishing, market analysis, system security, data integrity, intranets, outreach, and customer support.

Another Workshop

While NetTEM'97 was in full swing, USGS data managers held a concurrent meeting called the Information Management Policy Workshop. Sponsored by the USGS Information Council, this workshop enabled participants of both workshops to examine and discuss Federal information mandates that affect activities and programs at their facility or in their division.

Based on the broad attendance and participation by all USGS divisions, topics discussed, available training, and response of attendees, workshop planners, presenters, and trainers have to feel that the first USGS Internet Workshop: 1997 Internet Services Technical Exchange Meeting was a tremendous success. USGS attendees from across the nation left these workshops armed with enthusiasm and the knowledge, skills, and abilities to improve the use of Internet technology to disseminate USGS earth science information to people worldwide.

ASTER Joint Science Team Visits EROS *by Lisa Kurtz*

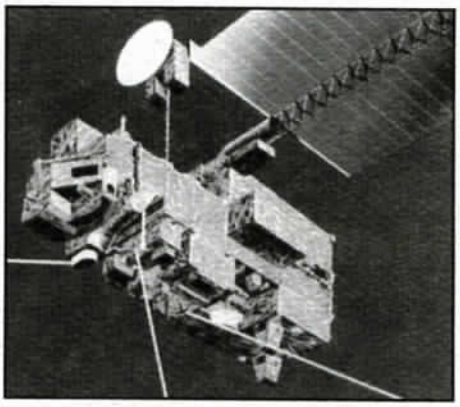
Fifty people associated with the Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) Joint Science Team met at EROS May 20-23, 1997 to experience first hand the Land Processes Distributed Active Archive Center (LPDAAC), which will process, archive, and distribute data and products from the ASTER sensor. While the majority of the meeting took place at the Holiday Inn-City Centre, the group also visited EROS for an informational tour of the EDC DAAC and an outdoor barbecue.

The ASTER Joint Science Team consists of primarily American and Japanese members and functions in separate, specialized groups. Members of the ASTER team focus on the developments of Japanese and U.S. ground data processing systems and past activities involving multi-disciplinary problems and technical issues related to the Earth's resources.

ASTER is an imaging device developed by Japan that will be carried on the EOS AM-1 platform launched by the U.S. in 1998 as part of NASA's Earth Observing System Program. The ASTER system will serve as the only high-spatial resolution instrument. As such, it will be used by NASA scientists to monitor other instruments, any changes that may occur, and validate and calibrate studies. The ASTER sensor will collect data in three wavelength bands; the Visible and Near Infrared, the Shortwave Infrared, and for the first time, the Thermal Infrared.

Key EROS participants in the meeting included **Jim LaCasse**, **Glenn Kelly**, **Saud Amer**, and **Bryan Bailey**. According to Bailey the meeting was an all around success. "The Team enjoyed the dinner and tour and were impressed by the Data Center's DAAC, facilities, and staff." He added, "The meeting was successful because we made progress and appropriate attention was given to all areas of study."

The next ASTER Joint Science Team Meeting will be held in early December in Japan.



The Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) sensor, developed by Japan, will be launched by the U.S. in 1998 onboard the Earth Observing System (EOS) AM-1 platform through NASA's Earth Observing System Program.

EROS Staff Help Dakota Flood Victims

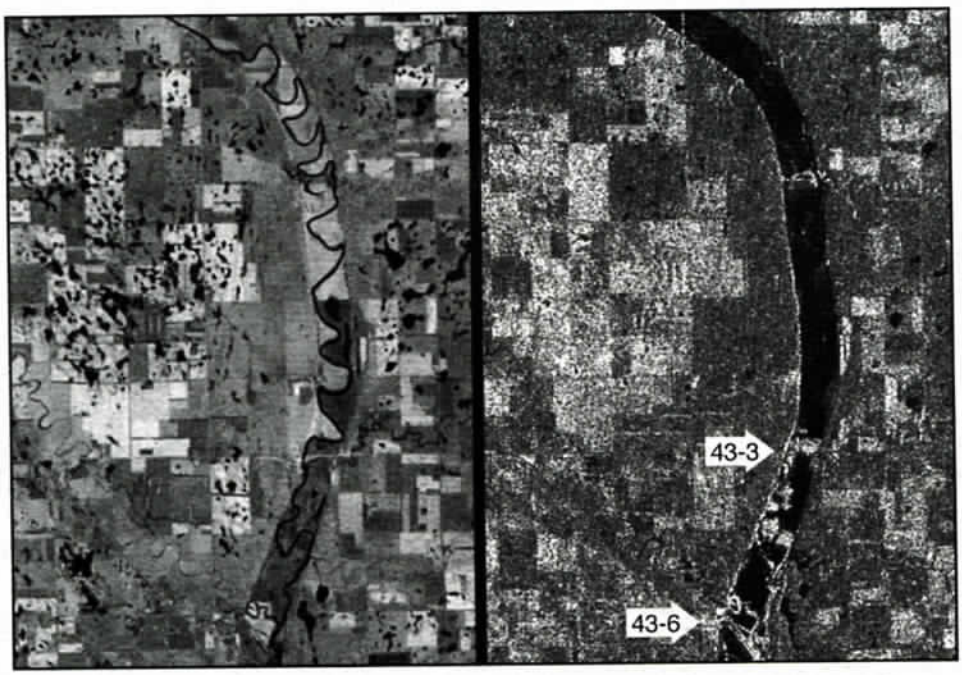
Following one of the most severe winters in the history of the Dakotas, nearly 50,000 people were evacuated from flood-stricken Grand Forks, North Dakota. The James River wreaked havoc on communities along its banks in east-central South Dakota. And Watertown, South Dakota, certainly lived up to its name. In the wake of devastating spring flooding, EROS staff demonstrated a wave of Midwest support for North and South Dakotans impacted by spring flooding.

Members of the EROS Data Center Activities Association organized an effort with Edison Middle School to collect donations for flood victims of Grand Forks, North Dakota. Thanks to the generous support of EROS employees and Edison Middle School students, food, cleaning supplies, and cash were donated to the Red Cross for distribution to Grand Forks flood victims.

South of the border, EROS staff also supported the flood situation in South Dakota. EROS employees developed copies of nearly 500 photos of flooding along the Big Sioux and James Rivers in 1969 South Dakota floods. Among these photos were more than sixty 40-inch prints of cities and towns along these rivers. In addition to the prints, some topographic and shaded relief maps were given to South Dakota Governor **Bill Janklow** for an address on the potential flood situation in South Dakota on South Dakota Public Television, March 17, 1997.

In other flood-related support, KSFY-TV interviewed **Dave Meyer**, Science and Applications Branch, about his use of radar data and aerial photos to assess flood damage along the James River and other areas in South Dakota.

From personal donations of time and money to professional use of radar and photographic technologies, EROS employees offered much needed help to flood-stricken people all across North and South Dakota. While this story isn't particularly shocking or Earth shattering, it serves as yet another example of how EROS employees share and care for people in need.



Landsat TM data (left), acquired May 25, 1993, of a portion of the James River just north of Forestburg, SD. Radarsat data acquired April 3, 1997 by Horizons, Inc. Arrows 43-3 and 43-6 indicate areas validated with aerial photos.

Employee News

USGS

Milestones

The USGS recently honored **Wayne Rohde** for 20 years of service and **Shar Van Beek** for 10 years of service with the Government.

Congratulations to: Sue Greenlee and the entire population of "Topo Town." Sue and company recently collaborated with NASA, NOAA, UNEP, USAID, and other international organizations to complete and make available a global elevation data set for use in many diverse earth science disciplines. Called GTOPO30 (G-TOH-POH-30), the data set features digital elevation data of the Earth's land surface at a 30-arc-second (about one kilometer) ground or spatial resolution. This data set features a significant increase in detail over previously available global elevation data sets.

Awards

John Boyd received a STAR Award for his continuing application of his engineering expertise in implementing critical satellite data processing systems.

Jane Westegard received a STAR Award for her continuing high-quality commitment to her work responsibilities during the creation of the Satellite Systems Branch.

Tom Kalvelage received a STAR Award for continuing engineering expertise ensuring EROS is ready to receive data from Earth Observing Systems instruments in 1998.

David Ochsner received a STAR Award for effective leadership skills in working with all Branches and Program Managers to solve equipment procurements and computer operations problems.

Jean Happel received an On-the-Spot Award for outstanding work in developing and implementing billing procedures for the International Program.

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EROS Staff Host First GLOBE Teacher Training Workshop

Local Teachers Take Earth Science Training Back to School

Twenty-four science teachers from the Sioux Falls School District took part in a week-long workshop administered by NOAA, NASA, the National Science Foundation, and the EPA, May 19-23, 1997 to learn more about the environment. EROS staff hosted its first Global Learning and Observations to Benefit the Environment (GLOBE) Teacher Training Workshop as the first step of an educational outreach partnership with the Sioux Falls School District.

About GLOBE

The GLOBE Program is a hands-on environmental science and education program joining students, teachers, and scientists from around the world to study the global environment. Sioux Falls teachers received training in five GLOBE scientific areas of interest: water, soils, land cover/biology, the atmosphere, and global positioning satellites (GPS). Despite cool temperatures and windy conditions, field activities were a part of the agenda for the Sioux Falls teachers each day of the workshop.

EROS Participants

Four EROS staff members joined a team of five other trainers from around the nation, assembled by the GLOBE office in Washington, D.C., to give the workshop. **Charlie Trautwein** and **Glenn Kelly,** SAB, taught the Remote Sensing and GPS segments of the workshop. **Kevin Lowell,** CSB, trained the workshop participants in the use of MultiSpec software. **Mark Barber**, PBA, worked with **Cheryl O'Brien**, Staff Development, Sioux Falls School District, and served as the on-site coordinator for the workshop.

The out-of-house trainers sent to EROS by the GLOBE home office in Washington, D.C. included the following people:

- **Gary Randolph**, Facilitator, Washington, D.C.
- **Joelle Auberson**, Activity Coordinator, San Francisco, CA
- **Lynne Hehr**, Geologist, Fayetteville, AR
- **Skip Hopkinson**, Hydrologist, West Hartford, CT
- **Vince Hurley**, Computer Tech, Vienna, VA

In addition to the EROS staff previously mentioned, **Barb Hubbling** and **Paul Severson**, both of DSB, attended the workshop as observers to learn more about the program and training that they help supply satellite imagery for each day. "The GLOBE Workshop is such a good program for school kids," said Hubbling. "Personally, I learned so much during the week. The teachers were wonderful and their students are going to learn a lot about our environment, which is really important."

EROS staff hosted the GLOBE Teacher Training Workshop in May after staff at the Center contributed to the Program the past 2 years by supplying satellite imagery of sites studied by schools around the world that participate in the GLOBE Program.

NASA and EROS offered the GLOBE workshop at no cost to Sioux Falls teachers. Interest by other area school districts and EROS Senior Staff support will determine if this training will be offered to other teachers and schools in the area. EROS staff already have been asked to host another GLOBE Teacher Training Workshop next January – not exactly the best weather month of the year in South Dakota to collect GLOBE water and soil samples!

EROS staff, GLOBE trainers, and workshop participants assemble for a group picture in front of the atrium globe during EROS' first GLOBE Teacher Training Workshop May 19-23, 1997.

International Space Station Replica Displayed at EROS

Over 5,000 People Experience Life and Work in Space

What's it like to live and work in space? EROS employees, their families, friends, and the public received a good indication June 6-7, 1997, when NASA's International Space Station visited EROS. The walk-through exhibit, which travels the United States in two 48-foot trailers, featured a full-scale mockup of the U.S. living quarters and laboratory of NASA's International Space Station.

The exhibit rolled into EROS the first week of June after a NASA scheduling conflict prevented it from arriving for South Dakota Space Day, April 24. (See cover story.) Since this exhibit travels the nation, and has never been to South Dakota, EROS outreach staff didn't want employees, their families and friends, or the local public to miss out. While the EROS mission is not linked to NASA's manned space program, the International Space Station exhibit, like the USGS and EROS, seeks to improve science, mathematics, engineering and technology skills, involve educators, and support national education goals.

Two NASA employees arrived with the trailers at EROS, Tuesday, June 3 for routine repair and maintenance. After EROS employees helped assemble the exhibit, Thursday, June 5, it opened to the public from 8:30 a.m. to 3 p.m., June 6-7. According to **Cassandra Pitts**, NASA Public Affairs Associate, 2,126 people toured the exhibit June 6 while 2,974 people experienced it the following day.

"This exhibit attempts to let visitors experience the environment in which astronauts will live and work for months at a time," says **John Dumoulin**, exhibits manager at the Marshall Space Flight Center in Huntsville, Alabama. "It's as realistic as we can make it without removing the gravity."

With the help of two NASA staff members, visitors encountered areas where the international crew will sleep, exercise, relax, and prepare their meals. Visitors also stepped into the astronauts' shower and bathroom compartments. The laboratory module in the companion trailer featured examples of actual experiments scheduled to be aboard the station.

According to Dumoulin, "The Space Station will be a permanent orbiting science institute capable of performing long-duration materials and life sciences research in a near gravity-free environment." The Space Station will speed breakthroughs in science, technology, and engineering that will lead to immediate uses for life on Earth.

The International Space Station is the largest scientific cooperative program in history, drawing on the resources and scientific expertise of 15 nations: the United States, Canada, Japan, eleven European countries, and Russia. Assembly of the station in orbit is scheduled to begin in 1997 and be completed in 2002. The exhibit arrived at EROS after a stop in Omaha, Nebraska. After being on display for two days at EROS, the trailers traveled south to Sioux City, Iowa.

*NASA Public Affairs Associate, **Paul Hale**, shows a young visitor how astronauts use a "sleep restraint unit" aboard the International Space Station June 6, 1997.*

Goodbye to EDIPS

Lauer Unplugs First Production Image Processing System

Where were you in February of 1979? Some of you were probably studying butterflies in grade school. Some of you may have been in high school algebra or college chemistry. For those of you in the Computer Services Branch at EROS in 1979, you will recall when the EROS Digital Image Processing System (EDIPS) became operational.

Configuration

Contract staff at TRW designed EDIPS as a unique system to handle Landsat MSS data. According to **Lyn Oleson**, Deputy Chief of the Satellite Systems Branch and former Computer Services Branch staffer, in all his years of system development work he never encountered a system as well architected and engineered as EDIPS. "The guys at TRW (the contractor for the project) basically engineered a system, taking pieces and parts, making it do something in the late 1970's that not many systems in the civil satellite program environment have been able to achieve since."

Like many computer systems of the 1970's, we look back and think, "How ancient! How mundane!" Today's CPU's are remarkably better. And I don't have to say a word about punch cards. "What was most impressive about the system," recalls Oleson, "was how the interesting and unique pieces of hardware such as the high-speed laser beam film recorders, high-density digital tape drives, and a special, customized controller interface operated."

The other interesting part of the system involved the use of the array processors. To process a full satellite image, TRW systems engineers incorporated two array processors. Each processor would correct geometrically half of an image. Once each array processor corrected its half of an image, EDIPS would combine the two sides to form one complete image. Today, computer system

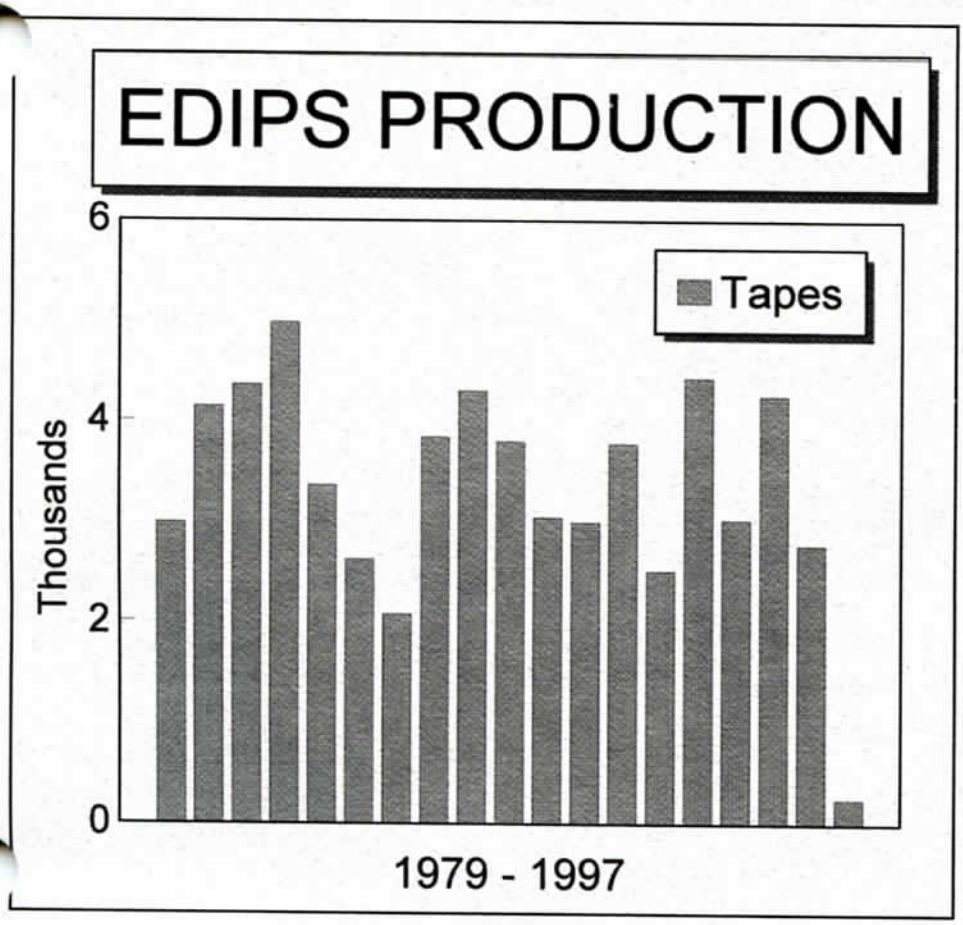
engineers use more CPU's or a larger network to match or surpass performance levels squeezed out of early systems such as EDIPS.

History

Computer Services Branch staff completed initial testing for EDIPS in late 1978, clearing the way for the system to be put online in early 1979. The original EDIPS system started out smaller than what EROS is bidding farewell to today. From the start, EDIPS was used to generate previously corrected satellite images, called "P" or "processed" images. EROS staff completed a major contractual upgrade to EDIPS in 1981 with the help of TRW, which added more CPU's, drives, and another array processor. The enhancement allowed EROS staff to expand to processing "A data", or "uncorrected data," by applying geometric corrections to satellite image data. EDIPS was designed to process over 200 digital Landsat multi spectral scanner (MSS) images each day. The result was a model system image processing facilities in Japan, Brazil, and other countries cloned.

Its Demise

EROS staff used EDIPS to generate 2,000-5,000 digital image products a year from 1979-1996 for an average of roughly 3,500 images a year. EDIPS peaked in 1982 when the system produced in the neighborhood of 200 digital images each day. By the mid-80's, when the thematic mapper was developed to complement the MSS sensor on Landsat satellites, EROS broadened its mission to include NOAA satellite data, and the Reagan Administration commercialized the civil satellite program giving birth to the EOSAT company, EDIPS production numbers decreased. While political and technological influences of the mid-80's decreased EDIPS production, EOS activities of the late 1990's at EROS offer a similar high-volume, digital image production system challenge.



Graphic depicting the growth and decline of EDIPS production at EROS from 1979 - 1997.

The EDIPS Legacy

The Data Center's 20-year experience with EDIPS taught staff how to manage satellite data, which leads to EDC's new NASA Mission to Planet Earth programs involving Landsat 7 and the EOS Core System. The EDIPS legacy also includes hundreds of thousands of images in the National Archive from Landsats 3,4, and 5. The system generated more than 63,000 digital tape products and 2 million, 9-inch, black-and-white master film negatives used to generate products to meet the photographic requests of EDC customers. The final influence EROS staff inherited from EDIPS involves how we approach similar projects. EDIPS served as the Center's first large-scale, cross-functional project.

Hello NLAPS

EDIPS served EROS well for many years thanks to the heroic efforts of many computer engineering and computer science innovators – and perhaps a little gum and bailing wire. Until NLAPS became operational in 1996, EDIPS continued to process a hand full of Landsat MSS images each week. "For years," Lyn Oleson recalls shaking his head with amazement, "many of us cringed and crossed our fingers whenever we had a problem with EDIPS because there was no backup. It was a very stressful thing for EROS to keep EDIPS operating. I'm thrilled I had the opportunity to be the lead system analyst and programmer for several years. It gave me insights to elements of software and computing technology that I still use as models today. My only disappointment is that so many new computer science people will never appreciate what EDIPS was like or about." By saying hello to NLAPS, EROS was able to finally say goodbye to EDIPS — its first, significant production image processing system — March 19, 1997.

Employee News
Continued from page 4

Jean also received a STAR Award for her excellent work in defining and analyzing problems, developing network relationships, and enabling senior managers in PBA, SSB, and SAB to accomplish their programs with greater efficiency.

Sue Greenlee received a Quality Step Increase for her technical leadership to EROS' topographic data development in three major program areas: Mission to Planet Earth, the USGS Global Data Change Program, and the USGS Framework Initiative.

Arlys Johnson received a Quality Step Increase for training a new PBA staff member, providing time and attendance support for CSB, and for continued superior work involving reception, appointments, calendar organization, typing, filing, and telephone contact.

Wayne Rohde received a STAR Award for his careful and well considered analysis and coordination efforts to develop vision and mission statements for the NMD Planning Process.

Gail Hanson received an On-the-Spot Award for her willingness and flexibility in completing an extremely heavy personnel workload the last month of fiscal year 1996. She also helped in planning, drafting, and processing 32 government personnel awards at EROS, while continuing her normal duties.

Ron Meyer received an On-the-Spot Award for his work to expedite the photo requirements for emergency flood assistance to the State of South Dakota and the City of Sioux Falls.

Lou Steyaert received an On-the-Spot Award, while stationed at the NASA Goddard Space Flight Center, Greenbelt, MD, for his "can-do" attitude in developing "case histories" on NASA and NOAA collaboration on weather forecasting.

Kristi Sayler received an On-the-Spot Award for developing the necessary code and cgi scripts for the Mojave Clearinghouse Project.

Mary Lou East received an On-the-Spot Award for her professional and proficient manner in helping the Branches and Offices run smoothly during secretarial absences.

Mark Shasby received a STAR Award for additional duties managing NMD's Alaska and ESIC Offices, which included collaborating with other DoI agencies in Alaska to identify the data requirements for NMD products and supervision of an additional seven staff.

Dave Ochsner received an On-the-Spot Award for his outstanding professional skill and ceaseless efforts resulting in major contributions to the effectiveness and success of EDC's Program and Financial Review. Dave played a key role in preparing and disseminating budgetary information for the May meeting.

Rita Tornow received an On-the-Spot Award for efforts above and beyond in support of the NetTEM97 and Information Management Policy Workshop the week of May 12-16, 1997.

Terry Pfannenstein received an On-the-Spot Award for his significant initiative and exemplary service in his duties, particularly with facility logistics. Terry coordinated all facility logistics for the NetTEM97 and the USGS Info Management Policy Workshop in May.

Susan Benjamin received an On-the-Spot Award for her work in developing a cooperative agreement between the WRD and NMD on land cover mapping for NAWQA.

Sue Greenlee also received an On-the-Spot Award for her work in hosting and organizing a NMD/WRD Digital Elevation Model Workshop at EROS May 7-9, 1997. In addition to hosting the meeting, Sue prepared presentations based on EROS DEM activities.

Kim Allington received an On-the-Spot Award for her contributions to minimize the procurement backlog expected from the absence of Procurement staff from April 15-May 12, 1997.

Dan Wray received an On-the-Spot Award for adding tasks to his normal workload to decrease the procurement backlog caused by the absence of one of three Purchasing Agents April 15-May 12, 1997.

Shar Van Beek received an On-the-Spot Award for voluntarily changing her part-time work schedule to work maximum hours to help decrease a procurement backlog because of a staff shortage April 15-May 12, 1997.

New Faces & New Places

Peter De Vincentis - Peter joins the Science and Applications Branch as a Government Intern working as a cartographer with John Hutchinson on a shaded relief map of North America and a land cover map of the Western Hemisphere.

Faith LeBrun - Faith joined the Computer Services Branch as a STEP student and works in Cartographic Systems Development developing web pages.

HSTX

Jeff Hauck - Jeff joined the Computer Services Branch July 1 as an electronic engineer.

Dorothy Dateo - Dorothy joins the Science Department as a visiting scientist from South Dakota State University as the Coordinator for the GAP Analysis Program.

Brad Schroeder - The Computer Services Branch welcomes Brad to its Information Development Section.

Ryan Cleveland - Customer Services welcomes Ryan as a Customer Services Technician who supports DAAC activities.

Kurt Simon - Kurt also joins EROS as a new Customer Services Technician.

Jon Christoferson - Jon joins EROS as a Senior Systems Engineer in the Satellite Systems Branch, where initially, he is helping to develop the Quality Assurance Plan for the Landsat 7 Data Handling Facility.

Craig Mattson - Craig also joined the Satellite Systems Branch to work on the Landsat 7 project.

Barry Eberhard - EROS staff also welcome Barry as a Senior Systems Engineer assigned to the Landsat 7 Ground Systems project.

Todd Doerr - Todd returns to EROS after joining Citibank a little more than a year ago. Previously at EROS, Todd worked on the DLG-F project for 4 years.

Tim Gardner - Tim comes to EROS to join the Software Engineering Department. Tim brings more than 10 years of systems experience to his new Landsat 7 assignment.

David Lloyd - EROS Software Engineering staff welcome David to the Scientific Systems Development group.

Tim Ratliff - Tim joins the Software Engineering Department as a member of the Scientific Systems Development group.

Jim Hagedorn - Jim joined the Information Systems Management Technical Area on May 1, 1997 after working in Customer Services in January 1995.

Jay Kost - Jay joins Data Management as a senior data specialist to manage and maintain databases. Jay enjoys fishing, camping, and spending time with his wife, Deanna, and two children, Kayla (4), and Adam (2).

Marty Lundblad - Marty joins the Computer Services Branch working on PDS software for the IMS system.

Jolene Selberg - The EROS Help Desk staff welcome Jolene to the Computer Services Branch.

Eric Nelson - Eric joined EROS in May to work with the Cartographic Systems Development technical area as a programmer.

Judy Knox - Judy joins HSTX at EROS after 12 years of Government service, primarily in supply, procurement, budget, and finance.

Paul Thorson - Paul joins EROS as a senior system engineer to integrate and test the Landsat 7 IAS.

Trading Places

Michelle Behnke - Michelle transferred from the Help Desk to work on the REDORRAN Project. Michelle has worked at EROS in a variety of positions since the summer of 1994.

Limin Yang - Limin joins the Science Department after serving the past 3 years as a Visiting Scientist from the University of Nebraska-Lincoln.

Eric Aasheim - Eric joins EROS as a HSTX summer intern from USD. Eric will graduate this December with a degree in computer science and a minor in business administration.

Jerry Sorum - Jerry comes to EROS after graduating this spring from the South Dakota School of Mines and Technology in Rapid City with a degree in computer science and a minor in math.

Susan Wenzel - Susan joins EROS as a database administrator for the ECS.

Eugene Welch - Eugene graduated from USD in May with a degree in computer science and a minor in business administration. Eugene supports the REDORRAN Project.

Todd Sneve - Todd joins EROS to work in Dissemination.

Cassie Soeffing - Cassie joins EROS this summer as a HSTX summer intern.

Pleasant Valley Cleaning

Belated Welcome

Dr. Marie Karban, DVM - After 11 years as a practicing veterinarian, Marie joined Pleasant Valley Cleaning in March of 1996 for a much needed career break.

You Can Call Me Al

EROS Staff Members Demo MAGIC to V.P. Gore

While most EROS employees contemplated April Fools pranks they would play on friends and family on Monday, March 31, 1997, **Jay Feuquay** and **Brian Davis** (SSB) were involved in an interesting and unique lifetime experience. They were in Washington, D.C. giving a demo to **Vice President Al Gore**. How these two EROS employees were chosen to give a demo to Vice President Gore is an interesting story. How they pulled it off is more interesting. What follows is a brief synopsis of the events leading up to Davis and Feuquay's whirlwind political campaign. But, before you read about Feuquay and Davis' meeting with Vice President Gore, a few words about their demo topic – MAGIC.

High-Speed Networking

MAGIC is a high-speed networking research project a small group of EROS staff participate in along with several other facilities nationwide that include: the Minnesota Super Computer Institute, Minneapolis, MN; Sprint, Inc., Kansas City, MO; the University of Kansas, Lawrence, KS; The Battle Command Battle Lab, Fort Leavenworth, KS; SRI, Inc., Menlo Park, CA; and the Lawrence Berkeley National Laboratory, Berkeley, CA. Funded by the Defense Advanced Research Project Agency (DARPA), MAGIC is an ATM, or Asynchronous Transfer Mode network. ATM is the protocol used to transmit voice, data, and images over local and wide-area networks using computers from different vendors by parceling information into uniform cells of 53 groups of 8 bits.

While gigabit test bed projects have demonstrated how fast they can push bits across a network, MAGIC from the start included a terrain rendering application that would view data sets so large that the data couldn't be housed on the computer in use. The data had to come from somewhere else via incredibly high speed networks.

Demo for Al

A consultant on the MAGIC project from a company called CNRI, Boston, MA, **Ira Richer**, called Feuquay on March 24, 1997 to ask if he would like to help give a demo to Al. Feuquay's immediate reaction was, "Why would Al Watkins (former USGS/NMD and EDC Chief) want a demo on the MAGIC Project?" Richer said, "No, Big Al, as in Al Gore." So, when Feuquay realized which Al was interested in his demo, he couldn't refuse. "The phrase that kept going through my mind was, unlimited downside," said Feuquay. "I was just thinking that it was going to be horrible and all of the things that could go wrong. I also tried to think of anything that would be a possible benefit from this, since I thought there was absolutely no chance of it happening or working."

Soon after Richer's initial call, the Associate Director of the National Economic Council, **Tom Kalil** called Feuquay because, although he had heard about the MAGIC project, he had never seen a demonstration of the technology. Also, a member of Vice President Gore's staff, **Jim Kohlenberger**, called to ask that Feuquay and Davis travel to Washington, D.C. to show the Vice President the MAGIC technology. "We demonstrated the MAGIC application called Teravision," explained Davis. "Teravision is a terrain-rendering application, where you move the mouse and it looks like you're moving over the land." According to Davis, while there are many applications that show similar flybys of terrain data, Teravision is unique because the data used in the flyby don't reside in the computer used for the demo. Teravision data exist over a network on completely different computer systems at other locations. Teravision interactively asks for the data it needs based on the user's perspective. "The people we gave the briefing to," says Davis, "were excited about MAGIC when they learned that these data could be located anywhere, be of anything, and could be viewed in real time."

9:37 a.m. – The Morning of the Demo

While Feuquay and Davis knew they were to give the Vice President a demo on the MAGIC Project, they didn't know exactly what he wanted to see. After a week of pulling together components from MAGIC consortium members across the nation for the demo, Feuquay and Davis met at length with Kalil and Kohlenberger to learn what they were supposed to do. "Many questions were directed to Jay," said Davis. "What kinds of data do you have? What's going to be available? What kind of programs do you have?" In addition to many questions involving EROS data and the Center's role in Mission to Planet Earth, Kohlenberger and Kalil also expressed interest in present and future coverage of the USGS Digital Orthophoto Quad (DOQ) program.

Jay Feuquay *presses flesh with* ***Vice President Al Gore*** *as* ***Brian Davis*** *wonders if he'll also get to meet* ***Tipper****.*

Networking Nightmare

How do you demonstrate a high-speed network application when the building you're in has no fiber optic network? Easy. You build your own. "We had to take along our own FORE Systems, Inc. ATM switch and fiber optic cables, SUN workstation, and disks to hold the storage server software," explained Davis. "We staged all of the components on Thursday (March 27) in a room at an SGI Office in Silver Spring, MD. That meant that everyone had to FedX their components to us by Wednesday (March 26) — less than 48 hours after Jay received the initial demo request. We planned to haul the demo into the Old Executive Office Building on Friday (March 28) and get it tested and running because we didn't know what time the demo was going to be on Monday. We wanted to get all the kinks worked out on Friday. We packed everything up, $300,000-$400,000 worth of gear, Friday morning in a rented van with the seats removed."

According to Feuquay, it wasn't easy getting into the Old Executive Office Building with a bunch of cases, a rental van, and two technocrats that looked like terrorists. "Well, the main thing wrong with this picture is they let us in," said Feuquay with a grin. "You really don't make jokes going into that venue. What surprised me was how straight forward the process was once you figured out what the process was."

2:20 p.m. EST

Once Davis and Feuquay were cleared by security, they met with Vice President Gore across the street from the White House in the Old Executive Office Building along with a small group of people for 15-20 minutes. Feuquay and Davis each played important roles in making the demo happen. "My role in the meeting," explained Davis, "was to stand in the back and be quiet. My real role was working with the data on the advance team, getting everything setup and loading the Teravision software and data."

Since Feuquay is the MAGIC Project Leader at EROS and has given many demos on the subject, his role during the

meeting was to handle the logistics of planning the demo at a non-MAGIC site. "The demonstration consisted of two people talking, neither of which was me," explained Feuquay. "My input came briefing the two Vice Presidential staffers in advance of the actual demonstration."

According to Feuquay and Davis, execution of the demo was flawless thanks to the other people involved with the demo and staff at EROS who came through for its "boys in the field." While the events and planning leading up to the MAGIC demo for V.P. Gore were fast and furious, the demo was important because it associated EROS with the MAGIC Project — a leading fiber-optic network application. The demonstration also prompted V.P. Gore to associate MAGIC with the work of Senate Minority Leader Tom Daschle, the USGS EROS Data Center, and South Dakota. "We were fortunate enough through the interest they (Gore staffers) had in our program and the luck of scheduling that everything actually came off as planned," reflected Feuquay. "... including having the Vice President in the room with us."

Just as Feuquay and Davis believed their whirlwind political tour was over, there was more after Gore. When they returned to Sioux Falls via Minneapolis, Davis and Feuquay ran into **Melanie Bliss**, wife of EROS scientist **Norman Bliss**. Bliss introduced Davis and Feuquay to South Dakota U.S. Senator Tim Johnson, who happened to be at the Minneapolis Airport as well, waiting to catch a plane to South Dakota.

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Space Day
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of your body, do your best, and stay in school."

The day before as well as Space Day, Mullane spoke to more than 7,000 students. In addition to visiting several area classes, Mullane also spoke to EROS Data Center staff from 1-2 p.m. April 23. Through the use of slides and a sense of humor, Mullane shared what it's like to have a dream come true. "When I was 12, in 1957, the race to be the first in space started. I knew at that time that I wanted to become an astronaut."

In 1995 the South Dakota Discovery Center and Aquarium hosted the first South Dakota Space Day in Pierre attended by roughly 2,000 students. In 1996 the South Dakota School of Mines and Technology in 1996 hosted the second Space Day attended by 2,500 students. While 2,450 students visited Space Day activities at EROS, nearly 5,100 students registered to attend activities on the campus of Augustana College. Space Day activities for 1998 are planned for April 13 in Pierre.

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EROS Employees Bring Their Children to Work

EROS Data Center employees observed the fifth annual "Bring Your Child to Work" day April 24 by bringing their children, relatives, or Little Brothers or Sisters to the office to link education with career goals.

Events started at 8 a.m., with 75 young people, ages 9-15, registered for the event. The promoter and organizer of the event, **Bernie Johnson**, introduced **Jim Sturdevant**, Assistant Center Chief for Operations, who welcomed the children to EROS for this special day of activities. **Joan Amundson**, Data Services Branch, spoke to the children about her career and explained the inner workings of the National Satellite Land Remote Sensing Data Archive (located in the basement of the Center). After touring the Archive, students took part in hands-on exhibits and demonstrations involving scientists, technicians, and other EROS professionals. Students spent the rest of the day shadowing their parents and taking part in Space Day activities.

"Bring Your Child to Work Day" coincided with two other major activities hosted by EROS staff the same day — South Dakota Space Day and meetings involving the USGS Policy Council, which included the Director of the USGS, **Dr. Gordon Eaton**. South Dakota Space Day drew over 2,450 school children from across eastern South Dakota for a variety of hands-on exhibits and demonstrations to showcase math, science, and technology.

"The younger children really get into the purpose of the day. They really get excited about coming to watch Mom or Dad work." said Johnson, Coordinator of EDC's Federal Women's Program, Program, Budget, and Administration.

"Bring Your Child to Work Day" targets young women because several studies have shown that, while elementary-school girls have as much self-esteem as boys their age, once they reach adolescence, their sense of their abilities sharply decreases. To help raise the self-esteem of girls and boys, the EROS Data Center continues to invite girls and boys to the Center each year to expose them to what's new in space, earth science, and many other related technological disciplines.

The daughters and sons of EROS employees assembled at the end of the day to close another successful "Bring Your Child to Work Day" and see who would win four EROS T-shirts donated by the EROS Data Center Activities Association. As with previous Daughter/Son Work Days held at EROS, it wasn't clear who had a better time, the youngsters or their parents.

Rod Beck, *VESCO, and his son,* ***Sam*** *(9), make a fiber optics connection during "Take Your Child to Work Day" April 24, 1997.*

Auction Serves as Icing on the Cake for Hunhoff Family Benefit

EROS employees raised nearly $4,600 during two auctions and a raffle for John Hunhoff and his fight against cancer March 13, 1997. **Jay Feuquay**, SSB, emceed the Live Auction and was assisted by several volunteers dressed in western attire. Volunteers who made the event a success included: **Pat Johnson**, **Sue Delaney**, **Karla Sprenger**, **Dana Larsen**, **Karen Zanter**, **Mary Weinheimer**, **K. C. Wehde**, **Paul Severson**, **Don Becker**, **Terry Baker**, **Brian Granneman**, **Darla Larsen**, **Darin Krempges**, **Jan Howe**, **Tim Smith** and **Caroline Fenno**. "Moschell-Hegge-Risty-Dullerud Auctioneering, Inc." of rural Garretson (a.k.a **Carl Moschell**, **Kent Hegge**, and **Ron Risty** all of DSB and **Wayne Dullerud**, Pleasant Valley Cleaning) delights a near-capacity crowd of cake bidders with the sights and sounds of a western livestock auction.

Because of the large number of cakes donated (47), the "firm" also held a Silent Auction from 10:30 a.m. to 3:30 p.m. that day. In addition to the Live and Silent cake auctions, a golf caddy wagon, lantern, artistic print, and meat smoker were included in a blue-slip raffle.

Auctioneer, Carl Moschell (left) and Wayne Dullerud (2nd from left) lasso Ron Risty as (l. o r.) K.C. Wehde, Karen Zanter, Dana Larson, Kent Hegge, Sue Delaney, and Caroline Fenno look on with a laugh.