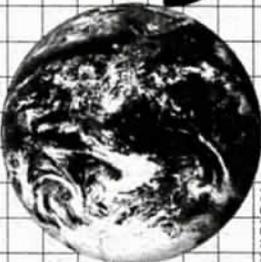


EROS DATA CENTER, SIOUX FALLS, SD

# EROS DATA CENTER



U.S. GEOLOGICAL SURVEY, NATIONAL MAPPING DIVISION

## EROS Opens Doors to Showcase its Work & New Addition

More Than 4,000 People Attend Open House

In the movie "Field of Dreams," James Earl Jones tells Kevin Costner, "Build it, and they will come." Beginning in the spring of 1994, the U.S. Geological Survey and NASA built a 75,000-square-foot addition to the EROS Data Center that will house equipment and people to support NASA's Earth Observing System Program and Landsat data handling. And Saturday, April 20, 1996 "they" came — families, friends, and members of the community interested in EROS. Two members of the Sioux Falls Audubon Society arrived at 9 a.m. — an hour before the event started. By 10 a.m. (the official start time), roughly 200 curious visitors wandered around the lobby and roamed hallways. By Noon, 1,300 people had taken part in the event. By 4 p.m., 3,480 people had visited the EROS Data Center open house.

The EROS Open House, held in conjunction with Earth Day, gave area residents a chance to see the addition, learn about the Earth's environment, and hear how EROS tracks its changes through a number of computer sci-

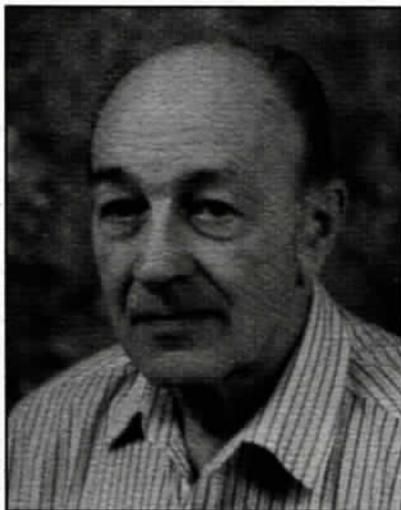


*Open House attendees browse imagery as they explore the new lobby atrium.*

*Continued on page 2*

## In Memory of Ivan J. Seubert

The Man Who Repaired the Unrepairable



**Ivan Seubert**  
1921 - 1996

Veteran Photo Lab repair and maintenance specialist Ivan Seubert died Sunday, April 21, 1996, from cancer at the McKennan Hospital Hospice. He joined EROS July 29, 1974 to repair and maintain photographic printing and processing equip-

ment. His dedication, ingenuity, and experience earned him the reputation of being able to "repair the unrepairable."

After graduating from Sioux Falls Cathedral High School in 1940, Ivan joined the Navy in 1942, where he served a tour of duty in the Marshall Islands. After his discharge, he worked for Douglas Aircraft Company in California, Soo Hudson in Sioux Falls, and American Tobacco Company in New York. In 1950, Ivan moved to Omaha, where he worked as a mechanic and service manager

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## UP FRONT

After intensive requirements analyses, tough negotiations, careful planning, and a long period of disruption due to construction, and maybe with a little bit of luck, the new addition to the EROS Data Center is finally done—and we completed the project within budget and on schedule! It all happened because of an enormous effort on the part of dozens of employees at the Center, so it's time to tip our hats to all of them. Given the current political and budget climate in Washington, D.C., the expanded facility is practically a once in a lifetime opportunity. Many of us will have a fond memory, for some time, of the April 20 open house, where we were able to showcase the work we are doing through-

out the Center as well as the new addition.

We have already put the addition to special use. In the first few weeks since occupancy, we have hosted major meetings with the USGS' Director, the USGS' Central Regional Director, the DAAC Science Advisory Panel, and with representatives from the United Nations, the World Bank, the Canadian Centre for Remote Sensing, and the Jet Propulsion Laboratory. And, we were able to hold our first all-hands meeting in the new auditorium, which I particularly enjoyed.

The list of events will grow in the coming months. On August 19 we will formally dedicate the new addition. Representatives from the South Dakota Congressional delegation, NASA, and the Department of the Interior have been invited to the ceremonies. That event will be followed immediately by Pecora 13. Soon thereafter will be a meeting of 150

scientists and policy makers involved in space radar systems.

We are in a new and rapidly changing era, but at the same time we must reflect on those whose work got us to this level. The Center family suffered another loss with the passing of Ivan Seubert. Ivan was a hard worker and a dedicated member of an important team. As we move to the exciting challenges of the days ahead, let us remember the institutional bond that has allowed us to achieve so much in the 20-plus years of the Center's history.

Donald T. Lauer

### Open House Continued from page 1

entific demonstrations, graphic displays, lobby kiosks, framed satellite image wall hangings, and three videotaped presentations.

Sue Bredlow, Program, Budget, and Administration, served as the unofficial head counter April 20. She counted 3,480 visitors who entered the front doors from 9:30 a.m. to 4 p.m. "I did not hear one negative comment (about the event)," said Bredlow, "but I was asked where the clowns and the kids' games were?"

In addition to the visitors Sue counted, many other people entered the building from the employee entrance. Because of this, Ron Beck, one of several members of the Open House Committee, estimates that the total number of visitors may have actually been 700-1,000 larger in number.

While more than 4,000 people attended the April 20 Open House, there was one visitor that wasn't welcome - one

of the neighborhood skunks. "My wife is looking for a T-shirt with the Disney character Flower for me," Beck said with a laugh before adding, "I was pleased by two major things. We sent a lot of invitations to senior citizen centers. The large number of senior citizens who were here pleased me a great deal. Secondly, I heard a number of employees speak with a different level of enthusiasm from what I've heard over the last number of months (e.g., because of the furlough, budget scrutiny by Congress, and a long winter). It seemed like there was a different spark in terms of employee morale. That impressed me."

Despite the skunk, the Open House smelled of nothing but success. "We wanted to let the community know that our doors are again open to the public," said Dr. Don Lauer, EDC Chief, "to link the day's theme (Exploring a Changing Planet) to Earth Day, and to give our visitors a good sense of who we are and what we do. We accomplished all of this and more. Most impressive to me was the manner in which the EDC staff played host -

everybody contributed their time and effort in some way and it impressed our visitors. Another highlight was the high turnout of past employees; they showed as much pride in the Center as all of us. Finally, hats off to the Open House Committee headed by Ron Beck, Media Services staff, led by Lee McManus, who put in some long and tedious hours, and the many staff members who volunteered to work the day of the event. We saw the results of their extraordinary efforts and deeply appreciate everything they did to make it a day we will all remember." ☺

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# National & International Officials Meet at EDC to Review GRID-Sioux Falls

## UNEP Executive Director Addresses EDC Staff

A group of 40 national and international officials met at the EROS Data Center March 28-29 to review operations of the United Nations Environment Programme (UNEP) Global Resource Information Database (GRID) - Sioux Falls Office, located at the Center. The group included people representing the United Nations, the World Bank, some world-renown individuals working with them, and people representing five U.S. Government agencies.

After a morning breakfast with Sioux Falls business leaders at the Minnehaha Country Club March 28, the group journeyed to the Data Center for a tour of the new addition and a series of technical meetings. At 1 p.m. Ms. Elizabeth Dowdeswell, executive director of the UNEP, addressed EDC staff at the East Room - the large, open bay area in the new addition. Dowdeswell thanked EDC staff for their daily cooperation and interaction with GRID-

Sioux Falls staff and described the United Nations Environment Programme.

### The UNEP

According to Dowdeswell, the United Nations Environment Programme is a small part of the United Nations system. In existence for 20 years, the UNEP is located in Nairobi, Kenya, with six regional offices worldwide. Very simply, the UNEP performs three activities. "The first thing we do is to continue to sense what is happening to the world's environment through a network of collaborating Centers, this (EDC) being one," explained Dowdeswell. "The second thing that we do, that is perhaps the most critical, is to use our extensive convening power to bring governments together to find solutions to problems we encounter through our environmental sensing. And the third thing that we do is capacity, or awareness, building. We

try to help governments solve their own environmental problems by sharing information, education and training, and working in areas such as governance and law."

For an agency with scarce resources, Dowdeswell told EDC employees that the UNEP depends largely on networking and partnerships, of which the EDC is a model example. "We're very proud of the fact that we're the only UNEP headquarters in the developing world. The rest of the UN system operates its headquarters out of New York, Geneva, and Vienna. We're the only headquarters in the developing world - something that continually gives us the challenge to show that the UN is an organization for all countries of the world."

Dowdeswell ended her address by saying that most environmental problems the world faces today must be addressed in a unified manner. "Most of the environment problems we are facing, we are going to be facing together, and we are only going to be able to find those solutions if we work with our partners in the North, South, East, and West. I think this institution is well placed to be able to help the United Nations system do that." ☺



*Ms. Elizabeth Dowdeswell, UNEP, shares a humorous anecdote during her address to EROS employees March 28.*

### Officials Attending the UNEP/GRID Meeting March 28, 1996

Ms. Elizabeth Dowdeswell	Exec. Dir. of the UNEP
Dr. Harvey Croze	Asst. Executive Dir. of UNEP
Dr. JoAnne Fox-Przeworski	Regional Dir. of North America UNEP Office
Dr. Ashbindu Singh	UNEP Office, New York
Ms. Kerstin Leitner	UN Development Programme
Chuck Lankester	UN Development Programme
Dr. Andrew Steer	The World Bank
Dr. Hassan Hassan	The World Bank
Maurice Strong	The World Bank
Peter Thacher	Earth Council Foundation U.S.
D. Wayne Mooneyhan	GRID Advisory Board
Dr. Jack Estes	University of California - Santa Barbara
Dr. Gordon Eaton	Director of the U.S. Geological Survey
Dr. K. Eric Anderson	National Mapping Division, USGS
Ken Lindskov	Chief USGS Hydrologist for the State of SD
Dr. Ali Montasser	Mission to Planet Earth Program, NASA
Dr. Bill Wood	Chief Geographer, U.S. State Department
Dr. Marion Pratt	U.S. Agency for International Development
Dr. Gyde Lund	International Office, U.S. Forest Service

# EROS Celebrates Unique Partnership at Annual Meeting

## All EDC Employees Participate in Combined Annual Meeting

For more than 23 years the U.S. Geological Survey's EROS Data Center (EDC) has nurtured a unique partnership between the Federal Government and private sector support service contractors. Continuing the spirit of this uncommon, yet highly successful relationship, Government and contract staff at the EDC met to celebrate the success of this special union and review a year of challenges and accomplishments at the EROS Data Center Annual Meeting, March 27, 1996, at the Howard Johnson Convention Center in Sioux Falls.

Following a 6-minute video review of 1995, **Dr. Don Lauer**, Chief, EROS Data Center, welcomed employees and guests to the afternoon program. This year's Annual Business Meeting at the EDC was a combined event to recognize the accomplishments of both Government and contract staff employed at the Center. The event is a direct result of three successful annual meetings Hughes STX held in Sioux Falls since 1993 to recognize employee contributions at the EDC.

Before Lauer recognized Government staff who received awards from the Department of the Interior and U.S. Geological Survey, HSTX Project Manager **Ken Klensk**, who emceed the meeting, introduced **John Hunhoff**. In an emotional presentation, Hunhoff presented a plaque thanking all EDC staff for their support during his trial with cancer. (Hunhoff recently received aggressive chemotherapy for Hodgkin's disease in Omaha, NE.)

Following a standing ovation for Hunhoff, Production Services Manager **Rich McKinney** introduced employees who received academic degrees during 1995; Deputy Project Manager **Ken Boettcher** recognized HSTX Incentive Award Winners; and Center Services Manager **Roger Van Noort** congratulated people who celebrated 10 or 20 year anniversaries at the EDC in 1995.

### EDCAA Volunteer of the Year

**Tom Holm**, Deputy Chief of Data Services, presented the EDCAA Volunteer of the Year Award to **Brenda Jones** for her exceptional effort, continued dedication, and commitment to voluntarily promoting the general welfare of EDC employees through her work with the Banquet. (The Banquet is a non-profit Sioux Falls organization that provides food and spiritual support to people in need.)

### Featured Speaker

**Dr. Gordon P. Eaton**, Director of the U.S. Geological Survey, served as the guest speaker for the afternoon program. Eaton shared his view of the Bureau's future as well as how the EDC fits five core competencies outlined by the USGS Strategic Planning Team. "I think this is a splendid model of what can be in the future for the U.S. Geological Survey," said Eaton. "Your fundamental business approach has been and is to partner with the private sector. And this meeting, in fact, cele-



Guest Speaker, **Dr. Gordon P. Eaton**, Director of the U.S. Geological Survey

brates the 23 year long success of this approach. The on-site technical support of contractors give the USGS a tremendous capacity and capability to rally resources to address customer requirements and ever changing technologies. Again, I salute you as a model to which we can point to with great pride in terms of how all the rest of the Geological Survey is going to have to learn to work in the future."

### 1995 Group Achievement Awards

After Eaton's address, EDC Assistant Center Chief for Programs, **Wayne Rohde**, awarded three Group Achievement Awards to Government and contract members of teams which have achieved breakthroughs, completed outstanding projects, or made outstanding group efforts for EDC, EDC customers, the USGS or its National Mapping Program. The 1995 Group Achievement Awards supported three significant EDC activities:

- USGS Film Transfer and Archive Relocation,
- National Landsat Archive Production System Development Team,
- Z39.50 Protocol Interface (a metadata network to access EDC server inventories).

### cmi Award

Next, EDC Assistant Center Chief for Operations, **Jim Sturdevant**, presented eleven HSTX secretaries with the 1995 cmi Award for their work in improving the HSTX time sheet process. The cmi award was established to recognize process improvement efforts at the EDC that embrace and use the principles and concepts of cmi.

### 1996 HSTX Peer Awards

One of the most anticipated parts of the meeting for Hughes STX employees was the 1996 Peer Awards. As in the past three years, these awards honored individuals who demonstrated teamwork and unselfish dedication. Twenty recipients were nominated by their peers and selected by a committee of nonsupervisors. Peer Award winners for 1996 received a stylish plaque and cash stipend. They include:

**Don Ohlen** - for helping to further the Global Landcover Characterization Project,

**Bob Van Den Oever** - for assisting with equipment procurement,

**Joan Amundson** - for effort during the film archive relocation,

**Doug Brock** - for cost-savings efforts in logistics and inventory,

**Brian Berg** - for patience and attitude in solving user problems,

**Jim Van Zee** - for knowledge of the UNIX operating system,

**Dorothy Knutson** - for quality control efforts in chem mix and processing,

**Ilene Olmstead** - for administering the ORACLE data base,

**Doug Hollaren** - for leadership in software development efforts,

**Becky Foster** - for competent travel arrangements made for LP DAAC Science Advisory Panel,

**Chad Phillips** - for cheerful can-do attitude and willingness to go the extra mile,

**Bill Happel** - for dedication to quality and professional representation of the EDC,

**Julia Towns-Marso** - for efforts to keep EDC library services available during construction activity,

**Dennis Hetrick** - for dedicated support of AVHRR scheduling activities,

**Ron Johnson** - for leadership in conducting Arc Info user group meetings,

**Jay Feuquay** - for the insightful approach and perspective reflected in all projects that benefit the EDC,

**Mike Choate** - for rising to meet the challenge of new responsibilities and short deadlines,

**Bob Klaver** - for efforts in training Arc Macro language,

**LeAnn Dix** - for work in developing the NLAPS system,

**Don Becker** - for dedicated creativity in all work and assistance in planning each Annual Meeting.

After **Barbara Larson** and the Peer Awards Committee announced the 1996 Peer Award Recipients, the meeting celebrating the unique partnership between Government and private sector contractors at the EROS Data Center ended as employees and guests mingled and sampled appetizers and refreshments. ☺



1996 HSTX Peer Award Recipients: Front (l. to r.): **Doug Hollaren, Don Becker, Bob Van Den Oever, Dennis Hetrick, Mike Choate.** Middle (l. to r.): **Becky Foster, Julia Towns-Marso, Ilene Olmstead, Dorothy Knutson, Joan Amundson.** Back (l. to r.): **Don Ohlen, LeAnn Dix, Chad Phillips, Doug Brock, Ron Johnson.** (Not pictured: **Brian Berg, Jim Van Zee, Bill Happel, Jay Feuquay, and Bob Klaver**)

## Employee News

### USGS

#### Superior Service Awards:

**Arlys Johnson** - for outstanding contributions as the lead secretary to the PBA Office.

**Geny Austin** - for outstanding contributions to the Financial Management Team.

**Bryan Bailey** - for outstanding contributions to the remote sensing programs of the USGS.

#### On-the-Spot Awards:

**Alvinia Quarles, Jane Westegaard, Mary Lou East, and Ron Beck** - for supporting the meeting of the Landsat Technical Working Group of the Landsat Ground Station Operations Working Group.

**Char Johnson** - for outstanding secretarial support during a time of an exceptionally high workload in the Office of the Chief.

**Ron Beck** - for logistical support of the meeting at the EDC between UNEP and cooperating U.S. Federal agencies.

**William Acevedo** - for work on an online animation featuring 200 years of urban growth in the Baltimore-Washington metroplex.

#### Employees on the Move:

**Alvinia Quarles** - Alvinia's last day at the Data Center was May 31.

#### Volunteer Award:

Former EROS employee **Phyllis G. Wiepking** of Eau Claire, WI, received the 1996 Bill Everett Award for outstanding service as a volunteer. Phyllis, a public information officer who retired in 1988, has volunteered for the Northwest Wisconsin AIDS Project since September 1994. Congratulations Phyllis!

### New Employees

**Keith Benson** - Keith works as a government student with Will Zhou on neural networks for the Technique Development Research Project and sensor calibration for the Image Assessment System (IAS) activity. Keith's academic background includes a BS degree in electronic engineering technology from South Dakota State University (1993). He now is working on a MS degree in engineering with an emphasis on computer at SDSU.

**Lisa Olsen** - Lisa also joins the Science and Applications Branch as government student. She works with Norman Bliss on the Global 1-kilometer Topographic Data. Lisa holds a BA in geography with a minor in Latin American Studies from the University of Tennessee-Knoxville (1993) and a MS in geography from the University of Wisconsin-Madison (1995). The Volunteer/Badger now is working on a PhD at South Dakota State University in wildlife and fisheries science, where her research interests include soils, biogeography, water resources, and wetlands. Lisa has worked in environmental education and was a graduate teaching assistant at the UW-Madison in physical geography. Lisa married Paul Olsen (SAB) in November 1995. Lisa and Paul live in Dell Rapids.

**Robb Campbell** - Robb joins the Science and Applications Branch as a part-time government student. His initial assignment is working on Web pages for the Research Program. Robb's academic background includes a BA in American history from Harvard College (1991). He will earn a MS degree from Augustana College in 1997. In addition to graduate school, Campbell teaches computer workshops for Dakota State University at its Sioux Falls office on Western Avenue. A native of South Dakota, Robb lives at Lake Madison.

**Jon Rogness** - The Science and Applications Branch welcomes Jon as a government student. He works with Dave Meyer on reflectance modeling. Jon is a student at Augustana College in Sioux Falls working toward a B.A. in mathematics, German, and computer science. He expects to graduate in 1998.

### HSTX

**Gail Schmidt** - Gail joins EROS as a senior programmer developing software for the radiometry portion of Image Assessment System activity. Gail's educational resume includes a BS in computer science with a minor in math from the South Dakota School of Mines & Technology (SDSM&T) in Rapid City (1992). She added a MS in computer science from the SDSM&T specializing in image processing and computer vision (1994). Before coming to EROS, Gail wrote Fortran and Assembly Code applications to maximize speed for Dakota scientific Software in Rapid City (1994-1996). During the summers of 1991 and 1992, Gail tested Word for Windows 2.0 and Word for Windows 6.0 at the Microsoft Corporation in Seattle, WA. Born and raised in Rapid City, Gail enjoys competing in triathlons, marathons, soccer, softball, and other sports.

**James Storey** - James joins EROS as a systems integrator in Satellite System Engineering. He is helping to develop the Landsat-7 Image Assessment System. Storey's academic file includes a BS in civil environmental engineering from Cornell University, a MS in surveying and photogrammetry from the University of Wisconsin-Madison, and a MS in electrical engineering from Johns Hopkins University. Before coming to EROS, James worked 8 years with the USGS National Mapping Division, 3 years for the Engineering Systems Division at Hughes STX, and 2 years with Hughes Information Technology Corporation. Away from work James enjoys biking, music, and reading. Storey now lives in Reston, Virginia but will relocate to Sioux Falls in early May.

**Amy Andersen** - Amy enters duty as a secretary in support of the Production Services Department. Her educational experience includes training in modern office systems from Dakota State University. Before joining EROS, Amy worked as a secretary for the U.S. Drug Enforcement Agency for nearly 2 years and Midland National Life as a correspondence clerk 2 years. Amy and her husband, Mike, live in Garretson, where she enjoys spending time with her family, reading, cross-

stitching, shopping, and all kinds of sports.

**Jackie Engebretson** - Jackie joins the Science Department to provide secretarial support. Her education includes majoring in English at Dakota State University. Before joining the Science Department, Jackie provided secretarial support for the Garretson School District business office. Jackie's family includes husband, Larry, a sales rep for Pam Oil Company, Sioux Falls; son, Chris, a junior majoring in computer science at SDSU (who works part-time at EROS in Software Development); daughter, Rebecca, a government student giving tours and assisting as a receptionist. Jackie's hobbies include trying different restaurants and golf.

**Mike Rechtenbaugh** - Mike enters duty full-time after working at EROS the past 3 years as a Government step student in the Systems Engineering and Management area providing pc support. Mike is now a Systems Engineer in the Computer and Communications Systems Department, ITA group. His duties include system administration and network performance testing of the MAGIC and AAI projects. Rechtenbaugh's education includes a BS in Computer Science as well as a BS in Electronic Engineering from South Dakota State University. He will soon complete the requirements for a MS in Industrial Management at SDSU. Mike grew up in Canistota, SD and currently lives in Brookings, SD. He plans to move to Sioux Falls this fall after completing his MS degree.

**Nate Keyman** - Nate joins EROS as a copy technician in the Copy Room. The Sioux Falls native attended Roosevelt High School and enjoys baseball and playing super nintendo.

**James Hall** - The EROS Alaska Field Office welcomes James as a Digital Data Production Analyst. James works with Arc/Info, digitizes, and performs data entry for geologic map projects. His educational background includes a BA in Environmental Science. In his spare time James likes to spend time with his wife and two dogs. James now makes his home in Anchorage after living in Denver and Southern California.

## UNEP GRID

**Gabriela Cuevas Garcia** - Gabriela comes to EROS through the United Nations Environment Programme. She is a visiting scientist from the Geography Institute in Mexico City, Mexico, where she studies geography and mapping. Gabriela's work experience includes: updating the census cartography at the Geography Government Institute (1989), training in ARC/INFO PC at SIGSA, the company that distributes ARC/INFO in Mexico, working in the University's Ecological Center in digital mapping for a Chiapas ecological project, collaborating in the University's Geography Institute project called, "The National Forest Inventory," and processing the land use digital maps for Mexico, which is used as part of the North American Landscape Characterization project. Gabriela's hobbies include listening to music, watching movies, visiting museums and parks, and sports such as jogging, swimming, and walking.

## Significant Achievements

Congratulations to the joint CSB/DSB team, which successfully released WebGLIS in April.

The team completed the job ahead of schedule so it could be announced at the American Society for Photogrammetry and Remote Sensing meeting and demonstrated at the USGS booth in Baltimore. Members of the WebGLIS team include: **Stu Doescher** (Program Manager), **Randy Sunne** (Team Lead), **Mike Neiers**, **Sue Delaney**, **David Terrell**, **Dave Jackson**, **Caroline Fenno**, **Karen Zanter**, **John Faundeen**, and **Karla Sprenger**. ☺

Iven Seubert  
Continued from page 1

for different car dealerships. Ivan attended Augustana College and the University of Nebraska-Omaha from 1951 to 1953, where he studied engineering. In 1953 Ivan moved to Denver to work for the Weaver-Beatty Company and the Cambridge Corporation. Ivan moved to Azusa, California in 1954, where he worked at the Aero-jet Corporation as an Instrumentation Technician. He returned to Sioux Falls in 1962 to farm in Lincoln County. From 1966 to 1971 Ivan worked at Raven Industries. Prior to joining EROS in 1974, Ivan worked as a plant engineer at Sioux Valley Hospital. For 23 years Ivan repaired and maintained photographic printing and processing equipment for the EROS Data Center. Ivan was an avid reader, hunter, and lifetime member of the National Rifle Association.

Ivan's supervisor, Ed Peters, remembers him as a quiet, gentle, man with the gift to fix just about anything mechanical. "Ivan was a great help in keeping the Photo Lab operational by fixing anything from electronic boards to pumps. He seemed able to fix anything, given the right tools and equipment. He was able to fix the unfixable.

He had strong, firm opinions about issues that he was always ready to discuss over coffee and rolls. Ivan brought coffee and rolls everyday for the 15 years I worked with him on swings, refusing to let anyone else contribute.

He was extremely knowledgeable about anything, often surprising me with his wide range of information. Many times he brought in copies of articles from books and magazines with more information on subjects discussed earlier. He will be missed by the Lab for his skills. He will be missed by his friends for his friendship, help, and advice." ☺

# Introducing the Satellite Systems Branch

## Rounding up Bears...and Skinning Them Too

The EROS Data Center began working with NASA 5 years ago on Landsat and the Earth Observing System. The group responsible for this on-going partnership is the Satellite Systems Branch. The Satellite Systems Branch originated in early 1990, when EROS formed the EOS Data Systems Project Office, or EDSPO for short. In late 1994, the group's name changed to the Satellite Data Systems Office (SDSO) because of responsibilities in addition to NASA's Earth Observing System. October 28, 1995, the Satellite Data Systems Office became the Satellite Systems Branch (SSB). Because many new employees have joined the Center over the last couple of years, and the Satellite Systems Branch is relatively new, many employees may wonder about its roles and responsibilities. Therefore, the purpose of this article is to give some background information on the Satellite Systems Branch, share information about some of its specific activities, and clarify its future impact on EROS and NASA's Mission to Planet Earth program. But first, let's begin by examining the strength of any organization - its people.

### SSBers

**R. J. Thompson** serves as Chief of the Satellite Systems Branch. According to Thompson, the Branch started with a handful of people but now features 25 employees who work within a three-tiered structure. "The Branch features three parts: a Civil Service management and technical staff (nine people), a satellite systems engineering and development contract group (ten people with Hughes STX) that provides the talent for doing the project work, and four people with the Hughes Applied Information Systems (HAIS) technical support company, who are responsible for implementing the Earth Observing System Data Information System (EOSDIS) Core System configuration in this building." Thompson oversees the entire branch as well as the Federal Civil Service personnel. **John Dwyer** manages the HSTX contract staff in-

volved in satellite systems engineering and development. And **John Dausavage** heads HAIS - an outside contract support group (a separate, but related entity to Hughes STX). As the EOSDIS Core System Engineering Liaison, Dausavage's biggest task will be supporting the world's largest data storage and science processing information management system. "The system is huge with more than 600 people building it. It's a big challenge for one person to stay current with on-going developments within the ECS to assess the situation according to the Distributed Active Archive Center's (DAAC) needs."

As a stakeholder in the design results Dausavage added, "I will operate the system to meet DAAC priorities for a time before the DAAC takes over the system and folds it into regular EDC Program operations. The process of putting a stakeholder, such as myself, directly in the loop is a modern way of doing business for this kind of project and may become a model for future projects within the U.S. Government."

In addition to the onsite staff, Thompson points out two instrumental people who work outside the building. "We also have an onsite representative at Goddard (Space Flight Center, Greenbelt, MD), Steve Covington. And we use some of John Faundeen's time in Reston to help with liaison activities at USGS headquarters."

Thompson says the Branch now is looking to hire two additional people and will add dozens of other people in the next 4 years. "There will be two periods of staff expansion. The first will happen the spring of 1997 with the delivery of the EOS Core System that will go into the new computer room. I expect John Dausavage's staff (people to operate and maintain the EOS Core System) to grow from four to possibly 40 or 50. By the launch of the EOS platform in June 1998, we are supposed to be up around 60 people."

Landsat data acquisition and processing activities are not a part of the EOS

Core System. Staffing for this activity will be provided by Hughes STX. "That staffing ramp up will start in the late spring of 1997. By the end of the 1997 calendar year, the SSB will add 25 people to John Dwyer's group. By the time Landsat-7 is launched in May 1998, the Landsat staff will be around 30 or so." As a result of those two major expansions, the SSB will add a total of 70 to 80 people to the existing 25.

### Why the SSB Exists

The Satellite Systems Branch was formed to give EROS a nucleus of management and technical people to guarantee the Center carries out its responsibilities associated with its cooperative agreements (Landsat and the EOS) with NASA. "Another important function of our Branch," explains Thompson, "is to provide a critical mass of talent positioned to deal with new issues associated with satellite remote sensing, regardless of where they originate. For instance, issues which may involve relationships with the Defense Department, the National Oceanic and Atmospheric Administration (NOAA), or private industry involving new opportunities such as new data reception and distribution for satellite remote sensing."

The Branch also was formed to serve a special purpose group of scientists. "I think we are a special-purpose computing operation," says Thompson. "Unlike the rest of the Data Center, we are not here to support the bulk of the programs and activities of the U.S. Geological Survey. Our world is confined in some ways, which forces us to stay close to the cutting edge (of technology) simply because that's where the new programs exist."

### Support vs. Applications

The scientific and technical staff within the SSB differ from their colleagues throughout the rest of the Data Center because they focus on scientific support versus scientific applications. According to **Bryan Bailey**, SSB Senior Scientist, the science mission of the Land Processes DAAC is to promote the interdisciplinary study and understanding of the land surface conditions and processes of the total Earth system through several activities. "We have implemented programs and activities

to improve user access to relevant data and products, help investigators to apply effectively those data and products to interdisciplinary Earth Science studies, and to promote expanded applications of pre-EOS and EOS data by a broad user community."

Bailey says the Land Processes DAAC requires two types of science support. "One type consists of the various general directives and guidelines levied mostly by NASA documents written early in the EOS Program. The others are specific requirements defined by the DAAC in consideration of its science mission and the general science support requirements specified by NASA."

### General Science Support Requirements

- Provide "appropriate and related science support" to broad spectrum of DAAC activities & programs
- Develop in-house science capabilities to perform early EOSDIS functions
- Improve near-term science productivity
- Develop science & engineering expertise for transition to Version 1 EOSDIS
- Share institutional expertise with users

### Specific Science Support Requirements

- Make available remotely sensed data & products
- Make available ancillary data sets
- Ensure metadata (data which describe data) characterize available data
- Ensure data & products are readily accessible
- Provide ready access to browse products
- Efficient & effective data distribution
- Establish mechanisms to understand users needs and gain feedback
- Provide comprehensive user services
- Establish & provide expertise about sensors, data, & products
- Establish & provide expertise about scientific uses of sensors, data, & products
- Establish short-term, on-site visiting scientist support capabilities
- Start user awareness programs

- Support the development, porting, & testing of product algorithms (mathematical rules for solving problems)
- Support generation and validation of prototype and standard data products

### Biggest Challenge

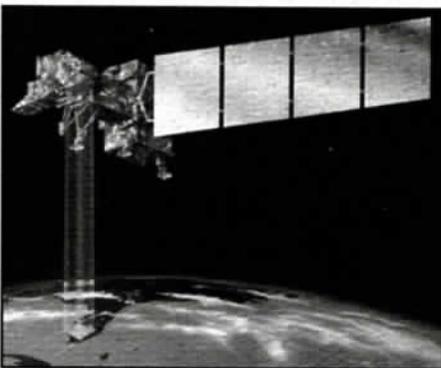
According to Thompson, the largest problem is not developing the systems and programs the Branch is responsible. Major obstacles seem to be coordinating with NASA and other branches within EROS. "We have all the difficulties of determining what next year's income will be, staffing up to meet the requirements of that income, and coordinating our activities associated with Landsat and EOS with the other activities that are going on in the building. We just need to do a better job of communicating our role and making sure it is understood."

### Primary Accomplishment

In addition to the challenges, the most pleasing accomplishment by the Branch in Thompson's view is the degree to which the DAAC has been established as a credible entity within science and remote sensing communities. "People are beginning to know who the Land Processes DAAC is, what we provide, and why we are here. And, we carry a fair amount of credibility in NASA's eyes."

### Radar: The Wave of the Future

New issues or opportunities the SSB continues to investigate are developments in the area of radar. "Is it an opportunity or a problem? It's easy to go out and round up a new bear," Thompson says, "It's much more diffi-



Satellite Systems Branch staff prepare to handle data from Landsat-7, due to be launched in May 1998.

cult to bring that bear in and tell someone else to skin it. In a SSB orientation, the key technical staff are pointed in the same direction with the same sense of commitment. Clearly, radar is an opportunity. Enough development and technical advancements have gone into radar by now that we (the SSB) cannot afford to treat it as anything but an opportunity. People are spending hundreds of millions of dollars on radar data and systems. People don't spend that kind of money without some promise of reward. So, if EROS wants to lead in land remote sensing, the SSB must pay attention to radar."

### The Crystal Ball

The first 5 years afforded the SSB plenty of challenges and opportunities, along with a few name changes. The next 5 years could prove just as dynamic. "We will expand our opportunities and interfaces a great deal with the Department of Defense, NASA, NOAA, and private industry because of the promise of access to near real-time satellite data. That's the thing that is going to change our modus operandi because we will receive data instantaneously and deliver it to a user almost instantaneously. And that will open an array of applications that we've dreamed about without the opportunity to experience. In the year 2000, we'll have rapid reception of data so it will be incumbent on us to be able to rapidly deliver a broad array of data products that will validate why the Center was located here in the first place."

The future of the SSB wouldn't be possible without the past work and accomplishments of the Data Center as a whole. Thompson is the first to echo this sentiment. "We really could not have taken the first step without the credibility the Center had before the NASA relationship came along. The reason we got the NASA affiliation and support can be credited to all the pre-existing programs, activities, and organizations within the Center."

From EDSPO, SDSO, to the SSB; solely a NASA EOS support office, to a Branch of talented people poised to deal with new issues associated with satellite remote sensing; the Satellite Systems Branch is rounding up new bears, and skinning them too. ☺

# Lake EROS: Team Chemistry at its Best

## Schultz & Luden Treat EDC Waste Water

During early summer evenings, an orange-red sun sets on Red-winged blackbirds perched on cattails surrounding Lake EROS. The sweet smell of the first cutting of nearby alfalfa fields fills the air. The croaking of frogs and the friction of cricket legs breaks a humid stillness. According to the U.S. Environmental Protection Agency (EPA), freshwater inland lakes and reservoirs provide the United States with 70% of its drinking water and supply water for industry, irrigation, and hydropower. Lake ecosystems support complex and important food web interactions and provide habitat needed to support many threatened and endangered species.

Federal, State, and local governments and industry have made significant commitments to protect water quality during the past two decades. Future expenditures are anticipated to abate and control water pollution. Because of the potential interaction of surface and ground water with water discharged from the EROS Photo Lab operation, Data Center management implemented a full-scale program in 1973 to adopt EPA-approved standards to guarantee the quality of water discharged from Lake EROS.

### A Hard Act to Follow

The Clean Water Act of 1972 and its amendments are the driving force behind many of the water quality improvements in recent years. The EPA develops nationally consistent guidelines limiting pollutants in discharges from industrial facilities. The effluent guidelines then are used in permits issued to dischargers under the National Pollutant Discharge Elimination System program. Additional controls may be required if receiving waters, such as Lake EROS, still are affected by water quality problems after permit limits are met.

### Team Members

Data Services Branch employees, **Ron Meyer**, **Ron Schultz**, and **Chuck Luden** provide a certain team chemistry to ensure that the Data Center's discharge of water into Lake EROS and the surrounding soil is clean - meeting stringent specifications set by the EPA. While Meyer supervises their work, Schultz and Luden are responsible for all water discharged from the building. Schultz is a chemist who researches chemical procedures, new systems, and files EPA reports. Luden operates and

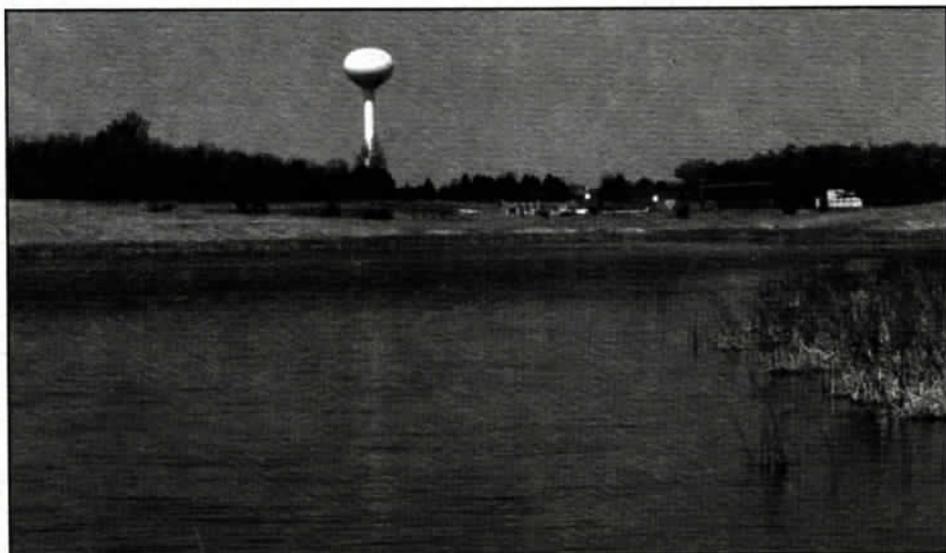
maintains the entire chemical management system. Together, the trio have established a team chemistry approach to waste water treatment that provides a model for many other government facilities nationwide. As proof, Schultz and Luden were recognized in April of 1995 for "Environmental Excellence in Government, Meeting the President's challenge through participation in the Federal Waste Prevention, Recycling, and Affirmative Procurement Initiatives."

### The Treatment

The EROS Waste Water Treatment Facility sprang to life in the early 1970's when a series of recess ponds and a lake were constructed to treat 20,000 gallons of waste water used each day in the operation of the Center's Photographic Laboratory. "We always have been dramatically below the limit the EPA sets for waste water standards," explains Ron Schultz. "Many of the parameters for discharges by our facility surpass drinking water standards set by the Clean Water Act. That does not mean I would advise drinking the water at the Lake. It wouldn't harm you. But, because of some of the compounds present, it doesn't smell or probably taste very good."

Most of our wash water goes right outside," explains Schultz. "The silver-bearing wash waters (after the developers and fixers) go to a silver recovery system that can take silver out of water (e.g., 50 parts per million is reduced to 1 part per million). Photo chemical developers are sent downstairs for ozone treatment. Ozone is a good oxidizer and it turns out the developers have a high capacity for being oxidized. The oxidation process removes toxicity and harmful properties so chemicals are broken down to a point that when water arrives at the waste treatment ponds, bacteria can consume them."

According to Schultz, secondary chemicals such as photo chemical stops, hardeners, neutralizers, and stabilizers contain biodegradable chemicals such as formaldehyde. "Biodegradables (chemicals) are sent directly outside because the ponds will take care of them anyway."



Lake EROS: O.K. to drink, but doesn't smell or taste great.

Most of the chemical fixers are reused after the silver is removed through silver recovery units (SRU). "If we take the silver out, we reclaim the chemical so it doesn't contaminate the environment. By recycling the chemical, we help the environment and save money by not having to buy more chemicals."

The biggest challenge for Schultz and Luden in making sure that Center discharges do not get out of control. This is accomplished through planned redundancy and equipment maintenance. "We have some backups, holding tanks, and things like that can hold discharged water if a problem occurs," says Schultz. "But thanks to VESCO and some creativity on our part, we're pretty good in coming up with a quick fix when needed."

Through the efforts of Schultz, Luden, and Meyer, the EROS Data Center helps to steward our precious natural resources. Complex environmental threats and diminishing funds for pollution control force all people to jointly solve pollution problems that foul our beaches and lakes or close our favorite fishing holes. We need to understand these problems and become a part of their solution. The EROS Data Center continues to do its part as a government facility to protect surface and ground water resources. Lake EROS remains a crystal clear model because of the work of Schultz and Luden. ☺

## The EROS Baby Boom

### Data Center Productive and Reproductive!

Another bumper crop over the last year and a half. Instead of corn or soybeans, the crop was BABIES. Some of the most fertile soil proved to be that of the EROS Data Center. For instance, in the last 18 months, 18 EROS families added babies to their brood, with another two due soon - Jenn Willems and LeAnn Dix. The list of EROS employees (including soon-to-deliver employees) and their diaper dandies appears below.

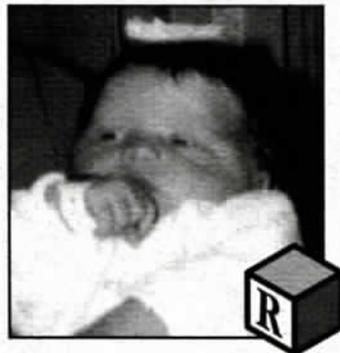
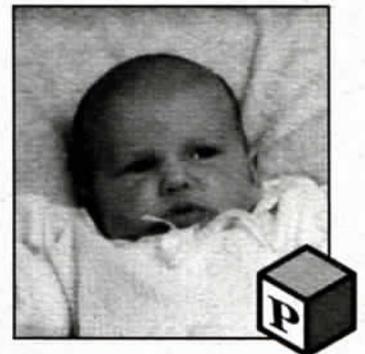
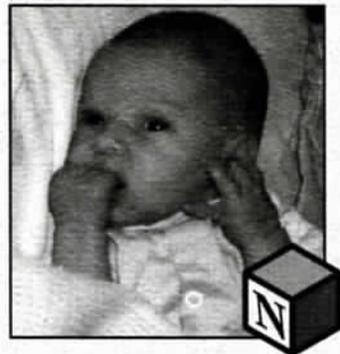
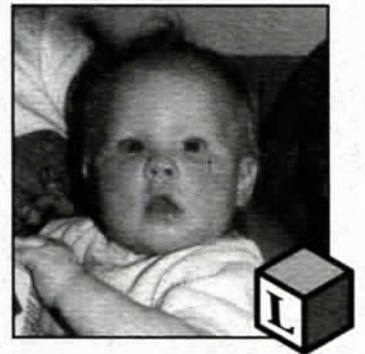
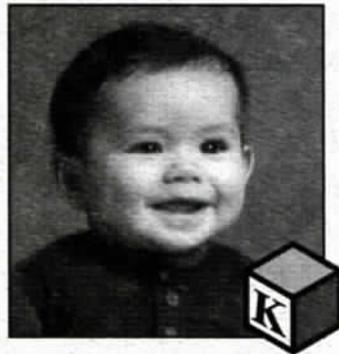
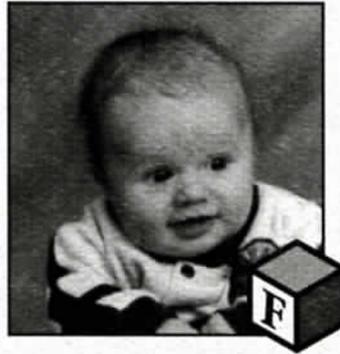
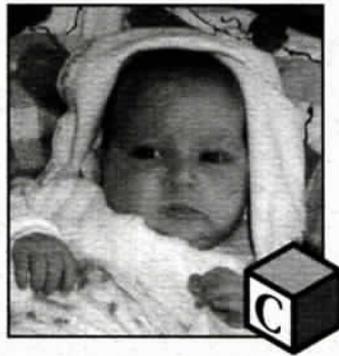
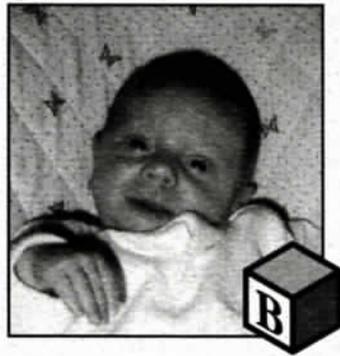
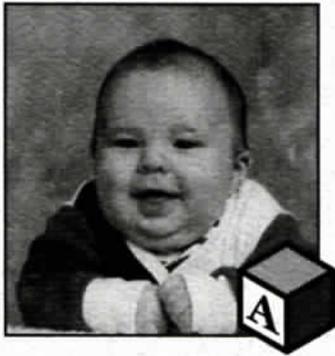
Each generation of parents wonders if their time as parents is the most difficult time in history to raise children. For instance, parents in 1996 must contend with such things as chemical and toxic waste, air pollution, the threat of nuclear war, inappropriate music lyrics, inappropriate television programming, one-parent households, the AIDS virus, drugs, inappropriate material on the Internet.

Just when parents of the 90's think it's tougher to raise children today, all they have to do is think about what it would be like to raise their child without disposable diapers, pacifiers, intercoms, all night grocery stores, intercoms, air conditioning, bottles, microwaves, bottled baby foods, walkers, cribs, playpens, washers, dryers, telephones.

No matter what point in history, it's not easy being a parent. Each generation of parents faces its own unique set of challenges. So, in honor of EDC's baby boom, the publishers of EROSDATA would like to give some tips for all diaperers and diaperers:

- Mothers prefer diapers with Disney cartoon characters over those featuring Beavis & Butthead or Itchy & Scratchy. (Babies don't care, just as long as they are clean and dry.)
- A clean disposable diaper doubles as a great South Dakota snow bonnet.
- Diapers don't do well in a compost heap, not even if you run them through a mulcher first.
- Check every trash can in the house daily for dirty diapers, especially the ones in your dining room, kitchen, and bedroom.
- If you ever get tempted to mutter unpleasanties under your breath during a 3 a.m. diaper change or feeding, please turn the baby monitor off first.
- By the time you think to check it, don't bother - the diaper is always wet.
- Do not expect to ever look at peanut butter or velcro the same way again.
- Beware the dreaded Fountain of Youth. ☺

Parents:	Baby's Name:	Weight:	Length:	Birthday:	Child:
Connie & Chris Haugen	Clark Daniel	6 lbs., 12 oz.	19 inches	12/29/95	2nd
Carla & Bill Lynn	Ethan William	8 lbs., 8 oz.	21 inches	12/9/95	1st
Laurie & Gregg Huewe	Jacob Thomas	5 lbs.	18 inches	2/4/96	3rd
Rhonda & Doug Newman	Ember Jeanne	8 lbs., 11 oz.	21.75 inches	2/12/96	1st
Mary & Wayne Johnson	Marissa Marie	7 lbs., 1 oz.	19.25 inches	11/13/95	1st
Larry & Bonnie Murtha	Taylor Kathleen	7 lbs., 2 oz.	19.75 inches	10/25/95	4th
Carla & Gregg Damme	Kiah Nicole	7 lbs., 7 oz.	20.25 inches	12/17/95	3rd
Greg Zylstra & Maria Pflaum	Francisco Willem	8 lbs., 12 oz.	20.5 inches	10/21/95	3rd
Shar & Tim Nelson	Mariah	6 lbs., 12 oz.	19 inches	4/8/96	2nd
Karen Zanter & Grant Mah	Scott Zanter Mah	7 lbs., 14 oz.	21 inches	8/2/95	1st
Carolyn & Ken Gacke	Shannon Lukah	5 lbs., 8 oz.	20 inches	7/26/95	1st
Jacie & Bob Klaver	William James	8 lbs., 12 oz.	21 inches	9/12/95	5th
Julia Towns-Marso & Jeff Marso	Claire Elaine	5 lbs., 12 oz.	19.5 inches	9/30/95	3rd
Dave & Gwen Jackson	Benjamin Elias	9 lbs., 10 oz.	20.5 inches	10/20/95	3rd
Jackie Keiner-Jones & Jim Jones	Jordan Elizabeth	8 lbs., 2 oz.	20.5 inches	3/17/95	1st
Ilene & Wade Olmstead	Hanna Amelia	6 lbs., 13 oz.	19 inches	12/12/94	3rd
Dan & Chrisann Etrheim	Trey Daniel	9 lbs., 7 oz.	21 inches	5/25/95	2nd
Aslam & Brett Maxon	Dahlia Brett	8 lbs., 12 oz.	21 inches	3/5/95	1st
Jennifer & Dave Willems	something nice	not too much	not too long	Labor Day?	will be 1st
LeAnn & Greg Dix	something nice	not too little	not too short	July	will be 2nd



A. Clark Haugen	G. Shannon Gacke	M. Kiah Damme
B. Jacob Huewe	H. Benjamin Jackson	N. Taylor Murtha
C. Francisco Zylstra	I. Marissa Johnson	O. William Klaver
D. Ember Newman	J. Hanna Olmstead	P. Claire Marso
E. Trey Etrheim	K. Scott Mah	Q. Dahlia Maxon
F. Ethan Lynn	L. Jordan Jones	R. Mariah Nelson