The CenterScene

SPRING 1992
U.S. Geological Survey/ EROS Data Center

GRID Office Inaugurated

A scientist involved in a research project often needs a great deal of information compiled on a number of levels and from a number of sources. Studying environmental problems can require information on the land forms, the weather, land use, political considerations, historic patterns, as well as current remotely sensed data provided by aircraft cameras and satellite sensors. Increasingly, the environmental interaction of regional and global systems has been brought into scientific investigations. A newly developed office at the EROS Data Center will help research scientists find out what relevant data sets are available and how they may get at those data sets. GRID Sioux Falls, under a cooperative partnership of the United Nations Environment Programme, NASA, and the U.S. Geological Survey, formally opens March 26. A series of events surrounding the opening will focus on the work of GRID and the importance of the partnership to the Center and to the research community.

GRID Sioux Falls has been in the development stage for a number of years. It is an outgrowth of a larger framework under the United Nations Environment Programme (UNEP). UNEP is a program under the U. N. Secretariat Office of the United Nations in New York, and operates from a Nairobi, Africa headquarters. Started in 1972, UNEP is responsible for initiating and stimulating environmental action and awareness at all levels of society and, more specifically, to coordinate the environmental work of UN organizations and agencies. To support the UNEP activities, the Global Environment Monitoring System (GEMS), coordinates world wide collection of relevant environmental data. Finally, within that framework, a Global Resource Information Data Base (GRID) network was begun in 1984. GRID was established to provide world wide access to timely, usable environmental data. The GRID Centers, which now are organizationally parallel to GEMS, though still are part of the UNEP organization, form a network of regional offices which can work more directly with scientific staff and policy planners on which sets of information are available for the necessary background to solve the problems. Information on data availability, formats, and storage requirements is provided by the GRID offices so scientists and planners can use it. The strength of the GRID network comes from its capacity to draw the data into an interactive, global system.

The GRID Centers are distributed around the world. Regions of concentration and locations of Centers include:

- **Asia and Pacific Basin**, Bangkok, Thailand (with former EDC employee Dr. Gary Johnson as manager)
- **Global and Europe**, Geneva, Switzerland
- **Poland**, Warsaw, Poland
- **Polar zones**, Arendal, Norway
- **Japan**, Tsukuba, Japan
- **Africa and West Asia**, Nairobi, Kenya
- **Himalayan and Hindukush**, Kathmandu, Nepal
- **North America**, EDC, Sioux Falls.

GRID Centers are planned for Brazil, Russia, Germany, the Caribbean, and the South Pacific.

The GRID facility at EDC is also supported by scientific personnel from the University of New Hampshire and the University of California at Santa Barbara. The GRID Sioux Falls office will draw on data collected by a variety of U.S. agencies and institutions, coordinate a continually expanding UNEP global data system, encourage the analysis of these data to support global environmental assessment programs, and assist developing countries in establishing their own structures for using GRID facilities and capabilities. Technical research and system efficiency will be the responsibility primarily of the University of California at Santa Barbara. Scientific research using global reference data will be explored primarily at the University of New Hampshire. Basic technical activities aimed at building and maintaining an accessible world- wide data base will be done mainly at EDC. GRID Sioux Falls will also be involved

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United Nations Environment Programme

G R I D

Global Resource Information Data Base

UP FRONT

In the last issue of Center Scene I wrote about many changes which are taking place within our Center. In this issue I would like to review another significant change. The formal dedication of the UNEP/GRID office, described elsewhere in this issue, marks an important step forward for the EROS Data Center.

The events of March 26 will formalize a relationship between the United Nations, NASA, USGS, and several supporting universities which started some time ago. Dr. Wayne Mooneyhan and Darrel VanderZee have already begun the work of this important project office. GRID Sioux Falls joins "nodes" in Europe, Africa, and Asia in providing data and technical assistance to researchers involved in environmental studies.

Formal dedication of the office will be made by USGS and NASA officials and by Dr. Mostafa Kamal Tolba, United Nations Under-Secretary General and Executive Director of the United Nations Environmental Programme. It is an honor for EDC to host a visit by Dr. Tolba. He is a world renowned scientist who has been an eloquent and tireless defender of the environment for most of his life. Born in Egypt, Dr. Tolba studied in Egypt and at the Imperial College in London. An experienced diplomat, he contributed significantly to the Montreal Protocol, the historic 1988 agreement to protect the ozone layer. The Protocol has been recognized as a precedent for preventive rather than corrective environmental action.

The establishment of a GRID office within our center, and the presence of Dr. Tolba at the opening ceremonies, gives recognition to the hard work and dedication of EROS Data Center employees to make this Center an important contributor to environmental research.

Donald T. Lauer

Farewell to a Friend

by
Don Becker

On Thursday, January 30th, 1992, Ken Graack, 39, passed away leaving his wife, Kathy, and two beautiful daughters, Alyssa and Kristin, to fend for themselves, proving to each of us how incredibly short and unpredictable life can be.

Ken's knowledge, experience, and devotion to his work will be a great loss to the EROS Data Center and the Archive Management Section, but his friendship will be missed even more. His sense of humor was as unique as the love he had for his family. His life on Earth was very short, and he left behind a million things that he wanted to do before retirement. Unfortunately, with no notice at all, his heart gave out, putting an end to those dreams.

My family and I will miss the camping, swimming, go-cart racing, fun, and friendship that we had with Ken, and our thoughts are with his family as they start putting their lives back in order. When you lose a friend at age 39, it is easy to make close comparisons to one's own life and all that has been accomplished, and I can't help but think that maybe something positive will come out of this. Right now it is mighty hard to see what that could be. He will be missed.

(If anyone has an interesting story or experience about Ken they would like to include in a booklet to be given to his family, please get them to me and I will forward them).

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in technological development to support the larger GRID system and training of developing country personnel.

The GRID program has already had some successes. At the request of the World-Wide Fund for Nature and the Elsa Wild Animal Appeal, a conservation plan was started to assess the number of elephants left in Africa. The need for the study grew out of a need to control the trade in ivory, and hence, reduce the slaughter of animals due to poaching. African countries needed to know how much ivory they could afford to export without severely impacting elephant herds. Correlations were drawn between herd densities and a series of variables which affect the animals, including degree of protection available, presence of parasitic insects, types of vegetation, human population density in the regions, average annual rainfall, and known elephant range. A continent-wide profile was developed on a GRID system and made available to wildlife ecologists. The profile is updated as new information becomes available.

In another case, information on land use and climate were combined with satellite data to examine soil erosion hazards. Additionally, drainage, slope, and human population density pressures were added to information on crop yield requirements to help regional planners to explore potential conflicts between groups making differing demands on the land.

As the GRID offices become more well known, their importance will grow. The establishment of a GRID

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GRID Office Inaugurated

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Sioux Falls facility grew out of a two decade experience of archiving, research, and training. The EROS Data Center maintains a unique worldwide archive of Landsat data, operates a real-time AVHRR data reception and production capability which acquires data of the entire globe, uses advanced product generation systems, and develops and maintains a number of data processing systems important to the global research community. Further, the planned involvement at EDC with the NASA EOS program will play a critical role in the study of Global Change in the coming decades. The partnership between the United Nations GRID program, NASA, and the U.S. Geological Survey's EROS Data Center is a natural extension of the experiences and needs of the participants. March 26 will be a significant day in the acknowledgement of the work done at EDC.

March 26 will be a significant day in the acknowledgement of the work done at EDC. Dr. Mostafa Kamal Tolba, United Nations Under Secretary General and Executive Director of the United Nations Environment Programme (UNEP), will attend the opening ceremony. A 9:00 a.m. formal ribbon cutting ceremony will be followed by a U. N. flag raising ceremony. That will be followed by a short press conference conducted by Dr. Tolba, NASA officials and representatives from the USGS and the Center. Later in the morning, Dr. Tolba will address an assembly of university, business and civic groups on the state of the World's environment and will answer questions on UNEP's involvement in critical global environmental issues. The events mark a new stage in the growth of the EROS Data Center's role in global scientific research. In August 1990 Dr. Lennard Fisk, NASA Associate Administrator for Space Science, inaugurated EDC's involvement with the Mission to Planet Earth program by joining USGS Director Dr. Dallas Peck in raising the NASA flag at EDC. On March 26, Dr. Tolba, will raise the U. N. flag, acknowledging the extension of the world-wide GRID network to include the Sioux Falls archive and research facility.

EROS Employees– Generous Contributors

While the EROS Data Center has built an international reputation for Earth science research and development, it's also known in the Sioux Empire as "a generous contributor." This is a reputation the Center has earned through the years from its traditionally generous support for the United Way and the Combined Federal Campaign.

EDC's support for these campaigns dates back to 1974. While participation has varied from year to year, as a whole, the amount pledged always has increased.

As in past years, the 1991 campaign was another record-breaker according to Tom Earley, TGS Technology, Inc. Personnel Supervisor.

"Last fall's campaign raised $17,421.88, an increase of 24.2% over the previous year. Two years ago," Earley continued, "79% of TGS employees contributed $14,200. While the percentage of people who contributed this year was down slightly (75.4%), the total amount increased. Because of Johnson Controls' Corporate Match Program, last fall's contributions totaled $34,843.76."

While TGS is pleased that nearly 80% of its employees "give from the heart" to the Sioux Empire United Way, contributions by Federal employees to the Combined Federal Campaign are perhaps even more impressive.

According to Carol Van Winkle, Personnel Officer, 55 people, or 85% of EDC Federal employees, contributed $9,688.10 during 1991. "This past year eight employees gave $500 or more and 23 people contributed $100 or more," stated Van Winkle. "Each year the total continues to creep up."

Bill Barlow, President of the Sioux Empire United Way, certainly wishes other organizations had the kind of track record established at EROS.

"The giving from the employees at the EROS Data Center allows us to make some significant impacts in the community that we otherwise would be hard-pressed to make," says Barlow.

"Number one, in addition to supporting our traditional agencies, the generous giving from the employees out there has allowed us to get involved with a day care initiative and some community problem-solving activities in terms of youth at risk.

In that program, we're involved with the Whittier Middle School, United Way, and Marquette Banks in doing some mentoring programs...and are now getting involved in some other levels to try and impact the kids that are at risk of either dropping out of school or becoming involved with perhaps juvenile authorities."

Barlow adds, "This is a real branch-out in the community that you people are allowing us to make.

You're a major contributor to the campaign and we truly are most appreciative of the support that you have given over the years."

Spearheading last fall's record-setting United Way campaign at EROS was John Faundeen, Information Management Section. According to Faundeen, he hopes those who contributed realize the importance of their generosity.

"Of the 34 agencies picked to receive United Way funding, each and every one of them asked for more money than the United Way

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Niamey Field Office

The Niamey Niger Field Office was established in March of 1989 in response to an agreement between the United States Agency for International Development and the U.S. Geological Survey, EROS Data Center. The agreement outlined EDC responsibility to provide technical support to the AGRHYMET Regional Center (ARC) in Niamey, Niger. Specifically, EDC has the job of augmenting the satellite data processing and GIS capabilities of the AGRHYMET Program.

The word "AGRHYMET" comes from the words "AGRiculture", "HYdrology", and "METeorology" which identify the main areas of AGRHYMET expertise. The AGRHYMET Program was established in the mid 1970's by the World Meteorological Organization with the goal to increase agricultural production in member nations. Nine nations of the Sahel region in western Africa (Mauritania, Senegal, Gambia, Guinea Bissau, Cape Verde, Mali, Burkina Faso, Niger and Chad) are members of the AGRHYMET Program, each having a National AGRHYMET Center.

The Sahel is the region of Africa that borders the southern Sahara Desert. It is characterized by distinct wet and dry seasons with decreasing rainfall amounts and reliability as one proceeds northward. The National Centers collect country-wide information on weather, agricultural production, and hydrology. The information is evaluated every ten days in an effort to monitor the agricultural growing season and make assessments on food security. For example, a study may explore what areas might experience food shortages. The data are also passed on to the Regional Center in Niamey which makes regional assessments.

The AGRHYMET program is the recipient of assistance from many donor nations. In addition to the United States, the countries of France, Belgium, Italy, Switzerland and the Netherlands provide support to AGRHYMET. Early in 1988, the French installed a satellite data reception station to intercept real-time data transmissions from National Oceanic and Atmospheric Administration (NOAA) weather satellites. (This is the same satellite data that EDC receives several times a day as the satellites pass overhead). At the same time, EDC participated in a study of AGRHYMET to identify how USAID might most effectively continue assistance to the program.

The study determined that the ability to process and distribute products derived from the NOAA satellite data would significantly facilitate efforts to monitor growing conditions throughout West Africa. The proposed regional center products would be based upon the experience gained in 1987 when EDC produced "greenness maps" for several countries in West Africa for their use in locust control efforts. Also identified was the need to place staff at the regional center to process the satellite data and through training, integrate it into the routine flow of data and information. Thus, in 1989, the Niamey Field Office was established as a three-member team at the AGRHYMET Regional Center.

The team consists of a Team Leader, an Agrometeorologist, and an Operations Production Supervisor.

Dr. Richard Swanson was chosen as Team Leader based upon his past experience in managing African projects. An interesting note is that Dr. Swanson was born in Niger while his parents were there as missionaries. Dr. Swanson's experience is unique as he studied agricultural systems in the Sahel and he is considered an expert. The Team Leader's main responsibility is to integrate team activities into the Center routine, act as a liaison between EDC and the Niamey facility, and find ways to help the AGRHYMET Program use these new capabilities to meet its goals. As of this writing, Dr. Swanson has moved on in his career after managing the Niamey Field Office for two and one half years. He has been replaced by Dr. Andrew Stancioff who also has many years experience managing high technology projects in West Africa.

Mr. Simon von Donk was named as the Agrometeorologist. Simon is a native of the Netherlands who studied agrometeorology at Kansas State University and received an MS degree based upon his agroclimatological study of the Sahel. Simon has been very active in helping the AGRHYMET Program organize its climatological data base and developing ways to easily retrieve and analyze

Aerial view of the AGRHYMET Regional Center, Niamey, Niger, home of EDC's Niamey Field Office.

the data. Additionally, Simon has the responsibility to travel to each AGRHYMET member nation every year to provide training to National AGRHYMET Center staff on the analysis of climate data. Simon was recently married and his wife, Susan, has joined him in Niamey.

Dr. Mark McGuire rounds out the team as Operations Production Supervisor. He has the responsibility to process and develop the satellite data into products for distribution throughout the AGRHYMET Program and to international organizations. The products include greenness maps based upon the Normalized Difference Vegetation Index (NDVI) computed from Advanced Very High Resolution Radiometer (AVHRR) data from the NOAA satellites. Mark has also spent time at the various National AGRHYMET Centers providing training in the use and interpretation of remotely sensed data for natural resource monitoring. Mark has also decided to make a career change after three years at the AGRHYMET Regional Center. He will be traveling in Africa and there are rumors he will help manage a nature preserve/park in the Seychelles Islands just north of Madagascar.

The Niamey Field Office team is supported by two Sahelians. Moussa Djibril is the Niamey Field Office staff assistant. He makes sure reports are typed and delivered on time, picks up express deliveries, makes hotel and airline confirmations for the many EDC travelers to Niamey, and generally assures that the office runs smoothly. Boubacar Seyni is the driver for the project vehicle and responsible for its maintenance. His primary duty is to shuttle NFO staff around Niamey to attend meetings at various ministries and at the USAID Mission. The Niamey Field Office staff are also supported by EDC staff. Staff of the International Projects Section are most directly involved with the AGRHYMET effort, however, EDC staff from SAB and other branches and contractors are or have been directly involved.

Bill Nelson and Rodney Beck from VESCO journeyed to Niamey to evaluate the AGRHYMET Regional Center facilities and make recommendations in terms of electrical power, air conditioning and the like. Various staff from CSB likewise have travelled to Niamey to evaluate and make recommendations. John Boyd and Dave Oschner evaluated current computer systems and made recommendations for upgrades. Jon Merchant has helped install hardware and provide training on its maintenance. Tom Bodoh went to Niamey to fine tune the VAX computer and DECNET operations and provided guidance on system administration. Staff from Data Services Branch (DSB) have digitized numerous maps and Landsat interpretations and generated map collars and reference images to be used in the greenness mapping program. Gray Tappan of SAB has pro-

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African Crop Protection Service staff and world renowned locust expert, George Popov (right), of the United Nations Food and Agricultural Organization, study a greenness map produced by the AGRHYMET Center.

Northwest Africans use a greenness map verify areas of green vegetation on the ground to plan locust control programs.

Niamey Field Office

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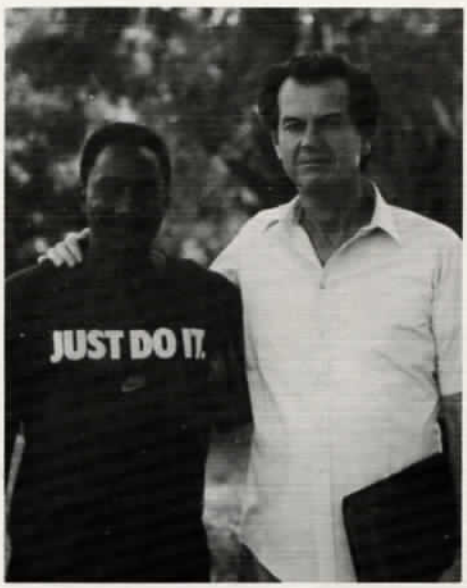
vided training to the ARC and NACs on the use and interpretation of greenness maps.

To meet the requirement to the improve its satellite data handling capability, the Land Analysis System (LAS) and the AVHRR Data Acquisition and Processing System (ADAPS) were installed at the ARC in the summer of 1989. John LaVergne (CSB) developed a streamlined ADAPS/LAS process to automate most of the image processing steps used in the generation of greenness maps. John also spent many weeks in Niamey fine tuning the production system. The AGRHYMET Regional Center also received a large format color electrostatic color plotter uses the CALPLOT program developed by John Hutchinson (SAB) to generate the final map products. With all these inputs, the AGRHYMET Regional Center began operational production in 1990. With the installed capability, the Regional Center now produces country specific and Sahel-wide greenness maps every ten days from May until November for each member nation.

Based upon the success of the AGRHYMET Regional Center in processing AVHRR data, the USAID Mission in Morocco (not part of the AGRHYMET Program) asked the AGRHYMET Regional Center to process AVHRR data into greenness maps to be used to monitor locust habitats. This current effort (from November 1991 until April 1992) represents the first "repay" project for the ARC and establishes it in the region as a source for satellite data processing and products.



Moussa Djibril (left), Niamey Field Office Staff Assistant, and Andrew Stancioff, Niamey Field Office Team Leader, outside the AGRHYMET Regional Center in Niamey.

GIS component

One year into EDC's involvement with AGRHYMET, an amendment to the PASA agreement was added which stipulated that EROS would also begin the introduction of Geographic Information System technology into the NAC component of the AGRHYMET program. This effort is now ongoing with installations of PC-based GISs at the National Centers. Andrew Nadeau (SAB) will share this responsibility with staff from the ARC. Installations have been completed and the rest are scheduled throughout this year.

Training

Underlying EDC's effort in AGRHYMET is the goal to Africanize the program. That is to say, EDC will eventually leave the program and the desire is that the African staff at the AGRHYMET Regional Center will be in a position to take over all the technical and administrative tasks now performed by EDC and Niamey Field Office staff. To that end, training is a very important aspect of the EDC's involvement with AGRHYMET. African counterparts have been named who work directly with Simon van Donk and Mark McGuire. Numerous training courses have been held at the AGRHYMET Regional Center for National AGRHYMET Center staff. The courses included: Using microcomputers, Microcomputer maintenance, Using microcomputers for climate data analysis, Remote sensing, etc. In addition, staff from the ARC have come to the U.S. to receive specialized vendor (DEC, CALCOMP, etc.) training for hardware maintenance. Other AGRHYMET Regional Center staff have come to EDC to receive advanced training in remote sensing, GIS, and computer systems administration.

The Niamey Field Office is EDC's link to the African continent. The work of the NFO and EDC staff is going a long way to help in the effort to take full measure of the problems facing the people in West Africa. The friendships and relationships developed over the past three years have also helped all involved to gain a fuller appreciation of the scope of the human condition on this planet earth.

EROS Employees – Generous Contributors

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Allocation Committee was able to give to them."

Faundeen also pointed out that while the major United Way Rally always takes place in the fall, agencies throughout the Sioux Falls area that receive United Way funds offer services throughout the year.

"It's very important that they (EDC employees) realize that it's not a once-a-year, in-the-fall commitment. What they (contributors) do in the fall affects people throughout the year.

EROS has a lot of people who don't live in Sioux Falls. But people have to understand that the United Way is much bigger than a Sioux Falls area. It's a regional concern."

For those who contributed to last fall's record-setting United Way and Combined Federal Campaigns, THANK YOU! Your contributions are much more than tax deductions or comfort for your consciences. Your contributions are the difference for 34 agencies offering a wide range of services to people of all ages–toddlers to senior citizens.

For those who didn't contribute last fall, reconsider next fall. Your donation could benefit your neighbor, friend, or family.

Note: Recent news stories have prompted serious concerns about the distribution of contributions within the United Way national organization. The local office is sensitive to your concerns and welcomes your questions. If you have any doubts, please feel free to call the Sioux Empire United Way office at 336-2095.

The Director of the U.S. Geological Survey has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this agency.