

# RSSG Newsletter

## From the Chair

Greetings!

I wish all members of the RSSG a very happy and productive new year. The 1990's are certainly going to be exciting for the remote sensing community as many new and bold space initiatives are planned for this and coming decades. Many projects and programs such as the global change initiatives and NASA's Mission to Planet Earth will provide members limitless opportunities to take the lead in studying our Home Planet.

Some noteworthy items:

Many of our members had a very productive year and were recognized for their achievements. Some outstanding papers and articles were generated by our members. I have attempted to summarize some below, but this summary is neither complete nor comprehensive. Please send me information on your accomplishments so that we can include these in the next newsletter.

\* John Jensen (University of South Carolina) edited the "Remote Sensing" chapter in the book Geography in America (Merrill Publishing Company). Twelve RSSG members assisted John in authoring the chapter.

\* Jack Estes (University of California-Santa Barbara) coedited the book Changing the Global Environment - Perspectives on Human Involvement published by Academic Press. Jack has also coauthored, with Jeff Star, a new text entitled Geographic Information Systems: An Introduction (Prentice-Hall), and last year served as Chief Editor for the journal Geocarto International.

(Continued on page on page 2 -  
From the Chair)

## RSSG AWARDS PROGRAM

Robert Holz (University of Texas) and John Harrington (Indiana State University) have been working on a proposed RSSG Awards program. The medal shown below is suggested by Bob as a possible award for outstanding contributions in remote sensing. Comments on design of the medal and the nature of the award are encouraged.



John Harrington has been working on a student awards program. John Wiley and Sons, Inc. has agreed to sponsor a student paper competition. Awards would include three remote sensing books. Implementation of the program will be discussed during the Toronto AAG meetings.

To contribute suggestions about RSSG awards contact:

Robert K. Holz  
Department of Geography  
The University of Texas  
Austin, Texas 78712  
(512) 471-5116

(From the Chair continued)

\* Jim Merchant (University of Nebraska-Lincoln) was guest editor of the November 1989 issue of Photogrammetric Engineering and Remote Sensing, the third consecutive year he has edited ASPRS's annual GIS issue. Tom Loveland (EROS Data Center) will serve as the editor for the 1990 special GIS issue of PE&RS.

\* Duane Nellis (Kansas State University), Ray Lougeay (SUNY-College at Geneseo) and Kam Lulla (NASA-Johnson Space Center) coedited the book Current Trends in Remote Sensing Education published by the Geocarto International Centre.

\* Mike Helfert and Kam Lulla (both with NASA) edited a special issue of the journal Geocarto International focussed on human-directed observation of the earth from space.

\* Duane Nellis, Kam Lulla and John Jensen recently completed the editing of a special issue of Photogrammetric Engineering and Remote Sensing that focusses on interfacing GIS/remotely sensing for rural land use analysis.

\* Bob Holz (University of Texas) has been working on designs and artwork for the proposed RSSG awards medals. A sketch of these designs is included in this issue of the newsletter. Members are urged to provide comments and suggestions to Bob. We will discuss the awards program in Toronto.

\* Kevin Price (University of Kansas) has coordinated the 1990 RSSG program for the coming annual meeting of the AAG. As usual the program promises to be both interesting and exciting. It is a positive reflection of our group's vitality.

Finally, thanks to all who participated in the RSSG election. Results will be announced at the AAG meetings.

SEE YOU IN TORONTO!

Kam Lulla, Chair

#### MEMBERSHIP

RSSG membership increased from 493 to 498 persons between 1988 and 1989. During the same period AAG membership grew from 5903 to 6321. RSSG is currently the fourth largest specialty group in AAG following the GIS (856), Urban (782), and Cartography (682) specialty groups.

#### HONORS



Stanley A. Morain (University of New Mexico) has been elected a fellow of the American Association for the Advancement of Science (AAAS). Stan was recognized for "vigorous leadership in research in the scientific and technological applications of remote sensing for natural resources and environmental monitoring." Stan currently serves as Director of the University of New Mexico's Technology Application Center and as Chair of the Department of Geography. He has also recently been elected Vice President of the American Society for Photogrammetry and Remote Sensing.

John R. Jensen (University of South Carolina) is the 1990 recipient of the Alan Gordon Memorial Award presented by the American Society for Photogrammetry and Remote Sensing during its March 1990 convention. The award cites John's "countless contributions to the field of remote sensing and photographic interpretation." In 1986 John was named, by the University of South Carolina, Carolina Research Professor. He currently holds that rank in the Department of Geography.



VOLUNTEERS NEEDED

RSSG needs your help. Please indicate below if you would be willing to assist with group activities. Send this form to:

Dr. Kamlesh P. Lulla
Chair, AAG Remote Sensing Specialty Group
NASA/Johnson Space Center (SN-4)
Space Shuttle Earth Observation Project
Houston, Texas 77058
Telephone: (713) 483-5159
FAX: (713) 483-5347

I would like to assist RSSG in the following area(s):

\_\_\_\_\_ Planning the 1991 annual meeting program

\_\_\_\_\_ Serving on the nominating committee

\_\_\_\_\_ Serving on the awards committee

\_\_\_\_\_ Assisting with the newsletter

\_\_\_\_\_ Assisting in fund raising

\_\_\_\_\_ Assisting with or organizing a workshop

workshop title: \_\_\_\_\_

\_\_\_\_\_ Organizing a special session or field trip for the 1991 annual meeting

session/trip title: \_\_\_\_\_

\_\_\_\_\_ Other: \_\_\_\_\_

Comments; suggestions for RSSG activities or projects: \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_ FAX: \_\_\_\_\_

**NEW**

## CURRENT TRENDS IN REMOTE SENSING EDUCATION

Edited by M. Duane Nellis, Ray Lougeay and Kamlesh Lulla

In order to supply the increasing demands for remote sensing and geographic information systems specialists, remote sensing technology must be effectively taught and incorporated into the geoscience "skills" provided to students in college and university classrooms and laboratories.

This book presents 14 papers by a group of educators from a wide range of colleges and universities. They provide insights on the following themes: firstly, an overview of fundamental considerations for teaching electromagnetic spectral reflectance characteristics of major earth features; secondly, an overview of remote sensing education and digital image processing strategies; thirdly, a series of environmentally related case study exercises interfacing research and instruction; and finally, a sample of remote sensing education programs at three diverse U.S. university settings.

In addition, there are seven guest essays by prominent remote sensing educators and geographers. These essays offer personal reflections and expert opinions on the current trends and future development in remote sensing education.

### Contents:

"Interfacing Remote Sensing Research and Instruction: Current Trends in Remote Sensing Education", M. Duane Nellis, Ray Lougeay, and Kamlesh Lulla.

"Fundamental Considerations for Teaching the Spectral Reflectance Characteristics of Vegetation, Soil, and Water", David Lusch.

"Remote Sensing Education: Enhancing Course Curricula Through Experience in Digital Processing with a Research Orientation", Stephen J. Walsh and Arthur J. Hawley.

Essay: "Reflections on Remote Sensing", by T.H.L. Williams.

"Software Integration in Remote Sensing Education", Michael P. Bishop.

"Developing An Image Processing Workstation for Teaching Digital Remote Sensing", Paul R. Baumann.

"Teaching Digital Data Analysis Strategies", James Merchant.

Essay: "Remote Sensing Education: Present Realities and Future Potential", by J. Jensen.

"Remote Sensing Field Applications: A Field Course", Ray Lougeay.

"Integrating Field Experiences with Remote Sensing for Understanding Vegetation Indices", M. Duane Nellis.

Essay: "Growth and Development of Remote Sensing Education and Research Within the Discipline of Geography", by S. Walsh.

"Integration of Remotely Sensed Data Into Hydrologic Models", Kent McGregor.

"Low Resolution Satellite Observations of Irrigated Land in the Columbia Basin of Oregon and Washington", Ronald A. Weinkauff.

Essay: "Interfacing Remote Sensing G.I.S. Research and Instruction", by R. Welch.

"Remote Sensing Education: The Indiana State University Experience and Approach", Paul Mausel and Kamlesh Lulla.

Essay: "Statement on Remote Sensing Education", by R. Holz.

"Remote Sensing and G.I.S. Education at the University of Tennessee: Strategies, Trends, and Forecasts", John B. Rehder.

Essay: "Some Personal Reflections on the Relationship Between Remote Sensing and Geography", by J. Estes.

"A One Semester Remote Sensing Experience", L.G. Thompson.

Essay: "Remote Sensing Training for International Students", by J. Harrington.

"Space Shuttle Handheld Photography: A Brief Synopsis of Unique Data Base for Earth Science and Geography Educators", Kamlesh Lulla and Michael Helfert.

"A Selected Listing of Remote Sensing Newsletters", by J. Merchant and L. Caron.

"Selected Sources of Remote Sensing Imagery and Information", by M. Duane Nellis and J. Merchant.

Published by Geocarto International Centre in 1989

Price: US\$28.00 postpaid surface mail

**Geocarto International Centre**

G.P.O. Box 4122, Hong Kong

Date:

Please supply the following.

My/Our payment is enclosed. (Please remit in US dollars payable through a bank in the USA.)

Current Trends in Remote Sensing Education

US\$28.00

Name/Institution: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

USE YOUR NEWSLETTER

The RSSG Newsletter is your vehicle for communicating with colleagues interested in remote sensing. You are invited to send news regarding publications, awards, honors, new programs, commercial ventures, student activities, jobs and other announcements to:

James W. Merchant  
Conservation & Survey Division  
University of Nebraska-Lincoln  
113 Nebraska Hall  
Lincoln, NE 68588-0517  
Telephone: (402) 472-7531  
FAX: (402) 472-2410

ASPRS REMOTE SENSING APPLICATIONS  
DIVISION NEWS

Two AAG/RSSG members are now directing activities of the American Society for Photogrammetry and Remote Sensing (ASPRS) Remote Sensing Applications Division (RSAD). T.H. Lee Williams (University of Oklahoma) has been elected RSAD Director and Tina Cary (EOSAT) Assistant Director. RSSG members are encouraged to contribute to RSAD activities.

At the RSAD Business Meeting held during the March 1990 ASPRS annual convention a number of topics of interest to RSSG members were discussed. These included:

- \* special sessions for future ASPRS annual meetings (e.g., global processes, operational remote sensing, planetary remote sensing);
- \* workshops and technical tours for the 1991 Baltimore annual ASPRS meeting;
- \* special sessions for the 1990 Anaheim GIS/LIS conference;
- \* publication and review of papers;

(Continued on page 6 - RSAD)

SURVEY: LANDSAT COMMERCIALIZATION  
EFFECTS ON THE ACADEMIC RESEARCH  
COMMUNITY

In 1985 the Department of Commerce awarded a contract to the Earth Observation Satellite Company (EOSAT) to operate the Landsat system and to be the sole sales and marketing agent for Landsat data. The effects of this policy action on users of remotely sensed data in the academic research community are not well documented. Recently, Ms. Kathleen Eisenbeis, a doctoral candidate in the Graduate School of Library and Information Science at the University of Texas-Austin, initiated a study of this issue.

As part of her dissertation, Ms. Eisenbeis is conducting a survey of faculty members of U.S. colleges and universities who are members of the AAG Remote Sensing Specialty Group. This survey will focus upon the information needs of academic geographers and the degree to which this community has been affected by the Land Remote Sensing Commercialization Act of 1984.

RSSG members are strongly urged to take part in this survey and to respond in a timely manner. Questionnaires were mailed in March. This survey provides RSSG a unique opportunity to represent the larger academic community in a study that has the potential of drawing a great deal of attention. Questions about the research or the survey should be directed to:

Ms. Kathleen Eisenbeis  
951 Neptune  
Houston, Texas 77062  
Telephone: (713) 280-9780

REMOTE SENSING VIDEOS DEBUT

Three remote sensing videos have been produced by the Nebraska Educational Television Council for Higher Education (NETCHE). NETCHE is a consortium of postsecondary

(Continued on page 6 - Video)

(RSAD continued)

- \* International Space Year, ISPRS convention (1992) activities;
- \* cooperative activities with other professional organizations (e.g., AAG).

To become involved in RSAD, offer suggestions or obtain additional details contact:

T.H. Lee Williams  
Department of Geography  
455 West Lindsey, Room 804  
University of Oklahoma  
Norman, OK 73019  
(405) 325-6530 or 5325

or

Tina Cary  
EOSAT  
4300 Forbes Boulevard  
Lanham, MD 20706  
(301) 552-0542



#### NEWS FOR AVHRR DATA USERS

##### Northern Great Plains Dataset

EROS Data Center has released a CD-ROM containing 33 weekly composite (maximum normalized difference vegetation index [NDVI]) images of NOAA-9 Advanced Very High Resolution Radiometer (AVHRR) Local Area Coverage (LAC) data covering the northern Great Plains. The images cover the periods June and August 1987 and March-October 1988. Included with the NDVI on the CD are data for bands 1-5, and computed solar and satellite zenith and azimuth angles for each pixel in the composites. The dataset also contains polygon and line data in raster format of counties and NOAA climatic divisions. These data total about 600 Megabytes and sell

(Continued on page 7 - AVHRR)

(Video continued)

institutions based in Nebraska. The videos are designed for instruction at the undergraduate level, but could be useful in some junior high/high school courses, and, especially in the case of the third video, in selective graduate courses. The three 30-minute videos are:

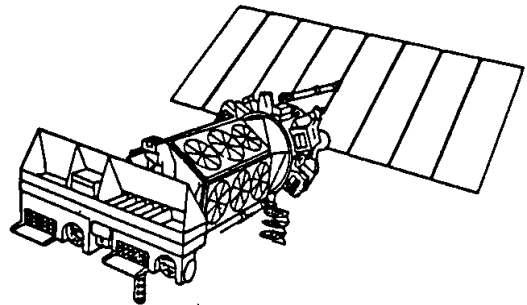
The Spectrum of Remote Sensing - An introduction to the technology and the various sensors commonly used.

The Technology of Remote Sensing - Focuses on non-photographic imaging, especially multispectral scanning.

An Application of Remote Sensing - Deals with the First ISLSCP Field Experiment (FIFE) and attempts to correlate ground measurements with remote sensing.

AAG/RSSG member Jeff Peake (University of Nebraska-Omaha) served as principal consultant for the videos. Other RSSG members contributing to the project included Don Rundquist (University of Nebraska-Lincoln) and Scott Samson (University of Alabama). Information on ordering or leasing the videos can be obtained from:

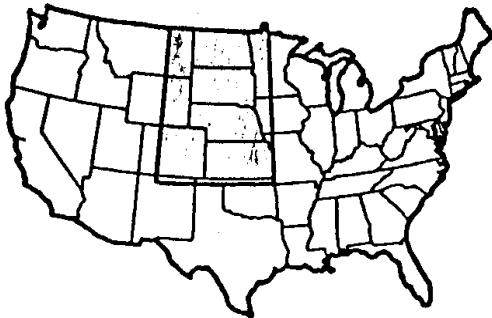
NETCHE, Inc.  
Nebraska Educational  
Telecommunications Center  
1800 North 33rd Street  
Lincoln, NE 68588  
(402) 472-3611



(AVHRR continued)

for \$35.00 including a disk of non-proprietary software for PC display of the images. Contact:

EROS Data Center  
Customer Services  
Sioux Falls, SD 57198  
(605) 594-6507



#### Northern Great Plains Video

A VHS video portraying AVHRR-based greenness mapping of the northern Great Plains is available from EROS Data Center. The 6-minute video depicts an animated sequence of greenness change over a growing season. A narrator discusses effects of drought, land cover change in the Corn Belt and other phenomena that can be observed. A copy of the video can be obtained free by sending a blank video tape to:

Jeff Eidenshink  
EROS Data Center  
Sioux Falls, SD 57198  
(605) 594-6028

#### Global Change Diskette Program

The NOAA National Geophysical Data Center (NGDC) is developing a land surface dataset for the International Geosphere-Biosphere Program (IGBP). The pilot project, focussing on Africa, includes monthly AVHRR-derived vegetation index data along with other environmental and physical parameters. All are available, with display software, on floppy disks. To order disks or obtain additional details on the project contact:

David Hastings  
NOAA/NGDC (E/GC1)  
325 Broadway  
Boulder, CO 80303  
(303) 497-6729

#### North American NOAA Polar Orbiter User's Group

The North American NOAA Polar Orbiter User's Group (NANPOUG) will hold its second meeting at the Howard Johnson's Plaza Hotel in New Carrollton, Maryland on May 24-25, 1990. The conference will feature both invited and contributed papers, and commercial and research exhibits. For registration information and a detailed agenda contact:

Earth Satellite Corporation  
7222 47th Street  
Bethesda, MD 20815  
(301) 951-0104

Membership in NANPOUG is free and is open to all who have an interest in the NOAA Polar Orbiting satellites and the sensors carried on-board. To join and to have your name listed in the NANPOUG directory contact:

David Hastings  
NOAA/NGDC (E/GC1)  
325 Broadway  
Boulder, CO 80303  
(303) 497-6729





## LANDSAT NEWS

### Tina Cary Appointed EOSAT Manager of Public Affairs

AAG/RSSG member Dr. Tina Cary has been appointed Director of Public Affairs by the Earth Observation Satellite Company (EOSAT). She replaces Richard Mroczynski who has been promoted to Director of External Affairs. Tina will be responsible for EOSAT public relations, symposia and trade shows, and will continue to be active in training and working with academia. Dick will be dealing with the international community and EOSAT's governmental affiliations.

### New EOSAT Publications

EOSAT has recently announced the publication of three directories. These include the Directory of Landsat-Related Products and Services, U.S. Edition, Landsat and GIS: A Directory of Geographic Information Systems and Related Products and Services, and the new EOSAT Products and Services Catalog. Copies can be obtained from:

EOSAT  
4300 Forbes Boulevard  
Lanham, MD 20706  
(301) 552-0537

### EOSAT Education Focus Group

During the March 1990 ASPRS/ACSM convention in Denver EOSAT held a meeting of a developing Education Focus Group. Participants included:

William Anderson (Ohio State University)

(Continued on page 9 - EOSAT)

## SPOT NEWS

### Special Rates on SPOT Data for Colleges and Universities

SPOT Image Corporation offers special rates for SPOT data used in educational programs and research. These are:

Digital data (CCT) -  
\$1000/scene  
Master generation film -  
\$500/scene

The prices apply to any scene in the Reston headquarters archive. Up to five scenes per year may be ordered at these rates.

Other products of interest to educators include the:

#### SPOT User's Handbook,

SPOT Education and Evaluation Data Sets (SEEDS), and

Special Offer Imagery

Project Briefs (see below)

For information on any of these products contact:

SPOT Image Corporation  
Customer Service Department  
1897 Preston White Drive  
Reston, VA 22091-4368  
(703) 620-2200

### SPOT Project Briefs

SPOT Image Corporation has developed a set of one-page project briefs. These briefs summarize SPOT applications and are illustrated with full-color images and maps. Topics currently include:

(Continued on page 10 - SPOT)



(EOSAT continued)

- Manfred Ehlers (University of Maine)
- Thomas Lillesand (University of Wisconsin)
- Ann MacLean (Michigan Technological University)
- James Merchant (University of Nebraska-Lincoln)
- Carolyn Merry (Ohio State University)
- Stanley Morain (University of New Mexico)
- Steven Sader (University of Maine)
- Keith Turner (Colorado School of Mines)
- Tina Cary, Steven Cox, Shawana Johnson, Max Khan and Tony Shupin (EOSAT)

The Education Focus Group will assist EOSAT in identifying and addressing the needs of academia. Topics discussed at the March meeting included possible price breaks on selected Landsat data, development of teaching materials and the future of the Focus Group. Additional details on the Group can be obtained from Tina Cary, EOSAT Director of Public Affairs and Training, (301) 552-0542.

Landsat Status Report

Both Landsat's 4 and 5 are operating nominally. Funding for construction of Landsat 6 is secure and a 1991 launch date is being considered. The Bush administration, through spokesperson Vice President Dan Quayle, Chair of the National Space Council, has given indications that support for Landsat 7 will be forthcoming, but no funds were included in the FY91 budget proposal. RSSG members should note the call-for-action reprinted below.



## Landsat Status Report and Call for Action

Over the past year, the National Space Council (NSC) headed by Vice President Quayle has been working to resolve the policy and funding problems surrounding the Landsat Program. Stop-gap measures have been taken to keep Landsats 4 and 5 in operation and to complete Landsat 6, but key decisions as to the future of Landsat 7 remain to be answered.

In mid-December 1989, a plan to turn over the design and operation of Landsat 7 to the Defense Department surfaced but the plan was rescinded by the Vice President. Further action on this matter by the NSC has been delayed until this spring when the Council will once more explore all available guidelines to assign responsibility for the Landsat Program.

It is fair to say that the attempt to commercialize Landsat has not worked as originally envisioned. The professional societies believe that Landsat data should be available to civilian users at a reasonable cost. This is not currently the situation, as data prices have dramatically risen during the last few years. Landsat provides fundamental data about the Earth and as such, it belongs in the public domain so it can be widely utilized by all.

The dilemma which the NSC must resolve this spring is the policy decision on

where to place the responsibility for the Landsat Program. This decision will define the direction that the Landsat Program will be taking for the foreseeable future. Therefore, it is clear that we, as members of the Landsat user community as well as members of ASPRS and ACSM, have a big stake in this matter. As Acting Chairman of the ACSM/ASPRS Joint Satellite Mapping and Remote Sensing Committee, I strongly encourage my colleagues in the mapping sciences and remote sensing communities to write a letter to Vice President Quayle at the NSC. Your letter should be brief but informative and might include the following points:

- That you care deeply about this problem and why.
- Call attention to the need for early resolution of agency responsibility for the program to ensure continuity of data.
- Express your concern that Landsat data be available to civilian users at reasonable costs.
- Point to the critical need for the U.S. to maintain pace with the technology so we can effectively participate in such programs as "Mission to Earth," "Global Change" and others aimed at the future well being of this planet.

Your letter should be addressed to:

- Vice President Dan Quayle  
The White House  
Washington, D.C. 20050  
with copies to key Congressional figures such as:  
The Honorable Ernest F. Hollings  
United States Senate  
Room 125 Russell Senate Office Building  
Washington, D.C. 20510  
The Honorable Robert A. Roe  
U.S. House of Representatives  
Room 2243 Rayburn HOB  
Washington, D.C. 20515  
The Honorable James H. Scheuer  
U.S. House of Representatives  
Room 2466 Rayburn HOB  
Washington, D.C. 20510

It is important that your message be sent as soon as possible. If you can, please forward a copy to Nancy Parke, the ACSM/ASPRS Government Affairs Director at the Headquarters building. The last such writing effort two years ago on this subject was very successful. I hope you will make this effort equally effective.

Alden P. Colvocoresses  
Acting Chairman  
ACSM/ASPRS Joint Satellite Mapping and Remote Sensing Committee

Reprinted from Photogrammetric Engineering and Remote Sensing,  
April 1990

(SPOT continued)

Coastal Zone Sensitivity Mapping,  
Identifying Surface Hazards and  
Pollution,  
Wetlands Vegetation Inventory,  
Wetlands Monitoring,  
Land Cover and Forest Regeneration  
Mapping, and  
Synergism from Space: Salto Sea  
Mapping with SPOT.

Copies can be obtained from SPOT  
Customer Services, (703) 620-2200.

#### SPOT Academic Advisory Council

SPOT Image Corporation (SICORP) has formed an Academic Advisory Council to advise and work with SICORP in developing education and evaluation data sets and tutorial materials, and in establishing an applications-oriented educational and research agenda. Its mandate is to focus on SICORP's interaction with all levels of academia.

The Council held its first meeting in Denver during the March 1990 ASPRS/ACSM convention. Among the ten initial Council appointments are several AAG/RSSG members. The Council membership includes:

Janet Degner (University of  
Florida)

Ernest Fish (Texas Tech  
University)

John Jensen (University of South  
Carolina)

Chris Johannsen (Purdue  
University)

Vic Klemas (University of  
Delaware)

Thomas Lillesand (University of  
Wisconsin)

James Merchant (University of  
Nebraska-Lincoln)

Stanley Morain (University of New  
Mexico)

Douglas Stowe (San Diego State  
University)

Roy Welch (University of Georgia)

Other appointments will be made in the future. Bob Barker, SICORP Director of Commercial Applications, provides leadership and serves as Council coordinator.

Among topics discussed at the first meeting of the Council were formal Memoranda-of-Agreement between SICORP and universities, possible data grants for research, SICORP-sponsored awards or fellowships, enhancements to SEEDS, and possible special sessions at forthcoming professional meetings. For additional information about the Council contact Bob Barker or Sheri Meffle, (703) 620-2200.

#### REMOTE SENSING NEWSLETTERS

James Merchant (University of Nebraska-Lincoln) has recently updated his listing of newsletters dealing with remote sensing. Approximately sixty newsletters are now included. A new list of GIS newsletters is also available. For copies of either list contact Jim at:

Conservation & Survey  
Division, University of  
Nebraska-Lincoln, 113  
Nebraska Hall, Lincoln, NE  
68588-0517; (402) 472-7531

## Cook College Remote Sensing Center and Office of Continuing Professional Education

Announce the Winter/Spring 1990 short course schedule in  
GRASS/GIS and Remote Sensing/Digital Image Processing

- |  |  |  |   |
|--|--|--|---|
| • Intro to GRASS3.1 GIS<br>with hands-on training<br>January 22-26, 1990<br>June 12-16, 1990<br>By Dr. Fred Limp<br>and Dr. Scott Madry<br>cost \$795.00 | • Intro to Remote Sensing<br>with hands-on ERDAS training<br>February 13-16, 1990<br>May 14-17, 1990<br>By Dr. Tev Airola<br>and Dr. Rick Lathrop<br>cost \$695.00 | • GRASS Imagery & Remote Sensing<br>with hands-on training<br>March 6-8, 1990<br>By Dr. Scott Madry<br>cost \$595.00 | • A Beginners Intro to GIS<br>lecture and demonstration<br>April 2-6, 1990<br>By Dr. Scott Madry<br>and Dr. Tev Airola<br>cost \$595.00 |
|--|--|--|---|

Other 1990 courses to be offered include:

- Advanced GRASS/GIS
- GRASS GIS Data Base Development
- Advanced Remote Sensing (ERDAS)

New Facilities with two dedicated training labs with AT&T 3B15, 3B2/500/700, 6368, 6312  
and Masscomp Concurrent 5450 and 500 computers

- All training materials and lunches included
- Off-site training also available on request



For course information contact:

Brie Bill, GIS Program Coordinator, Department of Environmental Resources  
Box 231, Cook College, New Brunswick, NJ 08903 tel: (201)932-9631

To register or to receive course literature:

Call Continuing Professional Education at  
(201) 932-9271

## CALMIT SHORT COURSES 1990

The Center for Advanced Land Management Information Technologies (CALMIT), University Nebraska-Lincoln announces its 1990 schedule of short courses. All courses provide hands-on computer-based training. To receive additional details and registration information, contact CALMIT, Conservation and Survey Division, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, NE 68688-0517; Telephone (402) 472-2567.

February 5-9, 1990  
April 9-13, 1990  
April 16-20, 1990  
June 11-15, 1990  
June 18-22, 1990  
June 25-29, 1990  
July 9-13, 1990  
July 16-20, 1990  
August 20-24, 1990  
September 10-14, 1990  
September 17-21, 1990  
October 14-16, 1990

Geographic Information Systems: An Introduction  
Geographic Information Systems: An Introduction  
Advanced GIS: ARC/INFO  
Remote Sensing/Digital Analysis  
Geographic Information Systems: An Introduction  
Advanced GIS: ARC /INFO  
Field Techniques in Remote Sensing  
Geographic Information Systems: An Introduction  
AVHRR Data Analysis  
Geographic Information Systems: An Introduction  
Advanced GIS: ARC/INFO  
Using GIS in Groundwater Management  
(held in conjunction with Midwest  
Groundwater Conference)

NEW PUBLICATIONS

Earth Observing System Booklet

NASA has prepared another in a series of excellent documents on the proposed Earth Observing System (EOS). The latest, entitled EOS: A Mission to Planet Earth, outlines the project plans for monitoring global change, and includes an excellent selection of color maps and images in support of the text. For copies and additional information on EOS write:

EOS Program Office  
NASA Headquarters  
Code EE  
Washington, D.C. 20546

Ocean Color from Space

An outstanding packet of color images and maps developed via analysis of Coastal Zone Color Scanner data and data from selective other sensors has been prepared by the NSF/NASA-sponsored U.S. Global Ocean Flux Study Office. This packet, titled Ocean Color from Space, will be of interest to anyone teaching remote sensing or concerned with global change research. Ask, too, about the availability of posters produced by the program. Write:

U.S. Global Ocean Flux Study  
Office  
Woods Hole Oceanographic  
Institution  
Woods Hole, MA 02543

RSSG Newsletter  
c/o James W. Merchant  
Conservation and Survey Division  
University of Nebraska-Lincoln  
113 Nebraska Hall  
Lincoln, NE 68588-0517

NON-PROFIT ORG.  
U.S. POSTAGE  
PAID  
Lincoln, Nebr.  
Permit No. 46