

NEWSLETTER NEWSLETTER NEWSLETTER NEWSLETTER

AAG REMOTE SENSING SPECIALTY GROUP

Nos. 85-3 and 85-4

September - December 1985

From the Chairperson

NOMINATIONS REQUESTED

In my last note in June, I wrote to the group expressing my desire to see us grow, develop stronger and become more financially stable. The membership response to those goals was very good - but could be better! With the call for votes for vacated RSSG positions, we received only a little over thirty responses, and although a number of you have sent in 1985 dues, we still have about 90% unpaid. If more members could remember to send their \$5.00 to John Place, or myself, we would not need to worry about either printing and distributing our newsletter or other expenses. We do not want to make dues mandatory, so please help us if you can.

In the June issue, I noted that our most pressing issue was the organization of our program for the 1986 AAG meetings in Minneapolis. As of last month, our program has been established and it promises to be outstanding (see program plan in this issue). My sincere thanks go out to the program committee for their outstanding job. All members planning to attend the AAG meetings should make sure they participate in the business meeting on Monday evening and the get-together planned for afterwards.

The results of our recent elections to fill the RSSG committee seats are:

Vice-Chairperson: Jim Merchant
Non-Student Director: Duane Nellis
Student Director: Dennis Dye

Jim will serve as vice-chair up until the May 1986 meetings and will then become chairperson for two years through April 1988. Since we filled all the

(Continued on page 2)

FROM THE EDITOR: Please note that this edition of the RSSG Newsletter combines the September and December issues (85-3 and 85-4) in an effort to conserve RSSG funds. We hope to resume quarterly publication in March 1986.

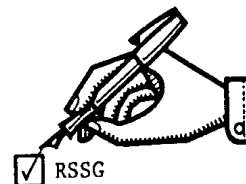
RSSG TWIN CITIES PRELIMINARY PROGRAM

The RSSG Program Committee for the 1986 AAG Annual Meeting, scheduled May 4-7, is completing plans for RSSG-sponsored events. Arrangements are firm for three RSSG-sponsored paper sessions, a poster session, a digital image analysis workshop, a forum on commercialization of earth observation systems and two half-day field trips.

See page three for the full preliminary schedule of events.

EARLY AAG MEMBERSHIP RENEWAL HELPS RSSG

John Place, RSSG Secretary/Treasurer, recently spoke with the AAG Central office regarding policy on reimbursement of specialty groups. He reports that on or about January 15 of each year a count is taken by the AAG Central Office of members who have paid their dues for that year and have checked-off the name of a particular specialty group on their renewal form. Near the end of each calendar year the records of specialty group members are purged, and a new check-off on the annual renewal form must be made. Each specialty group receives seventy-five cents from the AAG Central Office for each member who has checked the name of that group. This "rebate" is the largest and most dependable source of money for the Remote Sensing Specialty Group, but it only covers part of the costs of our Newsletters and other expenses, hence, the need for supplementary dues (\$5.00 per year).



RSSG members are urged to (1) renew your AAG membership early, (2) remember to check-off RSSG on your AAG membership renewal form and (3) send 1986 RSSG dues to:

Dr. John L. Place, RSSG Treasurer
U.S. Geological Survey
National Center, Mail Stop 521
Reston, VA 22092
Telephone: (703) 860-6345

ELECTION RESULTS

Don Rundquist (University of Nebraska - Lincoln), Chair of the 1985 RSSG Nominations Committee, reports the following results of the recent RSSG elections:

Vice-Chairperson: Jim Merchant
University of Kansas

Non-Student Director: Duane Nellis
Kansas State University

Student Director: Dennis Dye
University of Maryland

Vince Ambrosia, current RSSG Chairperson, will head the Nominating Committee for 1986 and will prepare a slate of candidates for forthcoming vacant positions (see page 1).

. . . NOMINATIONS REQUESTED (Continued from page 1)

positions late, Duane will serve until the AAG meeting in 1987, and R. D. Mower's position as the other Director will expire at the AAG meeting in Minneapolis. John Place's position as our Secretary/Treasurer will also be vacated at the Minneapolis meeting. Dennis' Student Directorship will also expire. All of this leads me to the point that we need to be thinking about filling the following positions:



Vice-Chairperson (2 years)
Director (1 year)
Student Director (1 year)
Director, Secretary/Treasurer (2 years)

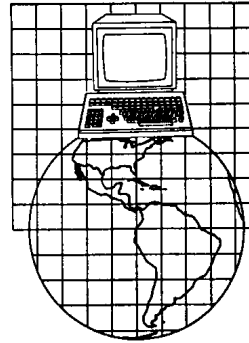
PLEASE SEND ME THE NAMES OF ANY ELIGIBLE CANDIDATES FOR THESE POSITIONS BY FEBRUARY 10, 1986. Candidates must be current RSSG members and must be willing to serve. I will devise a ballot for the next newsletter and votes will be compiled in time for announcement at the AAG meeting.

Finally, the Geocarto International Centre of Hong Kong has informed me that they are initiating a new international journal dealing with remote sensing. They have extended an open invitation to RSSG members to contribute to the first issue in March. Further information is included in this issue of the Newsletter.

Thanks again for keeping the RSSG one of the strongest in the AAG and congratulations to the new members of the Board of Directors. I look forward to working with you.

Vincent G. Ambrosia, RSSG Chairperson
NASA/AMES Research Center, MS 242-4
Moffett Field, CA 94035

GIS WORKSHOP



The USDA-Forest Service, Southern Region and the American Society for Photogrammetry and Remote Sensing (ASPRS) are planning to co-sponsor a Geographic Information Systems (GIS) Workshop in Atlanta, Georgia, April 1 to 4, 1986. Leaders, managers and professionals who are knowledgeable in the GIS field will present papers and share their experiences with attendees. Panel discussion topics will include GIS applications for resource and technical service managers; land management planning; database design; data formatting, handling, capture, updating and archiving; modeling; map preparation; training and awareness; benefit/cost; program administration, structure, planning and budget. Individual examples of GIS technology in action will be demonstrated by state and federal agencies as well as private firms. Exhibits and demonstrations of GIS hardware and software will be on display throughout the week. Further information on the workshop may be obtained from Bob Phelps or Roy Mead, U.S. Forest Service, Room 890S, 1720 Peachtree Street, N.W., Atlanta, Georgia 30367.

GEOCARTO INTERNATIONAL INVITES CONTRIBUTIONS

The Geocarto International Centre of Hong Kong is planning to publish a new quarterly journal for international circulation in 1986. This journal, Geocarto International, will be devoted to new developments and applications in the field of remote sensing. Printed in 8 1/2" X 11" format, this journal will be liberally illustrated with color images, photographs and diagrams. The first issue will be published in March 1986.

The journal welcomes contributions on: (1) New developments, technologies and applications of remote sensing; (2) News about activities, programs, courses in various centres, institutions and organizations; (3) Assessment and evaluation of new remote sensing equipment, software and hardware; (4) Listings and reviews of new publications; and (5) Information on events, workshops, seminars and conferences.

Manuscripts must be typewritten (double-spaced) on one side of quarto paper (21.5 cm x 28 cm or 8 1/2" x 11"). Two copies of a paper are required. The maximum length for a paper is 6,000 words. Manuscripts must not have been published previously in any periodical and should not be submitted elsewhere until a decision is received from this journal.

Additional details on preparation of manuscripts may be obtained from Vince Ambrosia (NASA-Ames Research Center) or James Merchant (University of Kansas). Manuscripts should be sent to: Geocarto International Centre, G.P.O. Box 4122, Hong Kong.

RSSG TWIN CITIES PRELIMINARY PROGRAM

Paper and Poster Sessions

Kamlesh Lulla (Indiana State University), 1986 RSSG Program Committee Chair, has organized three special paper sessions. In a departure from usual practices, participants in these sessions will be allowed thirty minutes in which to present their research. Speakers currently scheduled are as follows:

SESSION I: Large Area Ecosystem/Biome Characterization via Remote Sensing (Chair: Kamlesh Lulla, Indiana State University)

- Donald F. Baer, Rockwell International, "Biomap - Biological Mapping of Earth's Living Species with Remote Sensing"
- Marvin E. Bauer, University of Minnesota, "Remote Sensing of Crop Ecosystems"
- Elgene O. Box, University of Georgia, "Worldwide Analysis of the 'Greenness Index' for Vegetation Characterization"

SESSION II: Advanced Sensor Systems and Applications (Chair: David Hicks, Environmental Research Institute of Michigan)

- M. Leonard Bryan, California Institute of Technology, "Imaging Radars: Current and Future Trends"
- Walt Westman, NASA Ames Research Center, "Detecting Forest Structure with C-Band Radar"
- David R. Hicks, Environmental Research Institute of Michigan (ERIM), "NOAA Satellite Data: Its Use in Macroinventory for Geographic Assessment"
- Bernard H. Mollberg, NASA Lyndon B. Johnson Space Center, "Large Format Camera (LFC), Geography and the World's Maps"

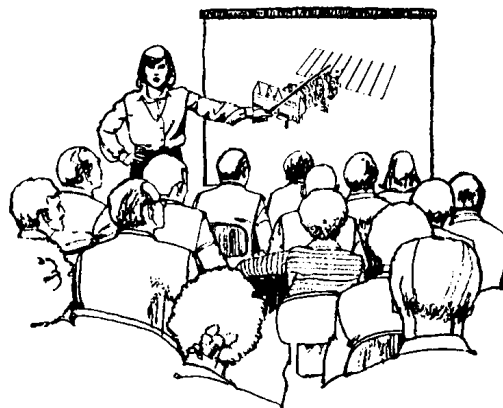
SESSION III: Remote Sensing: Technique Development (Chair: Vincent Ambrosia, NASA/Ames Research Center)

- Gregory Plumb, University of Kansas, "An Algorithmic Approach to Automated Vegetation Mapping of Big Bend"
- Barry Haack, George Mason University, "Digital and Visual Landsat Data Double Sampling for Irrigated Rice"
- Richard A. Weiler, San Diego State University, "Scales of Surface Cover and Their Respective Reflectance Distributions"

A Remote Sensing Specialty Group-sponsored poster session on "Remote Sensing of the Environment," organized by Duane Nellis (Kansas State University), will include ten additional papers. Topics range from using Landsat TM digital data for urban analysis to applying high altitude photography in rangeland assessment.

Forum on Commercialization

James Merchant (University of Kansas) has organized a Forum on Commercialization of Earth Observation Systems and Future Data Availability. During this session invited speakers from EOSAT, SPOT Image and EROS Data Center will review changes taking place in satellite remote sensing and will outline the respective functions, products and services of their organizations. Formal presentations will, however, be limited. Most of the session will consist of discussion between speak-



ers and audience. The forum will provide data users an opportunity to raise questions regarding the impacts of commercialization and to express needs, concerns, interests, ideas and opinions.

Digital Image Processing Workshop

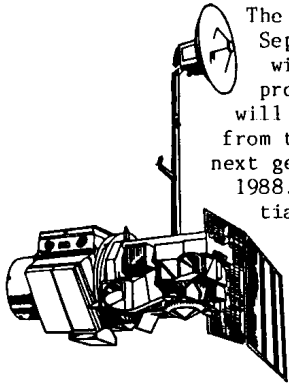
Tina Cary (Rutgers University) will present a 1 and 1/2 day RSSG workshop on "Digital Processing of Remotely Sensed Data." The workshop will be held May 3-4, 1986. The objective of this workshop is to provide participants an introduction to digital image processing. Each participant will be expected to be familiar with the electromagnetic spectrum, and matter-energy interactions. Those topics will be only briefly reviewed in the introduction. The steps in data analysis and classification will be introduced in lectures; then participants will form teams to conduct an analysis on a microcomputer. Finally, the group will reconvene to compare and discuss analysis results. Enrollment will be limited to approximately fifteen persons.

Field Trips

Ben Richason III (St. Cloud State University) and Paul Mausel (Indiana State University) have arranged two half-day field trips. Both are tentatively scheduled for Monday, May 5. A morning tour of Mark Hurd Aerial Surveys, Inc. will include "everything from the photo lab to the automated mapping stations." The afternoon trip will go to the Remote Sensing Laboratory at the University of Minnesota - St. Paul campus. This trip will include a demonstration of the Lab's color infrared video camera system. Each of the two RSSG-sponsored trips will be limited to approximately 30 persons, so early registration is encouraged. It should also be noted that the AAG Local Arrangements Committee has already scheduled tours of the Minnesota Land Management Information Center (MLMIC) and its digital image processing and computer mapping facilities. Many RSSG members will wish to take advantage of the opportunity to see MLMIC as well.

Additional details on RSSG-sponsored activities planned for the 1986 Twin Cities AAG Meeting will be provided in the March 1986 RSSG Newsletter.

EOSAT ASSUMES OPERATION OF LANDSAT



The government finalized the transfer of the Landsat program to the private sector on September 27, 1985 when Secretary of Commerce Malcom Baldrige authorized a contract with the Earth Observation Satellite Company (EOSAT). EOSAT will undertake a 10-year program, beginning with the immediate assumption of operations of Landsats 4 and 5, and will be the primary point of contact for marketing, ordering and distribution of the data from these spacecraft. In addition, EOSAT will receive \$250M to begin construction of the next generation, commercial Landsat spacecraft, the first of which will be launched late in 1988. EOSAT's ability to quickly bring Landsat 6 into service will help minimize potential data gaps.

EOSAT will rigorously follow the "non-discriminatory access" policy as set forth in U.S. Public Law 98-365 by making Landsat data equally available to all requestors. Specifically, all requests for data will be filled at published prices to anyone who requests it. This will include all data currently in process or in archive. Satellite data will continue to be made available to all users through the Department of Interior's EROS Data Center in Sioux Falls, S.D.

Foreign ground stations currently capable of receiving Landsat data will continue to operate under the existing agreements negotiated between the operators and the U.S. Government. Simultaneously, EOSAT will begin to establish improved foreign Landsat reception capabilities in concert with a worldwide marketing effort to stimulate use of the Landsat remote sensor data as a tool for managing the Earth's natural resources.

Existence of the commercial Landsat system establishes continuity of data to users through the mid-1990's. Landsat data users will continue to receive Thematic Mapper quality data through this period. Furthermore, EOSAT intends to expand applications and R&D, predicated on finding new uses for Landsat data. EOSAT is committed to developing a vigorous value-added industry capable of serving the many varied disciplines that use remote sensing data worldwide.

Important telephone numbers:

- Information regarding an order, inquiry, or technical applications may be obtained between the hours of 7:30 a.m. - 4:15 p.m. (Central Time) by calling: 1-800-367-2801
- Foreign customers: 605-594-2291
- South Dakota residents: 1-800-344-9933
- EOSAT Sales and Marketing or General Information, please call: 301-552-0500

SYNOPSIS OF NEW LANDSAT PRICE SCHEDULE

(Effective November 1, 1985. This synopsis is for general information only. Contact EOSAT for details).

I. Standard Photographic Products

Black and White Products

NOMINAL IMAGE SIZE	APPROX* SCALE	PRODUCT		PRICE \$		
		MATERIAL	CODE	MSS/RBV	TM	
18.5cm (7.3 in.)	1:1,000,000	Film Positive	13	80	150	
18.5cm (7.3 in.)	1:1,000,000	Paper	23	50	100	
37.1cm (14.6 in.)	1:500,000	Paper	24	100	170	
74.2cm (29.2 in.)	1:250,000	Paper	26	150	250	

Color Composite Products

NOMINAL IMAGE SIZE	APPROX* SCALE	PRODUCT		PRICE \$		
		MATERIAL	CODE	MSS	TM	
18.5cm (7.3 in.)	1:1,000,000	Film Positive	53	150	360	
18.5cm (7.3 in.)	1:1,000,000	Paper	63	100	300	
37.1cm (14.6 in.)	1:500,000	Paper	64	200	400	
74.2cm (29.2 in.)	1:250,000	Paper	66	350	500	

Color Composite Generation†

PRODUCT CODE	PRICE \$	
	MSS	TM
59	200	300

Customer must designate which band combination is desired. Bands must be in ascending order. Color sequence must be blue, green, red. Enter band selection in the "Color Combin." area on order form. Printing master is retained by EOSAT. Product costs must be added to generation fee.

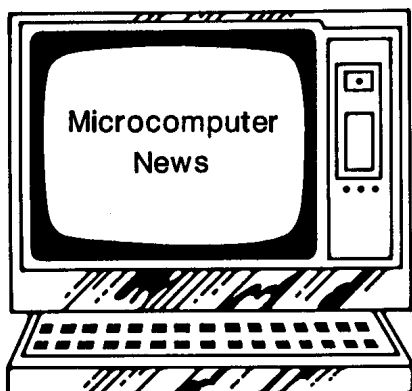
*Excludes RBV 1 Unless otherwise requested standard color composites will be generated as follows: Landsat 1, 2, 3—MSS bands 4, 5, 7; Landsat 4, 5—MSS bands 1, 2, 4, TM bands 2, 3, 4. Note: For custom orders or for priority service there is a 300% surcharge.

II. Standard Digital Products (Computer Compatible Tapes)

TRACKS	BPI	FORMAT	MSS All Bands (Band Sequential)		MSS All Bands (Band Interleaved)		RBV Single Subscene		Set of Four RBV Subscenes		TM Full Scene		TM Quarter Scene*		MSS/TM CCT Copies†			
			CODE	PRICE \$	CODE	PRICE \$	CODE	PRICE \$	CODE	PRICE \$	CODE	PRICE \$	CODE	PRICE \$	MSS		TM	
9	1600	TAPE SET	184-A	660	184-B	660	184-C	660	184-D	1320	81	3300	83	1650	92	120	86	720
9	6250	TAPE SET	185-A	660	185-B	660	185-C	660	185-D	1320	80	3300	82	1650	93	120	90	720

CCT Data formats and data acquisition dates: MSS BIP-2 (CCT-X)—Prior to Jan. '79; BSQ or BIL (corrected only)—Jan. '79-May '81; BSQ or BIL (corrected or uncorrected)—June '81 to present; RBV CCT not available prior to Sept. '80; SSQ (corrected only)—Sept. '80-May '81; SSQ (corrected or uncorrected)—June '81-March '83; TM BSQ or BIL (corrected or uncorrected)—TIPS Apr. '84-present.

SOURCE: Earth Observation Satellite Company, Landover, MD.



MICRO-CARTO NEWSLETTER

The first issue of the American Cartographic Association's Micro-Carto Newsletter has recently been published. RSSG members having interests in microcomputers, geographic information systems and cartography will find it especially useful. The Micro-Carto Newsletter is compiled and distributed by Carleton Cox, Chairperson, ACA Information Services Committee, 309 Kent Circle, Downingtown, PA 19335 (215-531-1565).

AAG MICROCOMPUTER SPECIALTY GROUP

The AAG Specialty Group on Microcomputers has been formed to investigate the ways in which microcomputers can be used as a tool in geographical research and teaching. Members are concerned that microcomputers be viewed as a means toward an end, rather than an end in themselves. Activities will include reports and demonstrations by Group members about the ways in which they use microcomputers as geographers; program exchanges, so that the users of different machines might trade programs they have created or acquired from the public domain; creation of resource guides and identification of persons with expertise in such areas as graphics, statistics, computer mapping, computer-assisted instruction, and hardware use/problem solution, who might be able to help others on a voluntary basis. Two issues of the new Microcomputer Specialty Group Newsletter have been published. For additional information some key contacts are:

Chairman: James N. Snaden
Department of Geography
Central Conn. State University
New Britain, CT 06050
(203) 827-7218

Newsletter Editor: Lawrence T. Lewis
Department of Geography
Western Illinois University
Macomb, IL 61455
(309) 298-1764

Software Exchange Coordinators

Apple II: James C. Hughes
Department of Geography and
Environmental Studies
Slippery Rock University
Slippery Rock, PA 16057-9989
(412) 794-7310

Apple Macintosh: Kim Holland
Department of Geography
Univ. of Western Ontario
London, Ontario Canada N6A5C2
(519) 679-3423

IBM-PC: Robert P. Sechrist
Center for Governmental Studies
Northern Illinois University
DeKalb, IL 60115
(815) 753-1901

SUPPORT SERVICES FOR MICROCOMPUTER IMAGE PROCESSING

Access and transfer of an image to and from a particular format has been a significant impediment to the potential user of the commercially available microcomputer image processing systems. The Nebraska Remote Sensing Center (NRSC) has been actively involved in the development and use of microcomputer image processing systems for a number of years. As a result of this activity NRSC staff have developed the software and hardware for microcomputer systems to access images from many different sources.

NRSC has developed a wide variety of resources for reading the format of a specific image type, locating a particular sub-area, and transforming it into a specific image, disk and operating system format. This has resulted in the development of a collection of microcomputer software and hardware which can now handle a wide variety of situations.

Multispectral and single band image segments or windows can be extracted from any LANDSAT RBV, MSS, or TM computer tapes in the standard CCT formats distributed by the EROS Data Center since 1972. SPOT data will be handled as it becomes available. LANDSAT images from distribution stations other than EROS are a non-standard service. Subimages are first placed into the NRSC systems' standard Data Plane Input/Output (DPIO) format on floppy or hard disk. Conversion routines to transform images to and from this format to those used by currently available commercial microcomputer image processing systems are available as follows:

- DPIO format (Nebraska Remote Sensing Center) using 3.5", 5.25", and 8" floppy disks under a variety of operating systems including the IBM DOS operating systems.

(Continued on next page)

. . . SUPPORT SERVICES (Continued from page 5)

- PCIPS format (IBM Corp. Product 6466996) using a 5.25" floppy disk generated under the IBM DOS operating system.
- APPLEPIPS format (Telesys, Inc.) using a 5.25" floppy disk generated under the Apple DOS operating system.
- MICROPIPS format (Telesys, Inc.) using a 5.25" floppy disk generated under the IBM DOS operating system.
- ERDAS format (ERDAS, Inc.) using an 8" floppy disk generated under the Cromemco CDOS or the CP/M 2.2 operating systems or a 5.25" floppy disk generated under the IBM DOS operating system.
- RIPS format including both .DAT and .IMG formats (EROS Data Center and Spectral Data Corp.) using an 8" floppy disk generated under the Cromemco CDOS or the CP/M 2.2 operating systems.
- VIPS format including both .DAT and .IMG formats (Spectral Data Corp.) using a 5.25" floppy disk generated under the IBM DOS or the Apple DOS operating systems.

Segments of other satellite images may also be transformed from tape to the DPIO disk format using NRSC microcomputer systems. Those considered to be part of the NRSC standard capability include AVHRR, SEASAT, SAR, HCMM, and Nimbus. USGS's Digital Terrain Model (DTM) tapes of the 3 arc-second format can be segmented as well. The area segmented can be specified by a latitude and longitude window. This window can match a 7.5' topographic map. The 3 arc-second cells can then be convolved and interpolated to any new cell size including an accurate overlay of the LANDSAT TM image map. Other current services include digitizing film transparencies and converting map polygons (e.g., soils) to raster formats. Possible future services may include support for users of Amiga, Atari ST, HP 150, Data General, Macintosh and other systems.

For details on NRSC microcomputer support services and costs, contact: Dr. Lee D. Miller, Conservation and Survey Division, University of Nebraska-Lincoln, 113 Nebraska Hall, Lincoln, Nebraska 68588-0517, Phone: (402) 472-3471.

LANDSAT TM IMAGE MAP OF ILLINOIS

A "Satellite Image Map of Illinois" has recently been published by the Illinois Geological Survey. The map, a semicontrolled mosaic constructed from Landsat 4 Thematic Mapper (TM) film products, was prepared by Richard E. Dahlberg and Donald E. Luman (Northern Illinois University Laboratory for Cartography and Spatial Analysis) and Alden Warren (U.S. Geological Survey). Additional contributions were provided by Christopher Stohr (Illinois State Geological Survey).

The image map, published at a scale of 1:500,000, was prepared from three selected TM bands (TM2, green; TM3, red; and TM4, IR) to produce a "false-color" composite image which simulates a color infrared photograph. The source data for this image map were derived from film masters for 13 individual TM scenes acquired from September 30, 1982 to October 25, 1982. Twelve of these scenes were acquired within a duration of only nine days, thus providing excellent scene-to-scene matching. The imagery was assembled into a mosaic through a photomechanical process which utilizes contrast-balanced film images rather than the paper prints traditionally used in mosaic preparation. This photomechanical method insures high geometric accuracy and optimum image resolution by using stable base film during all steps of the mosaic preparation, with the resulting film composite having the appearance of a single image.

To aid the image map user in feature identification, 10 areas of the image map have been selected which are representative of the diversity of features that can be seen across this satellite image map. Each of these areas appears at a scale of 1:750,000 and is accompanied by an interpretive description.

Rolled copies of the "Satellite Image Map of Illinois" are available for \$4.95 (bulk rate) or \$7.95 (first class) from the Illinois State Geological Survey, Attn: Order Department, Natural Resources Building, 615 East Peabody Drive, Champaign, IL 61820. Phone: (217) 344-1481.

GEOGRAPHIC REMOTE SENSING ACTIVITIES: 1985 ASCM-ASPRS FALL CONVENTION'

Kamlesh Lulla and Mark Karaska (Indiana State University) report that geographers were well represented at the ASCM-ASPRS Fall Convention held September 8-13, 1985 in Indianapolis, Indiana. Over 200 papers were presented and representatives from twelve foreign countries participated in the program. This meeting included the Final Landsat (TM) Image Data Quality (LIDQA) symposium co-sponsored by ASPRS and NASA.

Geographers presented papers in six different sessions covering topics ranging from vegetation assessment to water/wetland monitoring using TM data. Many geographers (Lulla, Mausel and Hyde of Indiana State University, Jensen of South Carolina, Latty of Massachusetts, Welch of Georgia) also

organized sessions and served as moderators. Geography/remote sensing graduate students from the Indiana State University Remote Sensing Laboratory provided a variety of services including management of A-V equipment during the sessions.

Papers presented in the Coastal/Marine and Oceanographic Remote Sensing Symposium dealt with topics related to monitoring ocean surface parameters, coastal vegetation and sedimentation. Representatives from NASA/GSFC and NOAA/NESDIS described recent oceanographic remote sensing developments and future needs. Proceedings of the meeting are available from the American Society for Photogrammetry and Remote Sensing, 210 Little Falls St., Falls Church, VA 22046.

Remote Sensing Centers*

INDIANA STATE UNIVERSITY REMOTE SENSING LABORATORY

The Indiana State University Remote Sensing Laboratory (ISURSL) was founded in 1974 as a laboratory jointly managed by the Director of ISURSL and the Chairperson of the Department of Geography and Geology. The cornerstone of ISURSL's facilities traditionally has been a remote terminal which provided ISURSL with access to a large IBM mainframe computer at the Purdue University Laboratory for Applications of Remote Sensing (LARS). During 1985 ISURSL will put ISURSL, LARSYS, LARSYSDV and LARSPEC remote sensing software packages on a small ISU IBM mainframe computer (4361, version 5) which will be shared with only one or two other users at ISU. Association with LARS following this conversion will continue, but with reduced reliance on their hardware for analysis. ISURSL will have full hardware and software capabilities in-house by mid-1985. A version of IMGRID will be used for Geographic Information System (GIS) research and applications.



The present ISURSL in-house image analysis system has a PDP-11/Grinnell core with two tape drives and an array processor. It is anticipated that a VAX 730 will replace the PDP-11 in the near future. A GOES/NOAA satellite receiving station has been added to ISURSL recently.

Ten three-semester hour courses in remote sensing and GIS are offered at ISU. Eight courses are given by members of the Department of Geography and Geology and two courses are taught by the Department of Physics. During the past decade of ISURSL operation more than 20 funded research projects have been successfully conducted. Areas of most active current research interest include:

- Geobotanical Remote Sensing Techniques;
- Evaluation of Atmospheric Particulates over Large Urban Areas;
- Analysis of Urban/Suburban Structure Utilizing Landsat TM Data;
- Development of Vegetation and Terrain Information for Application to Global-Scale Environmental Problems; and
- Geographic Information System Development and Applications.

Four ISU faculty members have remote sensing as their major teaching and research responsibility:

- Walter Carnahan (Ph.D., Physics) - image processing, thermography, air pollution.
- Robert Howe (Ph.D., Geology) - photogeology, glacial terrains, geobotany.
- Kamlesh Lulla (Ph.D., Bioecology and Ph.D., Physical Geography) - biogeography, geobotany, weather, GIS.
- Paul Mausel (Ph.D., Geography) - land use, soils, GIS, agriculture.

Supporting faculty with interest in remote sensing applications and use of ISURSL facilities are:

- Dr. William Brooks - computer cartography
- Dr. Theresa Nagy - astrophysics
- Dr. Lee Guernsey - resources, mining, land use
- Dr. John Oliver - climatology
- Dr. Robert Larson - urban and regional planning
- Dr. John Swez - remote sensing instruments

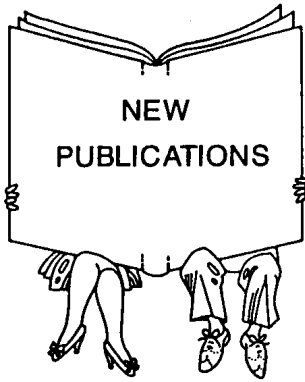
Remote sensing is a specialization within degree programs at ISU. Although a M.A. or Ph.D. is not awarded in remote sensing, it is possible for a student to earn 30 semester hours or more of formal credit for remote sensing courses. The most common graduate degrees acquired by students with a remote sensing specialization are in Geography (Ph.D. and M.A.), Geology (M.A.), and Physics (M.A.). A remote sensing specialization in the Life Sciences (Ph.D. and M.A.) is also possible.

Persons with established expertise in remote sensing are welcome to discuss the possibility of participating in ISURSL research and/or teaching during an extended free period (e.g., sabbatical, leave, summer session). Such an arrangement generally would not involve payment of stipends by ISU, but rather would focus on providing facilities for visiting scientists.

For additional information on ISU programs in remote sensing contact:

Dr. Paul W. Mausel or Dr. Kamlesh Lulla
Department of Geography and Geology
Indiana State University
Terre Haute, IN 47809
Phone: 812-232-6311 (ext. 2444)

**EDITOR'S NOTE: This article is the third in a regular series on Remote Sensing Centers. These articles will summarize the orientation, special ties and current activities of remote sensing research laboratories, academic departments, public agencies and private firms in which geographers are involved. Persons wishing to prepare articles for the series are asked to contact James Merchant, RSSG Newsletter Editor, for guidelines.*



CHARACTERISTICS AND AVAILABILITY OF EARTH-IMAGING SATELLITE DATA, by C.S. Southworth. 1985. USGS Bulletin 1631. 102 pp. \$6.50.

Earth-imaging satellite systems launched by the United States provide multiple data bases to study the Earth. This report is a compilation of sensor characteristics, available data, coverage index maps, sample data products, and sources of information on Landsat, Heat Capacity Mapping Mission, Seasat, Nimbus-7, and Shuttle Imaging Radar-A. The objective of the report is to provide a concise guide to available Earth-imaging satellite data to support site-specific earth-science investigations. Available from U.S. Geological Survey, Eastern Distribution Branch, 604 South Pickett St., Alexandria, VA 22304.

RECENT RESEARCH IN REMOTE SENSING AT INDIANA STATE UNIVERSITY, Professional Paper No. 16, Paul W. Mausel, editor. 1985.

This issue of the Department of Geography and Geology's Professional Papers Series is devoted to publication of recent research in remote sensing conducted by Indiana State University (ISU) faculty and students. The articles selected for publication represent many elements of current interest in the ISU Remote Sensing Laboratory. Articles included are:

- Indiana State University Remote Sensing Program - Paul W. Mausel
- Evaluation of Atmospheric Particulate Concentrations Derived from Analysis of Ratio Thematic Mapper Data - W. H. Carnahan, P. W. Mausel, and G. P. Zhou
- An Analysis of Spectral Characteristics of a Geobotanical Test Site: Case of Soldier's Delight, Maryland - Kamlesh Lulla
- Differential Insolation Component in Landsat Digital Data Utilizing Fourier Transform Techniques - Michael P. Bishop
- Soil Classification in Indiana from a Regression Modified Ration of Landsat data - Jamison Moore
- Dissertation Abstracts

Professional Paper No. 16 and other previously issued papers in this series are available from Dr. Paul W. Mausel or Dr. Kamlesh Lulla, Department of Geography and Geology, Indiana State University, Terre Haute, Indiana 47809.

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