

# Update

Number 71  
February 26, 1974

## ITEMS OF INTEREST

- \* On January 1, 1974 Shirley Davis' job description was officially changed from Technical Editor to Education and Training Specialist. She will be working on the development of Remote Sensing Education and training materials including the LARSYS Education Package. Linda Barnes, who joined the LARS staff on February 5, is taking Shirley's place as Technical Editor and will work with Tom Builtz.
- \* A brochure describing the LARS Short Course, to be headed by John Lindenlaub and scheduled for June 3 - 7, is being circulated in the lab now. The brochure is now available in quantity, and should be included in all LARS correspondence.
- \* The distribution policy on our color brochure entitled "Remote Sensing of Agriculture, Earth Resources, and Man's Environment" is as follows: For general requests asking for more than three copies, send three brochures and a covering note stating that we are giving three brochures as a courtesy, and that, if more are desired, they will cost \$1.25 each.
- \* New Faces at Flex II:

Graduate student Bijan Mobasseri has joined LARS recently and is working with Paul Anuta and Clare McGillem in the Data Handling Research Area. Bijan's home is Tehran, Iran.

Steve Wilkinson and Paul Spencer are working as Student Applications Programmers with Howard Grams and LARSYS programs, abstracts and users.

- \* Carl Julien, Manager of the Engineering Science Department of Deere & Co., Moline, Illinois, will visit the lab on Wednesday afternoon, Feb. 27th, to discuss with members of the LARS staff the possibility of co-operative research between Deere & Co. and LARS. He has asked the LARS staff to suggest possible proposals that might serve as a base for contract work for Deere & Co.

- \* In January, 1974 John Lindenlaub, Roger Hoffer and Shirley Davis began working on a set of approximately 20 slide-tape-workbook instructional units on The Fundamentals of Remote Sensing. Sponsored by Purdue's Continuing Education Administration, the project is expected to run through June, 1975.
- \* Olin Bockes, a remote sensing specialist with a background in forestry and photogrammetry and Armin Grunewald, a soil scientist with primary responsibility for the Conservation Needs Inventory will be visiting the lab on March 5. They are both with the USDA's Soil Conservation Service. They will be joined by Roy Hickman and Wayne Fuller, statisticians from Iowa State University. The group is coming to talk to Dave Landgrebe, J. B. Peterson, Phil Swain, Terry Phillips, Roger Hoffer, Marv Bauer, LeRoy Silva, Barrett Robinson, Jan Cipra and Dick Weismiller about ways that remote sensing and the LARSYS techniques may be better used for SCS's land inventory and monitoring tasks.

## ADDRESSES AND SEMINARS

- \* Harry Hitchcock presented a paper entitled "Remote Sensing, Computers and Land Use Planning" during the Winter meeting, K-E Section of the Society of American Foresters, December 6 and 7 in Lexington, Kentucky.
- \* Terry Phillips presented "Aspects of Resources Management Systems-- The Role of the Computer" at the Colorado Inter Agency Automatic Data Processing Council in Denver on January 30.

## TRAVEL

- \* Dave Landgrebe and Phil Swain were in Baltimore from February 11 to 22, where they were reviewing ERTS-B proposals. Phil was on a panel specializing in interpretive techniques; Dave's panel concentrated on agriculture, forestry and rangeland proposals. Dave Landgrebe also attended an NSF panel meeting.
- \* Marion Baumgardner left on February 8 for The Sudan to do preliminary studies for the possibility of mapping The Sudan for the Food and Agriculture Organization. He will then visit the FAO headquarters in Rome before returning to LARS about March 15.
- \* J. B. Peterson went to New York on February 8 as consultant for the Ford Foundation regarding research and educational programs in Africa.
- \* Roger Hoffer went to Colorado February 18-21 to complete ERTS-1 final report plans and to co-ordinate Skylab research with user agencies. He will then go to Pittsburg March 1 and 2.

- \* Dick Mroczynski and Roger Hoffer will attend an American Society of Photogrammetry conference in St. Louis March 10-14. Dick will stay only through the 11th.
- \* Harry Hitchcock is going to Colorado for field work on February 28. He will return March 10.

## VISITORS

- \* On January 18 Dr. Takeo Fukuda from Kawasaki, Japan visited the lab.
- \* Also on January 18, Mr. Dunlop from Atlantic Richfield came to see Dave Landgrebe.
- \* C. Payne Lucas of "Africare" in Washington, came on January 23 to see Marion Baumgardner.
- \* Men from 8 divisions such as Water, Forestry, State Parks, Wildlife Research, and Engineering of the Indiana Department of Natural Resources visited LARS on January 23 for an educational meeting with Dick Gilbert in connection with the PY program.
- \* T. P. Chang and Aolad Hossain of the Indiana Water Pollution Control Div. came to see Bill Miller on January 30.
- \* On February 6 Professor James Russell consulted with John Lindenlaub, Phil Swain and Shirley Davis on techniques for evaluating the effectiveness of the LARSYS Education Package.
- \* Jack Porter of Cities Service Co., Research Division, visited Paul Anuta on February 24 to discuss image processing for exploratory geology.

## MISCELLANEOUS

- \* Vern Vanderbilt has recently purchased 14000 straws; that's right soda straws, to further his research with collimated light. By bundling these straws together and then shining light through, the individual rays are encouraged to be parallel, and will better imitate sunlight in his remote sensing model.
- \* April 22 through 26 has been tentatively picked as the time for the LARS Annual Review. There will be a three-day program organized around projects. Details will be announced.
- \* A date to remember: Friday, March 15 is the day for the 1974 dinner-dance-reception honoring the Board of Trustees and officers of the University. The annual event is cosponsored by the Purdue Women's Club and the University Club.

---SAVE FOR FUTURE REFERENCE---

Number 8

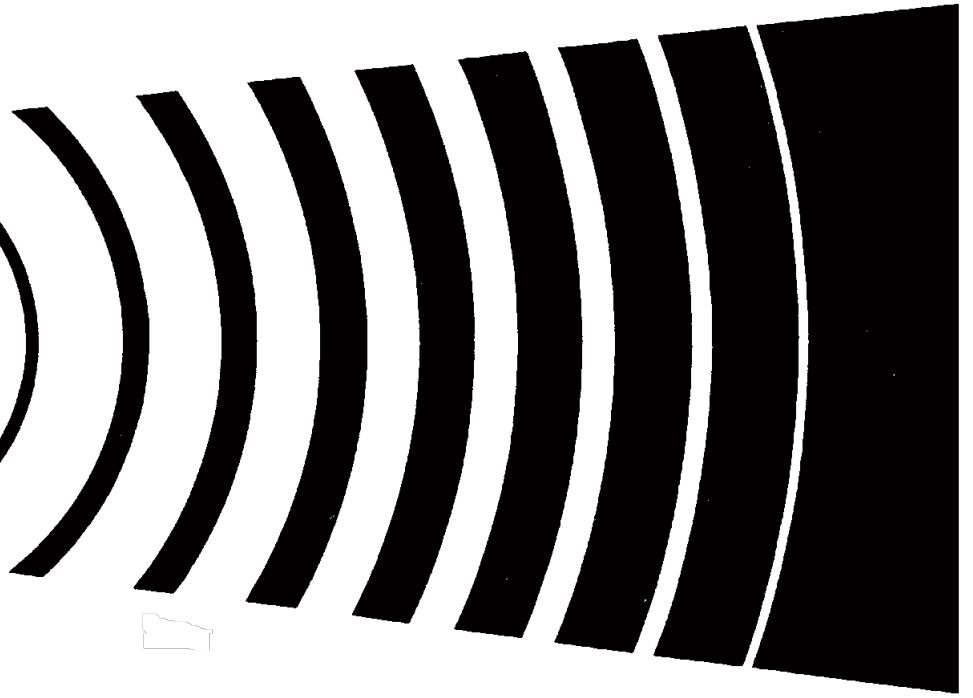
RECENT LARS INFORMATION NOTES

- 031573 MACHINE PROCESSING FOR REMOTELY ACQUIRED DATA by D. A. Landgrebe.
- 042373 AUTOMATIC DATA PROCESSING OF REMOTELY SENSED DATA FOR TEMPERATURE MAPPING OF SURFACE WATER by L. A. Bartolucci, R. M. Hoffer and T. R. West.
- 042673 TWO EFFECTIVE FEATURE SELECTION CRITERIA FOR MULTISPECTRAL REMOTE SENSING by P. H. Swain and R. C. King.
- 042873 APPLICATION OF MULTISPECTRAL REMOTE SENSING TO SOIL SURVEY RESEARCH IN SOUTHEASTERN PENNSYLVANIA by H. L. Mathews, R. L. Cunningham, J. E. Cipra and T. R. West.
- 062773 CLOSED BOUNDARY FINDING FEATURE SELECTION AND CLASSIFICATION APPROACH TO MULTI-IMAGE MODELING by J. N. Gupta and P. A. Wintz.
- 071373 MULTISPECTRAL IMAGE PARTITIONING by T. V. Robertson and K. S. Fu.
- 072473 EMISSION AND REFLECTION FROM HEALTHY AND STRESSED NATURAL TARGETS WITH COMPUTER ANALYSIS OF SPECTRORADIOMETRIC AND MULTISPECTRAL SCANNER DATA by R. Kumar and L. Silva.
- 101373 THE ROLE OF COMPUTER NETWORKS IN REMOTE SENSING DATA ANALYSIS by P. H. Swain, T. L. Phillips and J. C. Lindenlaub.
- 101473 MULTITEMPORAL GEOMETRIC DISTORTION CORRECTION UTILIZING THE AFFINE TRANSFORMATION by R. A. Emmert and C. D. McGillem.
- 101573 URBAN LAND-USE MAPPING BY MACHINE PROCESSING OF ERTS-1 MULTISPECTRAL DATA: A SAN FRANCISCO BAY AREA EXAMPLE by R. Ellefsen, P. H. Swain and J. R. Wray.
- 101673 LAND USE CLASSIFICATION OF MARION COUNTY, INDIANA BY SPECTRAL ANALYSIS OF DIGITIZED SATELLITE DATA by W. J. Todd and M. F. Baumgardner.
- 101773 MAPPING SOIL ASSOCIATIONS USING ERTS MSS DATA by J. E. Cipra.
- 101873 EXTRACTION AND CLASSIFICATION OF OBJECTS IN MULTISPECTRAL IMAGES by T. V. Robertson.
- 101973 INFORMATION-PRESERVING CODING FOR MULTISPECTRAL DATA by J. R. Duan and P. A. Wintz.
- 102073 MACHINE BOUNDARY FINDING AND SAMPLE CLASSIFICATION OF REMOTELY SENSED DATA by J. N. Gupta, R. L. Kettig, D. A. Landgrebe and P. A. Wintz.



LARS PUBLICATIONS (CON'T)

- 103073 GEOMETRIC CORRECTION OF ERTS-1 DIGITAL MULTISPECTRAL SCANNER DATA  
by P. E. Anuta.
- 110173 THE CORN BLIGHT WATCH EXPERIMENT: ECONOMIC IMPLICATIONS FOR USE  
OF REMOTE SENSING FOR COLLECTING DATA ON MAJOR CROPS by J. A.  
Sharples.
- 110273 THE ATMOSPHERIC EFFECT IN REMOTE SENSING EARTH SURFACE REFLECTIV-  
ITIES by W. L. Murray and J. E. Jurica.
- 011074 PURDUE/LARS COMPUTER USER'S GUIDE.



# LARS/Purdue Update

Number 72  
March 27, 1974

## NOTICES

- \* The LARS Annual Review will be held April 22, 23, and 24 in the Krannert Auditorium. The program will be announced soon.
- \* Wednesday, April 3 is the date! 3:30 p.m. is the time. The Flex Lab I conference room is the place. A special remote sensing seminar entitled "Systems for Airborne Oil Pollution Detection" will be presented by Dr. David Olson of Industrial Engineering and Dr. Gordon Wright of the Krannert School.

## ITEMS OF INTEREST

- \* We are all sorry to see our Business Representative, John Wunder, leave LARS at the end of this month. John has accepted a position as Cost Analyst with UARCO, Inc., a business forms and equipment company in Barrington, Illinois. Our good wishes go with him.
- \* Leslie Wilson began working with the Digital Display at Flex II on March 1 in her official capacity as Pictorial Interface Supervisor. She will be organizing training, assisting users and setting policies for the use of the Digital Display.
- \* John Wells and J. C. Humphrey from the office of Information Services (state government agency), Austin, Texas, completed the "LARSYS for Instructors" course on March 15 and will support their remote terminal site in Austin when it becomes operational this month. Phil Swain wishes to express his thanks to all who gave hospitality and a helping hand to John and J. C. They left feeling they had gotten quite a lot out of their two-week stay with us.
- \* Two of Dave Landgrebe's Electrical Engineering graduate students have passed their PhD Preliminary Exams. Congratulations go to Bob Kettig, who passed on February 26, and to Charles Wu, who had his exam on February 28.

- \* Roger Hoffer was in Colorado talking with colleagues at the University of Colorado (INSTAAR) during the third week of February. While there, talks and illustrations of computer processing of ERTS data in the San Juan Mountains of Colorado and Mesa Verde National Park areas were presented to people from the National Park Service and the U. S. Forest Service.

A great deal of interest was expressed by the National Park Service personnel concerning the use of SKYLAB photography for archeological surveys in Mesa Verde and surrounding areas, and also for the use of ERTS and SKYLAB data for aiding in updating the "current" (1938) vegetation map of Mesa Verde National Park. These activities will be pursued in conjunction with the National Park Service personnel as part of the Colorado SKYLAB project.

The U. S. Forest Service personnel expressed a great deal of enthusiasm for the progress LARS has made in being able to effectively process ERTS-1 data. Continued contact will be maintained with these people in the Forest Service through the INSTAAR group at the University of Colorado.

## ADDRESSES AND SEMINARS

- \* The Third Annual Remote Sensing of Earth Resources Conference at the University of Tennessee Space Institute in Tullahoma, Tennessee, was held March 25-27. LARSians who contributed papers to this conference were as follows:

- 1) C. J. Stohr and T. R. West: "Computer-Assisted Classification of Sink-holes with Thermal Infrared Imagery at Aircraft Altitudes."
- 2) Ravindra Kumar: "Statistical Separability of Agricultural Cover Types in Subsets of One to Six Spectral Channels."
- 3) H. C. Hitchcock and R. M. Hoffer: "Computer-Aided Mapping of Recent Forest Fires with ERTS Data."
- 4) W. N. Melhorn, S. Sinnock, O. L. Montgomery: "Analysis of Land Use-Form Relations From ERTS-1 Imagery, Sand Hills Region, McPherson County, Nebraska."
- 5) R. Gilbert (with Lee Guernsey and Paul Mausel of ISU): "Machine Processing ERTS-1 Data in Analyzing Land Use Conflicts in the Indianapolis Metropolitan Area."
- 6) Gerald M. Jurica with Chester Parsons: "Correction of Earth Resources Technology Satellite Data for the Presence of Atmosphere."

- \* "An Application of Personalized Instruction to Remote Sensing Technology," by Shirley Davis and John Lindenlaub will be presented by Shirley to the National Conference on Personalized Instruction in Higher Education in Washington, D. C., April 5-6.
- \* Tuesday afternoon seminars presented in the Flex Lab I conference room during the month of March were:
  - 1) "Computer-Aided Analysis of ERTS Data Collected over a Coal Strip Mined Region in Southwestern Indiana," given by John Berkebile on March 12.
  - 2) "Identification and Aerial Measurement of Winter Wheat in Kansas," given by John Stockton on March 19.
  - 3) "Computer Classification of ERTS-1 Data of Avalanche Chutes in the San Juan Test Site, Colorado," given by Jim Frater on March 26.

## PROPOSALS AND PROJECTS FUNDED

- \* Steve Luther and Roger Hoffer submitted a proposal to the U.S. Forest Service at Berkeley for analyzing ERTS data in Colorado, South Dakota and Georgia.

## TRAVEL

- \* Dave Landgrebe went to the Johnson Space Center in Houston on February 27.
- \* Dick Gilbert and Dick Weismiller were in San Francisco Feb. 27 to March 1 for the Land Use Session of the American Assoc. for Advancement of Science.
- \* On March 10, Dick Mroczynski, Roger Hoffer and Mike Fleming went to St. Louis to participate in the annual meetings of the American Society of Photogrammetry. Dick chaired the Forestry and Agriculture Section meeting of the Remote Sensing Division of the ASP. Paul Anuta also attended the meeting.
- \* Marv Bauer attended a review of the potential applications of Synchronous Earth Observations Satellite at Goddard Space Center, March 12 and 13.
- \* March 12th, Mike Fleming went to Houston to attend the Second Regional Technical Conference on Optimizing the South's Forest Resources. He was joined by Roger Hoffer on the 15th.
- \* Terry Phillips and Marv Bauer participated in a meeting at Johnson Space Center in Houston, March 14 and 15, on the design of crop inventory research projects. Terry returned for a Remote Terminal meeting on the 27th, and on the 28th Bill Simmons joined Terry for an ERTS Tape Formatting meeting.

- \* T. R. West and Chris Stohr were in Hallaran Spring, California March 17-22 to field check D.O.T. remote sensing site.

## VISITORS

- \* Dr. D. L. Van Rooy of Rice University visited the lab on February 27 to discuss LARSYS with Terry Phillips.
- \* Mrs. Debbie Keammerer from the University of Colorado came to LARS during the week of March 3-9 to work on the analysis of ERTS data in the Colorado alpine regions.
- \* On March 5, Olin Bockes and Armin Grunewald of the USDA visited the lab.
- \* Andrew Potter, Jim Dragg and Robert Bizzell of NASA came to see Dave Landgrebe and Marv Bauer March 6.
- \* Professor Patrick Horsbrugh of the Environic Foundation of Notre Dame and 14 of his students visited LARS on March 12 to get acquainted with the lab.
- \* Al Perry, Department of Geosciences at Purdue, Al Jacobs and Jerry Lineback of Illinois State Geological Survey came to see Steve Luther on March 13 about obtaining photography of the Lake Michigan shoreline for sedimentation studies.
- \* On March 14 Robert Scott, Remote Sensing Co-ordinator, Department of Natural Resources in the state of Washington, came to see Dave Landgrebe.
- \* Leonard T. Crook, Executive Director of the Great Lakes Basin Commission toured the LARS facilities on March 19.
- \* Jerry Pilgrim, Paul Wicker and Bill Morton from Computer Science Corporation in Denver, Colorado came to Flex Lab II on Thursday, March 21 to discuss arrangements for a LARSYS short course.
- \* Dr. Peter Beltemacchi of the Illinois Institute of Technology (Chicago), visited Tom Builta on March 25 to learn about LARS as an aid in planning an exhibit which may go on display at the Museum of Science and Industry in April.



--SAVE FOR FUTURE REFERENCES--

Number 9

RECENT LARS PUBLICATIONS

Information Note 111473

"Evaluation of the Upper Colorado River as Interpreted from ERTS-1 MSS Imagery" by S. Sinnock and W. N. Melhorn.

Information Note 111573

"Application of Machine-Processed ERTS-1 Data to Regional Land Use Inventories in Western Colorado" by W. N. Melhorn, S. Sinnock and R. Mroczynski.

Information Note 110873

"An Analysis of Temporal Data for Crop Species Classifications and Urban Change Detection" by P. Anuta and M. Bauer.

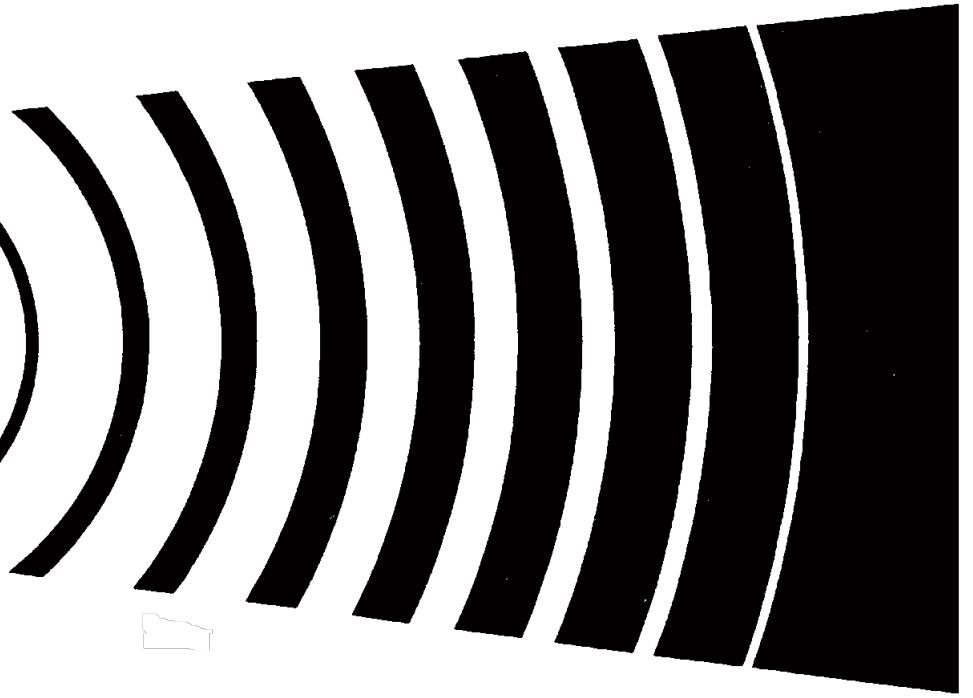
OUTSIDE PUBLICATIONS BY LARS STAFF

IEEE Transactions on Geoscience Electronics, January, 1974.

"Moire Patterns and Two-Dimensional Aliasing in Line Scanner Data Acquisition Systems," C. D. McGillem and T. E. Reimer.  
(Available as LARS Information Note 111772.)

LIBRARY ACQUISITION

"Seasonal Multispectral Flood Inundation Mapping in Iowa"  
Iowa Remote Sensing Laboratory



# Update

Number 73  
April 30, 1974

## ITEMS OF INTEREST

- \* We all would like to welcome LARS' new Business Representative, Fred Plant, who joined us on April 10. Fred came to us from Purdue's physical plant where he was an Administrative Assistant for 17 months. Previous to that he was with AVCO in Rensselaer.
- \* June 3-7, LARS staff members will be presenting a Short Course on Machine Processing of Remotely Sensed Data. Brochures describing this short course are available from area secretaries.

LARS staff members who wish to attend all or some of the lecture portions of the course may do so with the approval of their program leaders. However, staff members are asked not to participate in the workshop activities of the course. These activities parallel to a large extent the LARSYS Education Package materials, and people desiring this kind of training can get it in-house by means of the Education Package.

Questions regarding the Short Course or the LARSYS Education Package should be directed to Dr. Lindenlaub, ext. 251.

- \* For those of you who don't already know it, LARS had its Annual Review April 22, 23, and 24 in the Krannert Auditorium. At the end of the three-day session Dr. Landgrebe addressed the assembled staff and described LARS' past and immediate future, including elements of a proposed reorganization.
- \* Users of the copy center take note! Katie Wambach will be on vacation May 17-31. If you have printing work to be done, you may wish to get it to her before the 17th.
- \* The ERTS Central States final report is completed! Bound copies may be obtained from Sharon Mayo.
- \* There are a number of upcoming meetings and symposia on Earth Sciences:

- 1) Latin American Photogrammetry Meeting, Mexico City, July. Baumgardner and Bartolucci will present paper.
- 2) International Soils Congress, Moscow, USSR, August. Melhorn, Kristof, Baumgardner paper submitted.
- 3) Soil Conservation Society of America, Syracuse, New York. August. Program already completed.
- 4) 1st Annual Congress on Ecology, The Hague, Netherlands, September 8-12. Blair, Baumgardner paper has been submitted.
- 5) 1974 Earth Environment and Resources Conference, Philadelphia, September 10-14.
- 6) American Society of Agronomy Meetings, Chicago, November.
- 7) Geological Society of America, Miami, November 18-20. Abstract deadline is June 15.
- 8) British Soil Science Society, Edinburgh, Scotland. Dr. Blair will present a paper.

\* There have been a few changes recently in LARS personnel:

Lea Wendling of our business office has left LARS for a position in the Chief Accountant's office on campus. Sandy Edgar, who worked with Lea here, has been promoted to fill Lea's position.

Sherry Fisher has gone to a new job in the Instructional Media Research Unit of the Purdue Library.

Donna Dasaro has left LARS for the summer. She will return on September 1. Pat Borns is filling in for Donna until fall.

Susan Henderson will be leaving us in mid-May to take a new position as secretary in the Cooperative Extension Service.

To all who have left us we say farewell and good luck!

## SEMINARS AND ADDRESSES

- \* The Ninth International Symposium on Remote Sensing of Environment was held at the Environmental Research Institute of Michigan in Ann Arbor April 15-19. Attending from LARS were: Barbara Davis, Phil Swain, Dave Landgrebe, Bill Miller, Dick Weismiller, Luis Bartolucci, Steve Luther, Jeanne Etheridge, Fred Quiel, Vern Vanderbilt and LeRoy Silva.

LARS papers which were presented at the Symposium were:

- 1) "An Automated and Repeatable Data Analysis Procedure for Remote Sensing Applications" by Barb Davis and Phil Swain.
- 2) "The Economic Impact of Remote Sensing Data as the Source of Nonpoint Pollution Monitoring and Control" by Bill Miller.
- 3) "Statistical Separability of Agricultural Cover Types in Subsets of One to Twelve Spectral Channels" by R. Kumar and L. Silva.
- 4) "First Results from the Crop Identification Technology Assessment for Remote Sensing (CITARS)" by F. G. Hall (NASA), Marv Bauer and W. A. Malila (ERIM).

- \* On April 20 Dick Gilbert talked to the Lake Michigan Region planning council about LARS, Great Lakes Project and "Remote Sensing Information Systems for Regional Planning."
- \* On Friday, April 19, Dr. Frank Scarpace of the University of Wisconsin gave a special seminar in the Flex Lab I conference room entitled "Remote Sensing and Water Resources at the University of Wisconsin."
- \* Tuesday afternoon seminars presented during the past month in the Flex Lab I conference room were:
  - 1) "Selected Preprocessing, Enhancement and Filtering Techniques Presently Under Study at LARS" given by Rober L. Borger on March 29.
  - 2) "The Influence of Terrain on Multispectral Response" given by Chris Stohr on April 3.
  - 3) "ERTS Cover Type Mapping: A Procedure and Evaluation" given by Mike Fleming on April 15.

## PROPOSALS AND PROJECTS FUNDED

- \* Steve Luther's and Roger Hoffer's proposal to the U.S. Forest Service for analyzing data in Colorado, South Dakota and Georgia has been funded at \$19,702.

## TRAVEL

- \* Dave Landgrebe is in Washington at NASA headquarters this week (April 30 - May 3) for a bilateral US-USSR meeting.
- \* Marion Baumgardner is going to Salt Lake City on May 15.

## VISITORS

- \* On March 28 Mr. T. Cracraft and Mr. W. Bernhardt, who are associated with the Illiac IV operations at NASA/Ames Research Center, visited LARS. While here, they presented a special seminar on the Illiac facilities, and discussed with LARS staff ways in which we might be able to use them.
- \* Russell Miller of the Indiana Department of Commerce visited Dick Gilbert on April 10.
- \* Dr. John Howard of the Food and Agricultural Organization headquarters in Rome visited LARS on April 17 to discuss the Sudan Project with Marion Baumgardner.
- \* F. P. Weber of the U.S. Forest Service came to see Roger Hoffer on April 19.
- \* Joseph T. Wolley of the U.S. Department of Agriculture visited LeRoy Silva on April 25.
- \* Mikio Takagi of the Institute of Industrial Science at the University of Tokyo visited Barbara Davis April 25.
- \* Herman Frinking of the Laboratory for Phytopathology in the Netherlands came to see Marion Baumgardner on April 25.
- \* Khid Suvarnasuddhi from the National Research Council of Thailand visited Roger Hoffer on April 26.
- \* A group from Illinois State University visited the lab on April 30.
- \* Chris Johannsen will be at LARS, visiting Marion Baumgardner on May 8.



--SAVE FOR FUTURE REFERENCE--

Number 10

### RECENT LARS PUBLICATIONS

Information Note 030773

"Spectral Mapping of Soil Organic Matter" by S. J. Kristof, M. F. Baumgardner and C. J. Johannsen.

Information Note 061873

"Urban Land Use Monitoring from Computer-Implemented Processing of Airborne Multispectral Sensor Data" by W. J. Todd, P. W. Mausel and M. F. Baumgardner.

Information Note 100773

"Machine Processing Methods for Earth Observational Data" by D. A. Landgrebe, F. C. Billingsley and J. D. Nichols.

Information Note 101073

"Applications of ERTS-1 Imagery to Mapping of Lineaments Favorable to the Localization of Ore-Deposits in North Central Nevada" by D. W. Levandowski, T. V. Jennings and W. T. Lehman.

Information Note 121073

"Techniques for Computer-Aided Analysis of ERTS-1 Data, Useful in Geologic, Forest and Water Resource Surveys" by R. M. Hoffer and Staff.

Information Note 121173

"Mapping Soils, Crops and Rangelands by Machine Analysis of Multi-Temporal ERTS-1 Data" by M. F. Baumgardner, J. A. Henderson, Jr. and LARS Staff.

Information Note 032674

"Mapping a Recent Forest Fire with ERTS-1 MSS Data" by H. C. Hitchcock and R. M. Hoffer

### RECENT REPRINTS OF LARS PUBLICATIONS

Information Note 061771

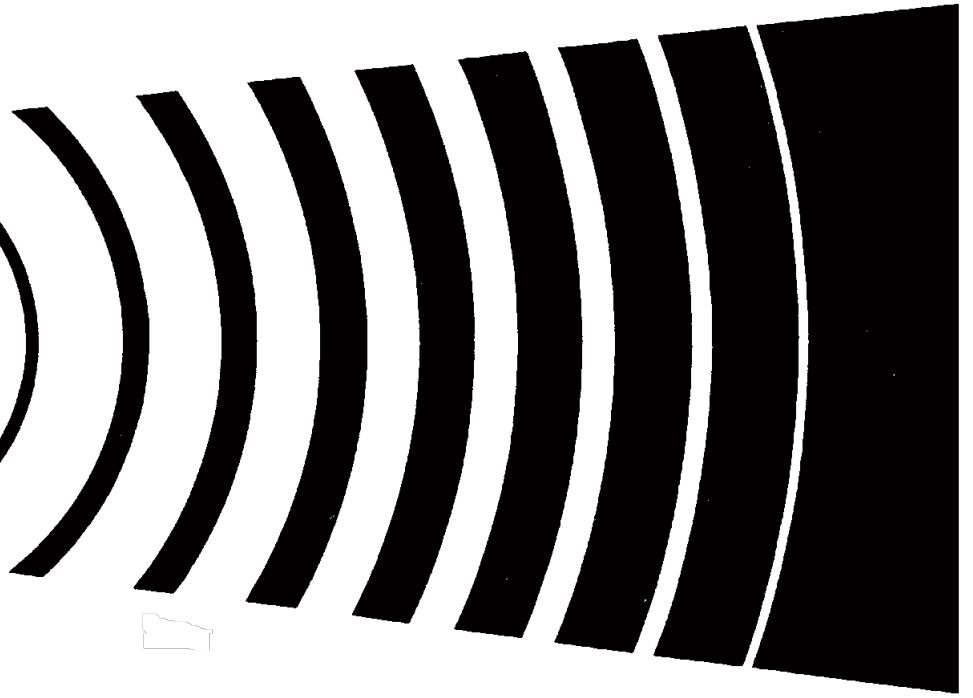
"Effects of Compression and Random Noise on Multispectral Data" by P. Ready, P. Wintz, S. Whitsitt and D. Landgrebe.

Information Note 110972

"Application of Multispectral Remote Sensing to Soil Survey Research in Indiana" by A. L. Zachary, J. E. Cipra, and R. I. Diderickson.

### LIBRARY ACQUISITION

"Optical Modeling of Agricultural Fields and Rough-Textured Rock and Mineral Surfaces" by G. H. Suits, R. K. Vincent, H. M. Horwitz and J. D. Erickson of the Infrared and Optics Division at the Environmental Research Institute of Michigan.



# Update

Number 74  
May 31, 1974

## ITEMS OF INTEREST

- \* Purdue/LARS' Short Course on Machine Processing of Remotely Sensed Data will be held in the Stewart Center June 3 through 7. On Tuesday there will be an Open House for participants in Area D of Flex II.
- \* Marion Baumgardner was a participant in the conference program on "Applications of ERTS Imagery in Utah." This meeting was held in Salt Lake City on May 16-17, and was designed to provide awareness of the availability and practical applications of space imagery to state and federal agencies, industrial personnel and the lay public.
- \* Once again summer brings many changes in LARS personnel.

At Flex II, the newest employee is Randy Culp, a student programmer, who is a Junior in Math Education with a minor in CS. New Student operators recently hired are Chuck Smith, a Sophomore in Civil Engineering and Willared Moseng, a Junior in English.

Also at Flex II, there is a change for the summer months. Marlene Hodge will be holding down Barbara Pratt's job until Sept.

Flex I's secretarial staff has two new faces. We'd like to welcome Glenda Bauer, the new Earth Sciences group secretary, and Debbie Tedrow, who is working in the Measurements area.

May 31st Terry Lehman leaves LARS for a job with the City Service Oil Company as a Remote Sensing Specialist. It is also Harry Hitchcock's last day. Harry is going to Norris, Tennessee to take a job with the TVA. We wish them both well in their new positions.

We have a new group of undergraduates who have joined LARS: Mark Schilling and Otis Griffith, both of EE, have been assigned to Barrett Robinson in Measurements Area. Jim Hargis, of Agronomy, will be working for Marion Baumgardner. Working for Marv Bauer is John Thanos, who comes to us from the Physics department. And Denny Speer, a Sophomore in Animal Science, is a new technical assistant for Roger Hoffer.

## ADDRESSES AND SEMINARS

- \* Dick Gilbert talked to the Vigo County (Terre Haute) Area Plan Commission this month on LARS and Remote Sensing.
- \* There were two Special Seminars held this month in the Flex Lab I Conference Room.

The first was on May 21st, and was on "Land Use Inventory of the Great Lakes Basin" presented by Dick Weismiller and staff.

The second, on May 28th, was a talk on the "United Nations Development Program", presented by Dr. Satypal of the Technology Advisory Division, United Nations Development Program.

## TRAVEL

- \* Bill Hockema, Paul Anuta, Bill Simmons and Sue Schwingendorf attended the National Computer Conference in Chicago on May 7. Howard Grams was there May 7 and 8.
- \* Phil Swain and John Lindenlaub were in Houston at the Johnson Space Center on May 15 and 16 to participate in the steering committee to formulate a data analysis training course for LACIP. Phil then stopped in Austin on May 17 to assess the situation at the State of Texas remote terminal.
- \* Terry West attended the Highway Geology Symposium and the steering committee for that organization, May 16-17, in Raleigh, North Carolina.
- \* Bill Simmons attended the Computer Display Conference in San Diego offered by International Displays Company on May 20-24. While in California, he also visited the Remote Sensing Laboratory at the University of California at Berkeley.

- \* Terry Phillips travelled to Sioux Falls, South Dakota on May 23 to discuss installation of the EROS Terminal.
- \* Don Levandowski will attend the First International Conference on the New Basement Tectonics in Salt Lake City, Utah, June 3-8. And on June 9-12 he will go to the Rocky Mountain Association of Petroleum Geologists in Casper, Wyoming.
- \* On June 12, 13, and 14, Howard Grams and Sue Schwingendorf will attend a Seminar on Terminals and Equipment in Washington, D. C.

## VISITORS

- \* Robert Hill and Ken Hancock of NASA came to see Paul Anuta on May 1.
- \* C. W. Tepple from Byron Ellis Assoc., Park Ridge, Illinois, was here to see Barrett Robinson on May 2.
- \* Also on May 2, Wayne Kiefer from the Geology Department of Valparaiso University and 15 students from his Geography class were escorted through the lab by John Lindenlaub.
- \* Dr. Dan Wiersma, Director of Indiana Water Resources Institute and members of the Wabash Valley Interstate Commission visited LARS on May 3.
- \* On May 7, Fred Sullivan of EPA visited the Laboratory.
- \* Phil Weber and Richard Francis of the Forest Service conferred with Roger Hoffer on May 7 and 8.
- \* Harry Loats of Ecosystems INTERNATIONAL's ecosystem program and Bruce Woodgate of the Goddard Institute of Space Studies visited on May 9.
- \* Marv Bauer had a number of visitors: Bob Bizzell, G. L. Gutschewski, Robert Patterson, Joe Garcia and John Dietrich of NASA, Johnson Space Center; Daniel Rick and Ric Cicone of ERIM in Michigan; and then Fran Johnson of NASA/JSC.
- \* LARS' former Technical Director, Bob MacDonald, who is now with NASA/Houston, came to review the LARS program on May 9 and 10.
- \* Neil Norstman, Michael Robins and Dale Walton of Indiana Heartland visited Dick Gilbert on May 14.

- \* Amikam Aharoni of the Weizmann Institute in Isreal visited LeRoy Silva this month.
- \* William Shy of Kimberly-Clark saw Marion Baumgardner on May 29.
- \* Also on May 29, Toshio Michino, Technical Director of NAC, Inc. (Remote Sensing Instrumentation Center), in Tokyo, conferred with Steve Luther. Mr. Michino is interested in methods of collecting Ground Truth and in ADP methods.
- \* Dr. K. N. Satypal, Senior Technical Advisor of the Technology Advisory Division of the United Nations Development Program came to LARS on May 28 and 29, to confer with people in the Applications areas on possible funding of activities where LARS would be cooperating with FAO and other United Nations programs.

## MISCELLANEOUS

- \* Congratulations are in order for two members of the LARS Staff who have new additions to their families:
  - Fred and Charlene Plant have a baby Girl, Amanda Renee, their first child, born May 21st.
  - Carl and Marilyn Walker have had a boy, Carl Joshua, born May 27.
- \* Congratulations also go to Vic Fletcher, who married the former Betty Snodgrass on May 24. We wish them every happiness.
- \* Also congratulations to Larry Biehl who will be married June 1, 1974.



RECENT LARS INFORMATION NOTES

Information Note 121373

"An Evaluation of Machine Processing Techniques of ERTS-1 Data for User Applications" by D. A. Landgrebe and Staff.

Information Note 102573

"Evaluation of Surface Water Resources from Machine-Processing of ERTS Multispectral Data" by P. W. Mausel, W. J. Todd and M. F. Baumgardner, R. A. Mitchell, J. P. Cook.

Information Note 022274

"Preparing Resource Inventories in the Southern Great Plains by Machine-Processing of ERTS-1 Multispectral Data" by J. A. Henderson, Jr., M. F. Baumgardner and C. E. Walker.

Information Note 031274

"On the Access to an Earth Resources Data Processing System" by T. L. Phillips and S. K. Schwingendorf.

Information Note 032574

"Delineation of Sinkholes Using Thermal Infrared Imagery" by C. J. Stohr and T. R. West

Information Note 032774

"Machine-Aided Analysis of Land Use-Land Form Relations from ERTS-1 Imagery, Sand Hills Region, Nebraska" by S. Sinnock, W. N. Melhorn and O. L. Montgomery.

Information Note 033174

"A Comparison Between Digitized Color Infrared Photography and Multispectral Scanner Data, Using ADP Techniques" by M. E. Coggeshall, R. M. Hoffer and J. S. Berkebile.

Information Note 041574

"An Automated and Repeatable Data Analysis Procedure for Remote Sensing Applications" by B. J. Davis and P. H. Swain.

Information Note 040174

"Simulation Techniques for Estimating Error in the Classification of Normal Patterns" by S. J. Whitsitt and D. A. Landgrebe.

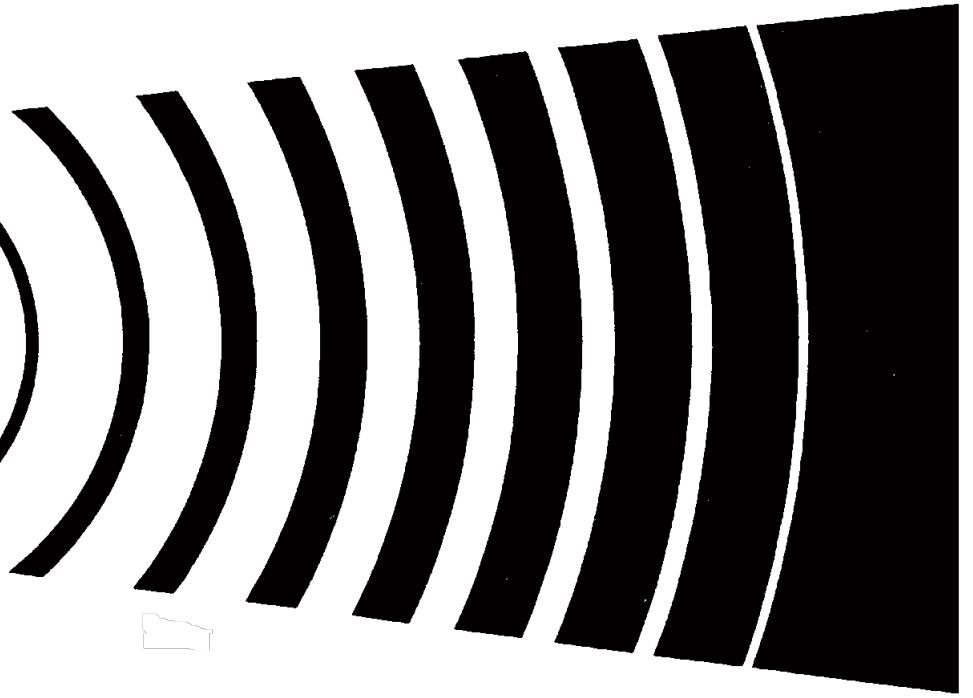
RECENT REPRINTS OF LARS PUBLICATIONS

Information Note 011069

"Ecological Potentials in Spectral Signature Analysis" by R. M. Hoffer and C. J. Johannsen.

Information Note 021072

"A Three-Stage Sampling Model for Remote Sensing Applications" by L. M. Eisgruber.



# Update

Number 75  
June 28, 1974

## ITEMS OF INTEREST

- \* LARS has a new organization chart, effective June 1! See page 5.
- \* Thanks to Purdues' Tele Communications Unit, video tapes starring LARS staff members will be available for use in Purdue classes this fall. The lectures, varying in length from 20 to 40 minutes, will be given by Dave Landgrebe, Phil Swain, LeRoy Silva, Roger Hoffer, Clare McGillem, Dave DeWitt and Barrett Robinson. There will be approximately 20 lectures covering most of the material basic to the quantitative approach to remote sensing data analysis: fundamentals of remote sensing, duality of systems types, scanner system fundamentals and signals, physical properties of targets, use of reference data, pattern recognition, data acquisition and preprocessing, calibration techniques, etc. Shirley Davis is coordinating LARS' role in the taping and will give anyone interested more details about the contents and availability of the tapes.
- \* Marion Baumgardner will serve as a member of the Agriculture Study Panel in a two week study sponsored by the Space Applications Board of the National Academy of Engineering. The meetings will be held in Snowmass, Colorado from June 30 to July 13. The general objective to be addressed by the 12 study panels is a study of future practical applications of space systems.
- \* The Technology Transfer Area has a new full-time staff member. Mr. Doug Morrison, who came to LARS this month from the English Department of Purdue where he was Schedule Deputy and Administrative Assistant. Previous to his time at Purdue, Mr. Morrison was with Alcoa.
- \* Dave Freeman accepted the position of Associate Manager of Data Re-formatting and officially began his new duties on June 1, 1974.
- \* Bill Zurney took up his new position as Hardware System Technician on June 17. His area of concentration will be programming for Remote Terminal Development.
- \* Belinda Wyss recently assumed the new title and duties of Technical Aide/Librarian.
- \* Dr. Byron Blair, professor of Agronomy, joined the LARS staff on July 1. He will be in the Crop Inventory Systems Research program area working on crops projects.

\* New Faces at Flex I:

Our new receptionist is Debbie Casson, who will also help out with overload typing in the lab.

Anna Becker is a new half-time assistant in the Business Office.

\* There are also some new faces at Flex II:

Bobby Brown is filling Belinda's recently vacated secretarial position for the summer. She then plans to be married and move to Kentucky.

Another student programmer, Bill Freestone, has joined LARS. Bill is a recent graduate of Jefferson High School and will enter the School of Engineering at Purdue in the fall.

- \* The LARS Vari-Scan is again working, thanks to the combined efforts of the measurements staff. To insure that it remains in working order, potential users are requested to arrange for machine time with Pat Sprague or Dick Mroczynski. Either Pat or Dick will be happy to load the Vari-Scan with the proper data for you. Users should not attempt to load the machine themselves.
- \* The Great Lakes Photographers are flying again. Jay Henderson, Bud Goodrick, Larry Biehl and Dick Gilbert will be flying over Minnesota, Michigan and New York in the next few weeks collecting more ground information for use in analysis.

## SEMINARS AND ADDRESSES

- \* On Tuesday, June 11, Charles F. Lehman gave a special seminar in the Flex Lab I Conference Room. The title of the seminar was "TIAD: Tamarack Inventory, Analysis and Development-Northern Elkhart County Planning Region."
- \* Mr. C. Royal Sand gave a seminar on Remote Terminal Concepts on June 12 in the Flex I Conference Room.
- \* Dick Gilbert presented a talk to the Hoosier Heartland Association of District Supervisors entitled: "Land Use Inventory of the Heartland Area using ERTS Data" on June 11.
- \* Dave Landgrebe went to Sioux Falls, S.D., (EROS) on June 26 and 27 to present a paper at their Short Course.

## PROPOSALS AND PROJECTS FUNDED

- \* From Geographic Applications Program, U.S. Geological Survey, \$44,932 for "Land Use Classification and Mapping by Machine Aided Analysis of ERTS-1 Multispectral Scanner Data", June 1, 1974-October 31, 1975. The Principal Investigator is Philip H. Swain.

- \* Dr. Hoffer submitted a \$130,936 proposal extension for his Skylab contract for August, 1974 through May 31, 1975.

## TRAVEL

- \* Jan Cipra attended the North Central Branch annual American Society of Agronomy meeting at Manhattan, Kansas, June 5-7. Papers on land use planning were given by such notables as Dr. Chris Johannsen, formerly of LARS, and John Welker of the Mid-America Regional Council, Kansas City.

While in Kansas, Jan met with Mr. Charles McBee, the State Soil Scientist of Kansas, regarding LARS work with ERTS-1 data in the Kansas soil survey program. He also collected ground information in Barton County, Kansas, near Great Bend. Barton County is one of the four prime study areas in the SR&T Soil Inventory Applications projects this year.

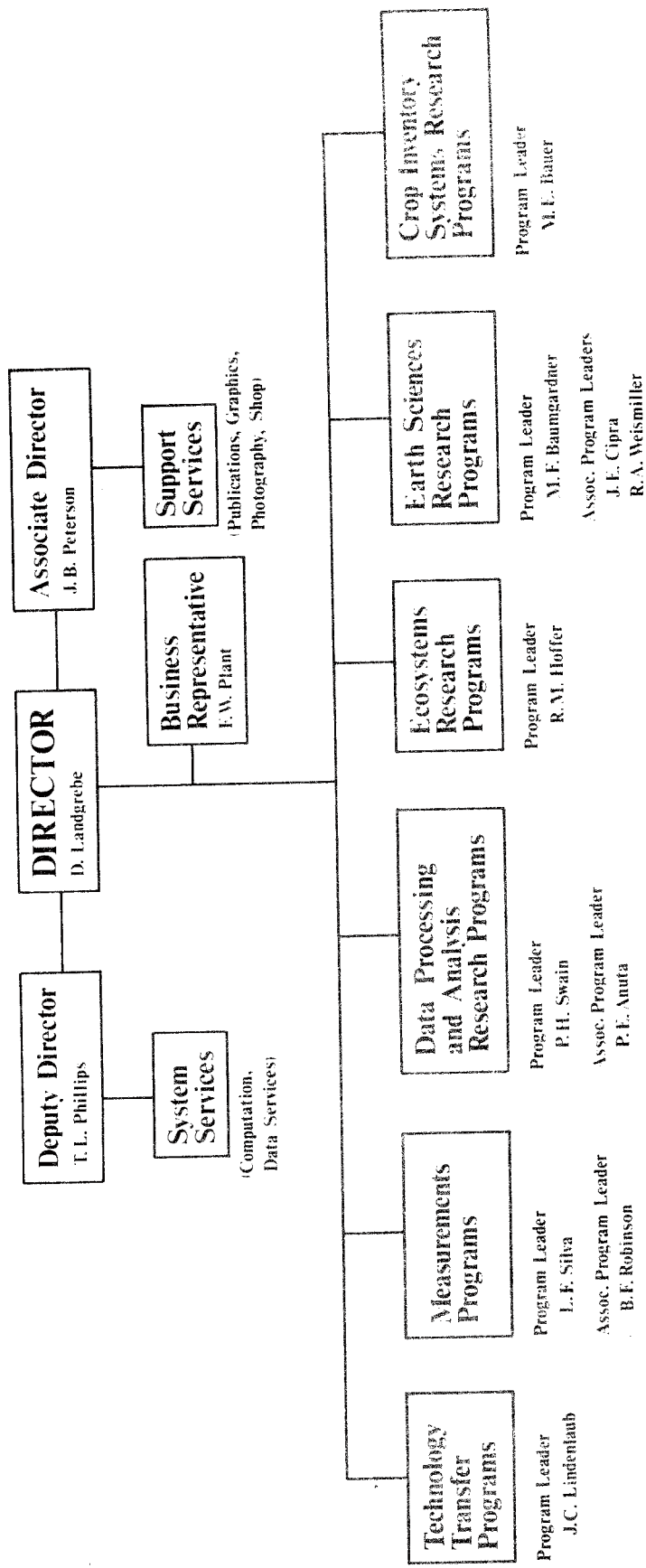
- \* Roger Hoffer, accompanied by Mike Fleming, went to the University of California at Berkeley during the week of June 9 to discuss results of the Forest Service contract with Forest Service personnel.
- \* June 12-13, Dick Weismiller and Steve Luther went to NASA/JSC to discuss Land Use Studies (Regional Application Project). Steve also discussed the extension of the Skylab-Colorado contract with the PI Management team.
- \* On June 21 Dick Weismiller, Marion Baumgardner, and Dick Mroczynski went to Chicago, EPA, to discuss the progress of the Great Lakes Project.
- \* Terry West was at the Annual Meeting of the American Society of Testing and Materials on June 23-26, where he served on subcommittees D18 (Engineering properties of rock and soil) and C9 (concrete and concrete aggregates).
- \* Paul Anuta and Clare McGillem travelled to San Francisco and Los Angeles on June 24-28 to visit various data processing centers to discuss remote sensing and data processing.

## VISITORS

- \* D. Dugan of CSRO, Australia, visited the lab on Thursday, June 6.
- \* Alfredo Flores and Ralph Mangonon of the Department of Agriculture and Natural Resources of the Philippines visited Terry Phillips on June 18.
- \* Dr. Richard Ellefsen and Len Gaydos from the University of California at San Jose, visited Phil Swain in connection with their USGS land use classification project. Their two week visit produced much in the way of interesting new results and methods. They (and Phil) wish to extend a special thanks to those who made special contributions to this work-- and they all know who they are!

- \* Dr. Aolad Hossain of the Indiana State Board of Health visited Dick Gilbert this month.
- \* Ten members of the State Forestry Planning Commission came to see Dick Gilbert and Roger Hoffer on June 5. A great deal of interest was expressed by the guests after they were given a briefing on Forestry research and remote sensing at LARS, and a tour of the lab and the Short Course area.
- \* Dr. Peterson and Marv Bauer had two visitors on June 26: L. W. Briqgle of USGS-ARS and Donald J. Schrickel of the Quaker Oats Co. in Chicago.
- \* Bill Wigton and Paul Cook, SRS/USDA, were at the Lab June 24-28 working on ERTS data analysis with Marv Bauer.





# Organization of the Laboratory for Applications of Remote Sensing

--SAVE FOR FUTURE REFERENCE--

Number 12

RECENT LARS PUBLICATIONS

Information Note 041674

"The Economic Impact of Remotely Sensed Data as the Source of Nonpoint Pollution Monitoring and Control" by W. L. Miller

Information Note 032874

Machine Processing ERTS-1 Data in Analyzing Land Use Conflicts in the Indianapolis Metropolitan Area, by J. L. Guernsey, P. W. Mausel and R. H. Gilbert.

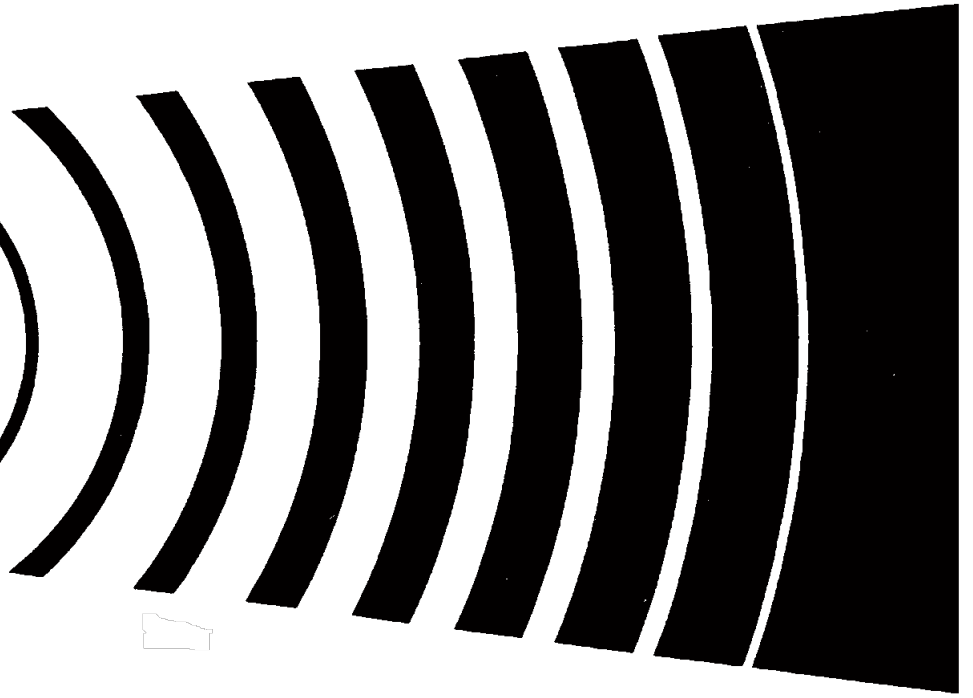
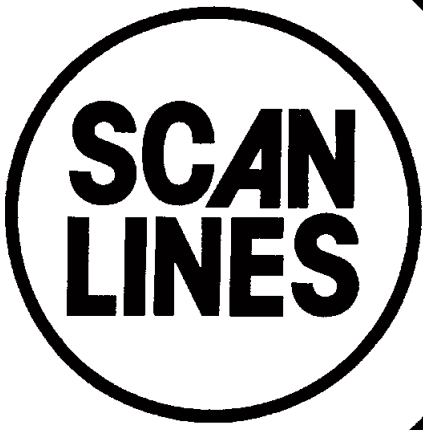
Information Note 022774

Engineering Soils Mapping from Multispectral Remote Sensing Data using Computer Assisted Analysis, by S. M. Woodring and T. R. West.

RECENT REPRINTS OF LARS PUBLICATIONS

Information Note 072071

A Linear Transformation for Data Compression and Feature Selection in Multispectral Imagery, by P. J. Ready, P. A. Wintz and D. A. Landgrebe.



# Update

Number 76  
July 30, 1974

## ITEMS OF INTEREST

- \* Dave Landgrebe is going to Washington on August 8 to provide testimony to the Senate Committee on Aeronautical and Space Sciences. His testimony will be relative to two bills creating an operational Earth Resources data facility.
- \* We have a number of physical changes at LARS this month. All of the central administrative group has moved into the space formerly occupied by Hennessey Assoc. This included Dave Landgrebe, J. B. Peterson, Terry Phillips, Fred Plant, Pam Roberts, Sandy Edgar, Juanita Fletcher and Anna Becker. A chart has been posted showing shifts made there and elsewhere. If you can't find someone now, check the chart!
- \* There have also been some changes in personnel this month:

Jim Russell of Purdue's Education Department, has joined the Technology Transfer Area on a part-time basis. Professor Russell has been a consultant in various areas of education, and served as co-ordinator for the Minicourse Development Project in Purdue's Department of Biological Sciences. His book, "Modular Instruction" was published this year.

David Baker is the new secretary who has taken Sharon Mayo's place.

Debbie Casson has been promoted to secretary for the Measurements Area.

Rhoda Nagle is secretary for Ecosystems till Donna Dasaro returns.

Debbie Tedrow is now our receptionist.

- \* Dave Landgrebe has been notified that he is now a Senior member of IEEE.

- \* Dr. and Mrs. Marion Baumgardner, Mary Susan and Jonathan will depart for Europe on August 5. Professor Baumgardner will be visiting scientist at the International Institute for Aerial Survey and Earth Sciences in the Netherlands. Their address will be: ITC, P.O. Box 6, Enschede, The Netherlands.

## SEMINARS AND ADDRESSES

- \* On July 2, Bob Kettig, one of LARS' data analysis researchers, gave a seminar in the Flex I Conference Room. The title of Bob's talk was "A Model for Multispectral Image Data, or, You Call This Data?"
- \* Fred Quiel gave a seminar in the Flex I Conference Room on July 23. His seminar was entitled, "Directional Cosines and Other Preprocessing Techniques."
- \* On July 30 Bill Simmons gave a seminar on Minicomputers, also in the Flex I Conference Room.

## TRAVEL

- \* A number of the LARS staff including Dave Landgrebe, Phil Swain, Terry Phillips, Marion Baumgardner, Marv Bauer, Roger Hoffer and Paul Anuta, went to Houston in mid-July to present a briefing on Purdue's Remote Sensing Program to people in the NASA Earth Resources Program offices at the Johnson Space Center Earth Observations Division, and to representatives of NASA headquarters.
- \* Bud Goodrick and Steve Luther were in Houston the week of July 15. Steve was there to attend the EREP Photo Interpretation conference. Bud was visiting the FAP staff.

## VISITORS

- \* Don Beeth of NASA/Houston visited LeRoy Silva during the week of July 8.
- \* There were three visitors from Goddard who came to LARS for two weeks beginning July 15 to study the LARSYS for Instructors Course with Phil Swain.
- \* On July 18 A. Sudradjet of the Geological Survey of Indonesia visited Don Levandowski.
- \* On July 22 Lewis Alan of U.K.A.E.A., England, visited the lab.

## MISCELLANEOUS

- \* Mr. Hughes would like all LARS staff to take note! Computer print-out paper is recycled. As long as it is in neatly folded stacks, that is. So, Mr. Hughes asks that you put your used paper in piles next to your wastebasket, marked "junk". He will collect it.

Used IBM cards are definitely re-cycled too. If you don't throw yours in the bin by the key punch machines, put them in piles on top of that neatly folded print-out paper.

He says he will also collect those throw-away coke bottles which usually end up in wastebaskets. They too can be salvaged. So please leave them by the coke machine, or by your desks.

It has been further pointed out to us that the LARS coke machines are operated for the benefit of LARS employees only. If you get wrong change from a machine, see Mr. Hughes or Carl Westfall. The candy machines, on the other hand, are from a vending company. Any complaints about the operation of one of those should be written on cards and taped to the machines for the vendor to handle.

- \* Carl Walker is back! From Austin, Texas, where he has spent 4 months teaching people in state agencies how to use LARSYS.

--SAVE FOR FUTURE REFERENCE--

Number 13

RECENT REPRINTS OF LARS PUBLICATIONS

Information Note 011069

"Ecological Potentials In Spectral Signature Analysis",  
by R. M. Hoffer, C. J. Johannsen.

Information Note 071069

"Calibration of Scanner Data for Operation Processing  
Programs at LARS.," by T. L. Phillips.

Information Note 111671

"Remote Sensing Techniques for Measurement of Water  
Temperatures," by R. M. Hoffer and L. A. Bartolucci.

Information Note 031673

"An Interpretation of a Geologic Map of Fannin County,  
Texas, prepared by ADP Techniques from ERTS MSS Data.,"  
by J. A. Henderson, Jr., J. J. Gardner and J. E. Cipra.

Information Note 101373

"The Role of Computer Networks in Remote Sensing Data  
Analysis. " by P. H. Swain, T. L. Phillips and J. C.  
Lindenlaub.

Information Note 101473

"Multitemporal Geometric Distortion Correction Utilizing  
The Appine Transformation," by R. A. Emmert and C. D.  
McGillem.

Information Note 101673

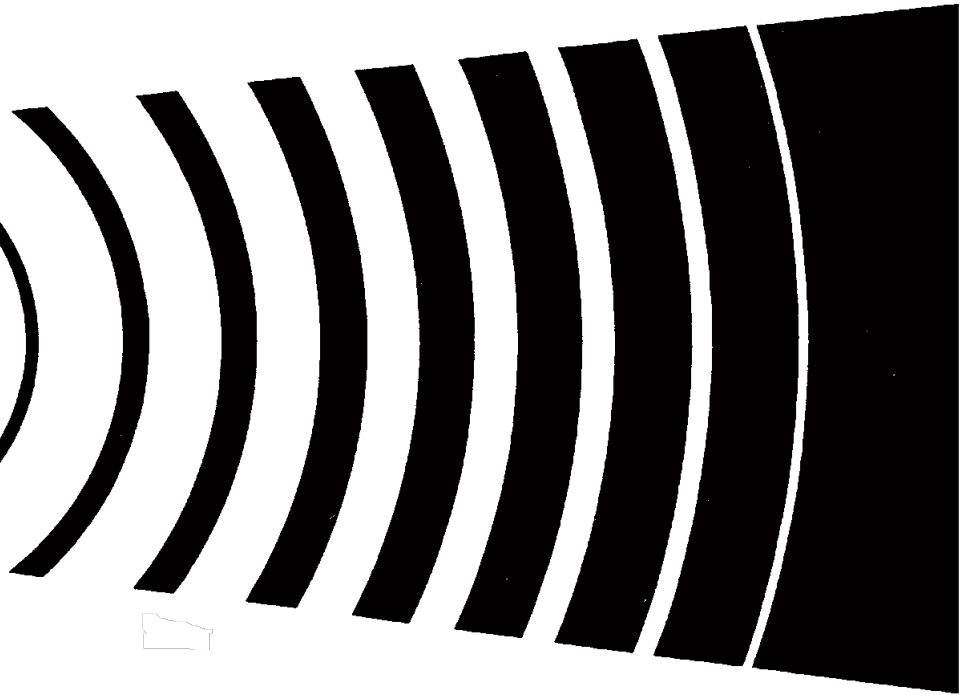
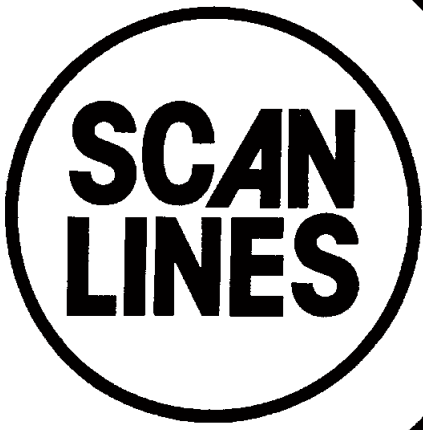
"Land Use Classification of Marion County, Indiana by  
Spectral Analysis of Digitized Satellite Data," by  
W. J. Todd and M. F. Baumgardner.

Information Note 101773

"Mapping Soil Associations Using ERTS MSS Data", by  
J. E. Cipra.

Information Note 110173

"The Corn Blight Watch Experiment: Economic Implications  
for Use of Remote Sensing for Collecting Data on Major  
Crops." by J. A. Sharples.





# LARS/Purdue Update

## ITEMS OF INTEREST

- \* It might be of interest to all of you who are as confused as we are over the many physical and personnel changes LARS has undergone in the past months to have a quick rundown on those changes:

In July, the central administrative group moved into the space Hennessey Assoc. used to have here at Flex I. Now the LARS receptionist has moved there too. Rhoda Nagle, Technical Typist for the staff, occupies the former reception desk.

In August, the Data Library was moved to the area next to the computer terminal.

Then, in early September the Technology Transfer Group moved over to Unit D in Flex II. This included John Lindenlaub, Doug Morrison, Shirley Davis and Jim Russell.

There are other new faces at Flex II. Royal Sand joined LARS on September 10 as the new Manager of Computer Systems. Mr. Sand, a native of Nebraska, came to us from Missouri University in Columbia, Mo., where he was in charge of Computer Operations and was instrumental in the re-organization of that department.

Marlene Hodge is the new Clerical Supervisor at Flex II.

Mrs. Jean Ho is a new Applications Programmer who is working with Sue Schwingendorf and the Remote Terminal Support.

Graduate Assistants Lou Ann Grady and Cheryl Hebeisen are working in that area also. Undergraduate Programmer Bill Freestone, a Freshman at Purdue this year, joined LARS in June. Tom Ransom has returned from California where he spent the summer assisting Computer Science Corp. in putting LARSYS on their computer. Steve Frick and Tad Pritchett have rejoined the Computer Operations group as student operators. In addition to Steve and Tad, there are five new student operators: David Griebelbauer, Bill Dill, Tom Carson, Don McLaughlin and David Maxey. Full-time Computer Operator Bob Meyer, joined the staff in August.

There are more changes at Flex I too. For instance, on September 21 Pat Sprague, data librarian in Flex I, departed for points west and marriage. Our good wishes go with Pat! Our new librarian is Donna Scholz, who comes to us from IU with experience as a map librarian and a background in Geology.

## ITEMS OF INTEREST

Virginia Van Zandt is our new full-time xerox and copy center operator. And we have a new purchasing clerk, Renée Gleason.

Donna Dasaro is back with us in the Ecosystems Area.

The Data Processing Area has three new graduate student employees: Ray Benson, from Computer Science; Nim-yau Chu, from Electrical Engineering; and Bob Hawkins, also from EE.

Kevin Kramer is a new student employee under Marv Bauer in Crop Inventory.

Measurements has two new graduate student faces too: Ed Hanley from Mechanical Engineering and Soon Chul Jo from Electrical Engineering.

Sue Kaminski is a temporary student employee working in the Earth Sciences area.

Tom Rank has returned to LARS in Earth Sciences, and Bernie Dahl, who has received an instructorship in horticulture, is still with us in that area also.

- \* The LARS Short Course on Machine Processing of Remotely Sensed Data is being repeated September 30 - October 4. Some 50 representatives from industry, government agencies and universities are expected to attend the course.
- \* The Journal, "Remote Sensing of Environment", is available to all interested staff. Just ask Pam or Dr. Landgrebe for it.
- \* Congratulations are in order for two EE graduate students who have worked at LARS. Charlie Wu passed his PhD final exam on Thursday, September 19! His thesis title: "The Decision Tree Approach to Classification." Dave Landgrebe is Charlie's major professor. And Terry Reimer passed his PhD final on Thursday, September 26! Terry's thesis title: "Optimum Constrained Image Restoration Filters." Clare McGillem is his major professor.

## SEMINARS AND ADDRESSES

- \* On Thursday, August 15, Professor Byron Blair of the Agronomy Department gave a seminar in the Flex I Conference Room entitled "Wheat--Its Growth, Development and Culture."
- \* On September 18, Dick Gilbert gave a talk to the Calumet Chapter, Indiana Society of Professional Engineers.
- \* The Tuesday afternoon Seminars in the Flex I Conference Room have commenced again. During September, the following talks were given:

September 3, "The Texas Remote Terminal Project" by Carl Walker and Sue Schwingendorf.

September 10, "Evaluation of Skylab Data for Land Use Mapping", by L. Biehl and L. Silva

September 17, "The Spectral Dimensionality Problem and Layered Classifiers," by Charlie Wu.

September 24, "Remote Sensing in Latin America," by Luis Bartolucci.

## PROPOSALS AND PROJECTS FUNDED

- \* Roger Hoffer and Steve Luther had a \$36,660 Proposal accepted by Wapora, Inc. for "Analysis of Aircraft Multispectral Scanner Data for Thermal Mapping of the Wabash River."

## TRAVEL

- \* Bill Simmons attended a mini-computer course in Chicago on July 15, 16, and 17.
- \* Jan Cipra went to Kansas for August 19-21 to collect ground information in Barton Co., Kansas for the Soil Inventory Applications Project.
- \* Terry Phillips was at the EROS Data Center in Sioux Falls, S.D., Aug. 20-23.
- \* Jeanne Etheridge attended a SHARE meeting in Chicago on Aug. 26, 27, and 28.
- \* Steve Luther went to Houston Sept. 4-5 to discuss LARS' role in the Regional Applications Project.
- \* Terry Phillips attended the Langley Air Force Base Open House on Tues., Sept. 10.
- \* On September 10 and 11, Dick Weismiller went to Philadelphia where he presented a paper on the Great Lakes project to the Earth Environmental Resources Conference.
- \* Then, on September 12 and 13 Dick went to Windsor, Canada and presented a progress report of the Great Lakes project to a reference Group on Pollution from Land Use Activities.
- \* From Sept. 16-20, Bill Hockema was in Washington, D.C., attending the Institute for Advanced Technology Computer Operations Management Seminar.

## VISITORS

- \* Apollo Astronaut "Rusty Schweikart, now Special Assistant to the Associate Administrator of Applications, NASA, reviewed LARS research. Wed. July 31.
- \* James Hansink of the Rocky Mountain Energy Co. of Union Pacific visited Don Levandowski and Paul Anuta on August 1. They talked about ERTS image enhancement for geological exploration.
- \* On August 5, Dick Gilbert met with a number of men from the Indiana Soil Conservation Service and the Indiana Dept. of Natural Resources.
- \* On August 6, Gerald Strandin and Bob Humphrey of Sandia Corp., Livermore, Cal. came to see Paul Anuta about our remote sensing data base and analysis system.

- \* Drew Potter and Bob MacDonald of NASA/Houston visited the lab on Aug. 23.
- \* Clem Meyers and others of Ohio Dept. of Natural resources and Ken Wenner of Ohio State University visited Dick Weismiller on Sept. 4 and 5 to discuss techniques developed in the Great Lakes Study.
- \* Mr. Howard Briggs, Dept. of Primary Industries, Brisbane, Queensland, Australia came to see Dick Weismiller during the week of Sept. 9.
- \* LeRoy Silva had two visitors on Sept. 9: W. D. Womack of NASA/JSC and John Rouse of Texas A&M.
- \* Also on Sept. 9, Richard Nalepka and William Malila of ERIM came to see Marv Bauer.
- \* Mr. Leo Kelley and George McElrath, Soil Conservation Service, were at LARS on Sept. 16 and 17, using corn blight photography of Knox Co., Ind. to check soil patterns along the Wabash River.
- \* Harry Hitchcock and others of TVA visited the lab on Sept. 17 and 18 to discuss the pilot project for mapping TVA land.
- \* Drew Potter of NASA was back on Sept. 20 to see Marv Bauer and Dave Landgrebe

#### MISCELLANEOUS

- \* As you all know, every lock at Flex I has been changed this month! Those of you who have not yet gotten new keys, apply to Sandy.
- \* The Journal of Photogrammetric Engineering has been changed to Journal of Photogrammetry and Remote Sensing.
- \* That never-ending problem--space--is back again. The moving of the data library left some material without a home. Certain things in the library date to the early days of LARS and might be of significant historical research value. Since these items do not belong in the data library, they will be disposed of during the first few days of October. If you are interested in reviewing, and taking, any of this material, please see Donna Scholz before October 1.
- \* Mr. Hughes asked that we remind everyone about the fact that computer print-out paper, key punch cards and coke bottles are all recycled. Please put all these items in the appropriate containers, or else stack them next to your desks to be picked up.

RECENT LARS PUBLICATIONS

Information Note 041874

"First Results from the Crop Identification Technology Assessment for Remote Sensing (CITARS)," by F. G. Hall (NASA), M. E. Bauer (LARS) and W. A. Malila (ERII).

Information Note 062874

"Some Limitations in the Interpretation of Thermal IR Imagery in Geology," by F. Quiel.

Information Note 091274

"Use of Computer-Aided Analysis Techniques for Cover Type Mapping in Areas of Mountainous Terrain," by R. M. Hoffer, M. D. Fleming and P. V. Krebs.

RECENT REPRINTS OF LARS PUBLICATIONS

Information Note 030872

"Potential Benefits of Remote Sensing: Theoretical Framework and Empirical Estimate," by L. M. Eisgruber.

Information Note 080372

"ADP of Multispectral Scanner Data for Land Use Mapping," by R. M. Hoffer.

Information Note 100272

"Results of the 1971 Corn Blight Watch Experiment," by R. B. MacDonald, M. E. Bauer, R. D. Allen, J. W. Clifton, J. D. Erickson and D. A. Landgrebe.

Information Note 111572

"Pattern Recognition: A Basis for Remote Sensing Data Analysis," by P. H. Swain.

Information Note 031573

"Machine Processing for Remotely Acquired Data," by D. A. Landgrebe.

Information Note 061873

"Urban Land Use Monitoring From Computer-Implemented Processing of Airborne Multispectral Sensor Data," by W. J. Todd, P. W. Mausel and M. F. Baumgardner.

Information Note 103073

"Geometric Correction of ERTS-1 Digital Multispectral Scanner Data," by P. A. Anuta.

Information Note 121073

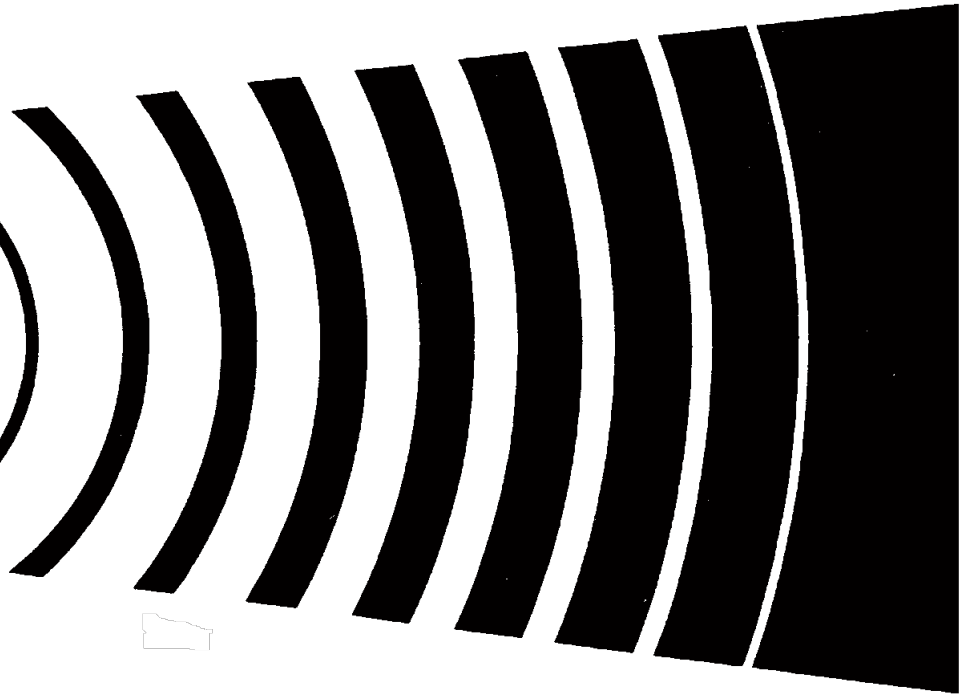
"Techniques for Computer-Aided Analysis of ERTS-1 Data, Useful in Geologic, Forest, and Water Resource Surveys," by R. M. Hoffer and the LARS Staff.

Information Note 031274

"On the Access to an Earth Resources Data Processing System," by T. Phillips and S. Schwingendorf.

Information Note 033174

"A Comparison Between Digitized Color Infrared Photography and Multispectral Scanner Data, Using ADP Techniques," by M. Coggeshall, R. Hoffer, and J. Berkebile.





LARS/Purdue  
**Update**

ITEMS OF INTEREST

- \* The LARS Annual Report to the University, Fiscal 1974, was just issued and transmitted to the President, the Provost, the LARS Policy Committee, the LARS Management Committee, and the appropriate Department heads. The Report summarizes research progress made over the year; lists theses completed and in progress; details educational activities such as Short Courses and Symposia; and provides a bibliography of all publications for the year. It also details the staff by school and department, and the funds expended by department.
- \* During the week of October 6 - 11 J. B. Peterson was at South Seas Plantation, Captiva Island, near Ft. Myers, Florida! He was there to attend the National Research Council Workshop III on Geochemical Environment in Relation to Health and Disease. The workshop was held to seek answers to reasons for the occurrence of cancer, cardiovascular disease and kidney and bladder stones in certain areas of the U.S. During this stimulating and interesting week, Dr. Pete was asked to speak about Remote Sensing not once, but twice!!
- \* LARS received a rush request from NASA headquarters this month. The request was for ERTS analysis examples over Grand Rapids, Michigan which NASA administrator Fletcher was to present to President Ford. The results were generated very rapidly indeed, then placed on a plane for Washington at the Indianapolis airport, and are now being incorporated into a display item for President Ford. A number of people worked under great pressure to prepare this material in the necessarily short time. Acknowledgement goes to Bud Goodrick, Dave Freeman, LeRoy Silva, Dick Mroczynski, Bill Hockema, Leslie Wilson, and Dick Gilbert.
- \* We have more additions to the LARS staff this month:  
  
Joe Brickler joined us on October 1 as part-time photographer. Joe is a freelance photographer in Lafayette, and an experienced TV cameraman.

Merridy Waggoner is Dr. Pete's new full-time secretary. Merridy replaces Juanita Fletcher who has transferred to Flex II where she is working with Paul Anuta.

Two new graduate students have joined Paul Anuta's Data Handling Research Group. They are Michael Singer, from Computer Sciences and Nim Chu from EE.

- \* The Purdue Development Office has organized a symposium for November 1 which is entitled "World Food--Problems and Issues." The Symposium, given for the President's Council which consists of 96 major benefactors to the University, will begin at 11:00 a.m. with a news conference. In the afternoon there will be a number of presentations on nutrition, genetics, agriculture, technology in food production conservation, economics and food policy. Dave Landgrebe will participate in this symposium and will make a presentation on LARS at 3:45.
- \* Six test images showing the quality of the Dicomed Image Writing system have been received at LARS. They can be seen by contacting Paul Anuta.
- \* Two new terminal sites are on-line. They are Indiana State University, Terre Haute, and the EROS Data Center, Sioux Falls, S.D. This increases the remote terminal site number to eight (including Flex I).
- \* The ITC Journal is available through Pam Roberts to all who are interested.

## SEMINARS AND ADDRESSES

- \* On September 11 & 12 Paul Anuta presented a paper, "The Use of ERTS-1 Multispectral Difference Data for Urban Change Detection" at the Earth Environment and Resources Conference in Philadelphia.
- \* Bill Simmons and Howard Grams attended an IBM seminar in Gaithersburg, Maryland on September 30. They addressed the conference, describing LARSYS--Past, Present, and Future.
- \* Roger Hoffer attended the Fall Convention of the American Society of Photogrammetry in Washington, D. C., September 10-13, where he presented two papers. The first was "Use of Computer-Aided Analysis Techniques for Cover Type Mapping in Areas of Mountainous Terrain" by Dr. Hoffer, M. D. Fleming and P. V. Krebs. The second was "Fishing for Catfish from 5000 Feet or the Utilization of Calibrated Thermal Infrared Scanner Systems for Studying the Impact of Thermal Effluent from Power Plants on Fish Populations," by Dr. Hoffer and L. Bartolucci.



- \* On October 4 Roger Hoffer presented a paper entitled "New Horizons in Natural Resource Surveys" to the 8th Annual Conference of the American Technical Education Association in Ann Arbor, Michigan.
- \* Paul Anuta gave the Second Lockheed LACIE Training Lecture, "Fundamentals of Image Registration," at Lockheed in Houston. October 18.
- \* There were a number of seminars in the Flex I Conference Room this past month:

On October 1 there was "Technology Transfer And A LARSYS System Conversion or How I Spent My Summer Vacation," by Tom Ransom.

On October 15, "Techniques for Analyzing Thermal Infrared Scanner Data," by L. Bartolucci, C. Kardos and R. Hoffer.

On October 17, "User Applications of Remote Sensing," by Joe Vitale of the NASA Office of University Affairs.

On October 22, "My 'Trip' Into the 12th Dimension or An Analysis of Temporal Data over Stripmines in Southwestern Indiana," by Saleem Momin.

On October 24, "A Model for the Study of Dispersion of Pollutants in Lake Michigan," by Gary M. Schwab, Circle Campus, Chicago, University of Illinois.

On October 29, "The Effects of the Physical and Chemical Properties of Soils on the Spectral Reflectance of Soils," by Oscar Montgomery.

On October 31, "How to Install a Computer in 200 Steps or Less," by Terry Phillips.

## TRAVEL

- \* Paul Anuta was in Washington, D.C. on September 19. He went to the NASA Goddard Spaceflight Center to discuss Image Pre-processing.
- \* Then he went to NASA JSC Houston on September 24 - 25 to discuss data handling research results with SR&T program monitors. Clare McGillem and Ed Mikhail also went.
- \* In late September, and then for a great part of October Doug Morrison, John Lindenlaub, and Tina Cary were in Houston teaching personnel from LACIE about LARSYS.
- \* On October 10 Dave Landgrebe went to the EROS Data Center in Sioux Falls, S.D. to give a lecture in a Short Course for various foreign scientists.

- \* Marv Bauer, LeRoy Silva, Barrett Robinson, Vern Vanderbilt and Vic Fletcher went to Garden City, Kansas on October 18 - 19 to collect spectral data over wheat plots and other crops with our field spectroradiometer system. The effort is for the recently designated LACIE field measurements research project.
- \* Marv Bauer described our research on crop inventories to the National Grain Trade Council meeting at Lake Geneva, Wisconsin on September 19.
- \* Jan Cipra was in White County doing field work with Ray Sinclair, Indiana State Soil Scientist, during the week of October 29 - November 1.
- \* On October 31 Dick Weismiller, Dave Landgrebe, and Jay Henderson went to a meeting in Chicago regarding the Great Lakes Project.

## VISITORS

- \* On October 8 Gary Milburn and Robert King of USEPA visited Roger Hoffer.
- \* Dean Walter Loen of the State University of New York, specialist in Pattern Recognition, visited the Lab on October 9.
- \* Joe A. Vitale, Chief, Engineering System Design, NASA/Headquarter Washington, D.C. came to LARS on October 15, 16, & 17 to hear a program review of the Office of University Affairs Grant. During his stay he accompanied Dick Gilbert and Dave Landgrebe to the Indiana State Office Building where Dave made a presentation to the Regional Planning directors of the state. Mr. Vitale also gave a seminar entitled "User Applications of Remote Sensing," in the Flex I Conference Room on October 17.
- \* On October 18 D. J. Swaine of CSIRO-Minerology in Australia came to LARS to see Don Levandowski.
- \* Winston Ntsekhe from Maseru, South Africa, visited with Dick Weismiller, Jan Cipra, and J. B. Peterson on October 23 - 24.
- \* Ruth Whitman of NASA/Headquarters and John Dornback of NASA/Houston came to LARS on October 23 - 24 to help prepare some material in defence of the need for ERTS-C, which is tentatively scheduled to be launched about 1978.
- \* On October 29 - 30 John Lindenlaub hosted a visit from three Australians: Dr. R. J. Millington, CSRIO, Chief of Division of Land Use Research; Dr. R. Story, Senior Scientist, Division of Land Use Research and Mr. E. K. Legette, New South Wales State Department of Agriculture. The visitors came to LARS to learn about the utilization of ERTS data.

--SAVE FOR FUTURE REFERENCE--

Number 15

RECENT LARS PUBLICATIONS

Information Note 090274

"Image Registration Error Variance as a Measure of Overlay Quality," by C. D. McGillem and M. Svedlow.

RECENT REPRINTS OF LARS PUBLICATIONS

Information Note 101073

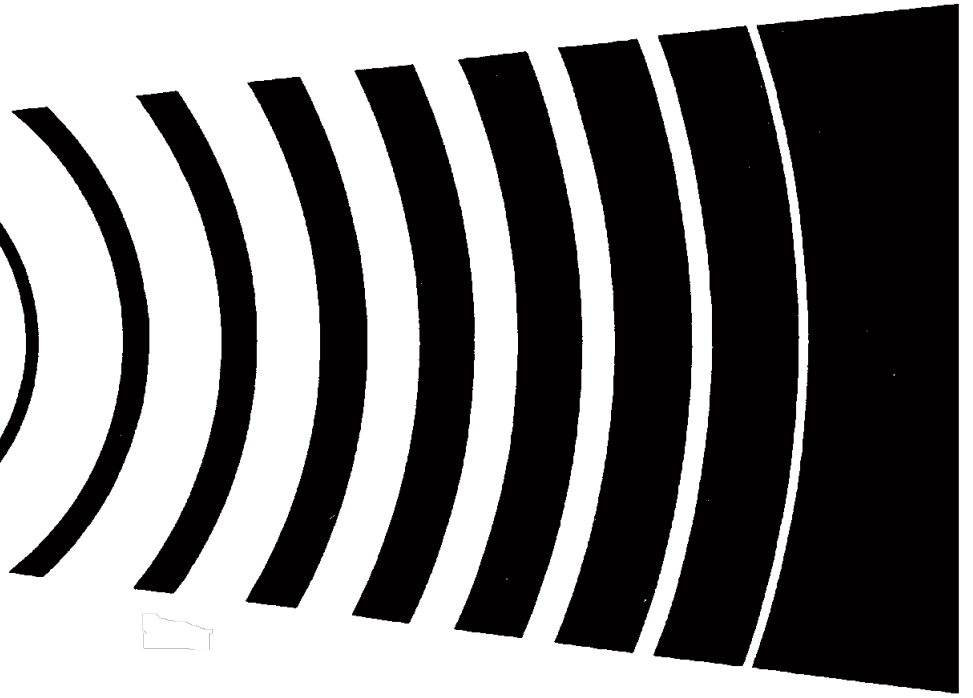
"Applications of ERTS-1 Imagery to Mapping of Lineaments Favorable to the Localization of Ore Deposits in North Central Nevada," by D. W. Levandowski, R. V. Jennings, and W. T. Lehman.

Information Note 032674

"Mapping a Recent Forest Fire with ERTS-1 MSS Data," by H. C. Hitchcock and R. M. Hoffer.

OUTSIDE PUBLICATIONS BY LARS STAFF

Remote Sensing of Environment, 3, 1974. "Statistical Separability of Agricultural Cover Types in Subsets of One to Twelve Spectral Channels," by R. Kumar and L. F. Silva. (Available as reprint under Information Note #041774.)



LARS/Purdue  
Update

ITEMS OF INTEREST

- \* Thanksgiving Holiday Reminder! Thanksgiving Day, November 28 and Friday, November 29 are official Purdue Holidays!
- \* Dave Landgrebe would like to express his thanks, and the thanks of James Morrison, Manager, Earth Resources Program, Office of Applications/NASA, to the people here at LARS who worked so hard to develop material last month for NASA's presentation to President Ford. Mr. Morrison reports that the meeting with the President and the presentation made went "extremely well!"
- \* The Tech. Transfer group would like to remind everyone that minicourses on Remote Sensing, and Video tapes of our seminars are both available now. Call Doug Morrison on ext. 275, or the Tech. Transfer secretary at 276 for information.
- \* Dave Landgrebe received a letter from Dr. R. Legault, Director of the Infrared and Optics Division of ERIM thanking us for our nomination of ERIM for the William T. Pecora Award.
- \* Harry Hitchcock will be returning to LARS for a week in December to analyze ERTS data of Knox County, Tennessee for the TVA.
- \* Chris Kardos and Mike Yanner will be leaving LARS in December. Mike will be entering the Air Force as a 2nd Lt. in pilot training, and Chris will be going to work for General Electric in San Jose, California. Our best wishes go with them.
- \* New personnel this month include: Carl Westfall, who is the new clerical staff member in Flex I, working out of the Business Office; Mary Parrata, who is working in Ecosystems helping to prepare presentations, and who will be a January graduate student in Forestry and Conservation; and two temporary clerical staff members in Flex II -- Carolyn Peterson, receptionist and secretary to Terry Phillips, and Karen Stewart, secretary for Tech. Transfer.
- \* Sue and Keith Schwingendorf have had a boy! Jeffrey Paul, born on November 18!

## SEMINARS AND ADDRESSES

- \* LeRoy Silva addressed the Great Lakes Region Annual Conference of Presbyterian Educators at Purdue on October 30.
- \* On October 31 Jerry Jurica gave a seminar entitled "The Transfer of Solar Radiation through a Hazy Atmosphere" to the Applied Optics and Radiative Energy Transfer Group.
- \* Dick Weismiller delivered a talk on "Application of Remote Sensing Techniques to Agriculture and Land Use" to the 1974 Crop Quality Council, Crop Production Conference, Minneapolis, November 4.
- \* Dave Landgrebe traveled to Boston on November 5 to give a paper at a symposium held by the Institute of Graphic Communication.
- \* Jerry Jurica gave a seminar on Remote Sensing studies of the Atmosphere on November 5 to the School of Science Dean's Honor Seminar.
- \* Phil Swain presented " 'Automatic' Analysis of Multispectral Remote Sensing Data - Problems and Prospects," at the Electronic Industries Association conference on Near Future Prospects for Image Pattern Recognition, November 11-13, in Silver Springs, Maryland.
- \* The following people presented papers at the American Society of Agronomy Annual Meeting in Chicago, November 11-15:

Dick Gilbert: "Regional Land Use Inventory by Computer-Aided Analysis of Satellite Data," with B. Dahl and N. W. Horstman.

Dick Weismiller: "Land Use Classification of Satellite Data by Computer Implemented Pattern Recognition Techniques," with F. E. Goodrick, J. A. Henderson, Jr. and J. W. Gorsuch.

Carl Walker: "Computer Analysis of Satellite Data to Produce Row Crop Area Estimates by Bare Soil Classification," with J. W. Gorsuch and R. A. Weismiller.

Steve Kristof: "Mapping Soils in the Mackenzie River Valley by Aerospace Remote Sensing," with C. Tarnocai.

Jan Cipra: "ERTS-1 Data as a Supplement in a Field Soil Survey of White County, Indiana," with R. H. Gilbert and C. Langlois.

Byron Blair: "Measurement and Evaluation of Canopy Color Changes in Hardwood Forest Canopies from ERTS-1 Data," with M. F. Baumgardner.

- \* On November 16 Don Levandowski delivered a talk entitled "Space-Age Prospecting" for the School of Science during the Focus on Purdue program.
- \* On November 27 Dave Landgrebe gave a presentation to Purdue's computer policy committee on our computer facility.
- \* November's Flex I Conference Room seminars were as follows:
  - "Enhancement of ERTS Imagery," by C. D. McGillem on November 5.
  - "Technology Transfer Activities at LARS," by John Lindenluab on November 12.
  - "A Decade of Progress in Remote Sensing at Purdue," by Roger Hoffer on November 19.
  - "Remote Sensing in Brazil" by Eric Stoner on November 22.
  - "Direct Change Detection, or, How to Double Your Mistakes in Two Easy Steps," by Mike Yanner on November 26.

## PROPOSALS AND PROJECTS FUNDED

- \* Drafts of the 1975-76 Work Statement for our SR&T Contract have been submitted to NASA/JSC for their consideration.

## TRAVEL

- \* Jerry Jurica attended the Conference on Cloud Physics, October 21-24 in Tucson, Arizona.
- \* Dick Gilbert and Steve Luther visited Dick McNabb of the Indiana Bureau of Reclamation on November 1 to discuss mapping strip mines with ERTS data.
- \* Jim Russell presented a paper entitled "The Use of the Audio-Tutorial System as a Model to Improve Instruction in Public Junior Colleges" at the Sixth Annual International Audio-Tutorial Congress in San Francisco, November 6-9.
- \* The LARS Field Instrumentation System returned from Garden City, Kansas on November 9. Marv Bauer, Barrett Robinson, Otis Griffith, Vic Fletcher, Larry Biehl and LeRoy Silva were involved in the final 1974 data take in Kansas.



- \* Dick Weismiller, Carl Walker, Steve Kristof, John Stockton, Dick Gilbert, J. B. Peterson, Marv Bauer, Byron Blair and Jan Cipra attended the American Society of Agronomy Meetings in Chicago on November 11-15.
- \* Dave Landgrebe and Phil Swain travelled to Silver Springs, Maryland, November 11-13 to a conference presented by the Electronics Industries Assoc.
- \* Terry West, Jay Henderson and Bill Melhorn attended the Annual meeting of the Geological Society of America in Miami Beach, November 17-20.
- \* On November 18-21, Jerry Jurica went to the Conference on Weather Modification in Fort Lauderdale.
- \* On November 19 Dick Weismiller attended the Indiana Rural Development Committee Flood Plain Seminar in Indianapolis.
- \* On November 19 & 20 Don Levandowski visited Cities Service Minerals Corporation to discuss the feasibility of doing a project to evaluate remote sensing data collected over a mining area in Arizona.
- \* Barb Davis was at JSC the entire week of November 18 assisting with the statistical analysis of the results from CITARS (The crop inventory technology assessment project).
- \* Dick Gilbert and Paul Anuta went to Oak Ridge National Lab in Tennessee on November 21 & 22 to discuss data base management with the Urban and Regional Analysis Group.
- \* Terry Phillips went to Sioux Falls, S. D. on November 20 & 21.

## VISITORS

- \* The following people attended the Remote Terminal Committee Meeting held at LARS on October 24: John Sargent, Frank Ravet and John Cornwell from Houston; Mary Alice Eastwood and Dr. Roger Blais from ODU/Langley; Dr. Harold Maurer from Wallops; and Jim Pritchard from Goddard.
- \* On October 29 and 30 Technology Transfer had three visitors from Australia: DR.'s Millington and Story and Mr. Legette, who were interested in learning about the utilization of ERTS data, and about the success/failure record users of the data have encountered.
- \* On November 1, Misters Jung, Kim and Oh visited the lab from Korea. They came to learn about data collection systems and crop production estimations.



- \* Dr. Carlos Brockman, of Bolivia visited the lab on November 4 and 5.
- \* Ray Sinclair, SCS and Prof. Joe Yahner, Purdue's Agronomy Department, came to LARS on November 5. They reviewed LARS' efforts at interfacing soils data with remote sensing.
- \* W. Guy Tuddenham, research Fellow in Agriculture and Forestry at the University of Melbourne in Australia visited the lab November 6-16.
- \* Mr. Olin Bockes, USDA/SCS visited the lab on November 7 regarding the International Joint Commission land use mapping work.
- \* Dr. Ralph Shay, Professor from Oregon State visited R. Landgrebe on November 14. Dr. Shay shared in the organizing of our lab approximately nine years ago.
- \* Dr. Norman Caplan, Program Director of the Control and Automation Program, under the Division of Engineering of the National Science Foundation visited Dave Landgrebe on November 14 also.
- \* The Royal Forestry Department of Thailand sent Mr. Manit Nayanetra to visit LARS on November 18-20. His main interest was in the Ecosystems Program area.
- \* Mr. Fred Tuzzi of Mead Technology Lab, Dayton, Ohio visited with Dick Mroczynski on November 20.
- \* Dr. Donald R. Buth visited LARS on November 22 and 23 to meet with LeRoy Silva, Barrett Robinson and Vern Vanderbilt.
- \* Mr. Cheng, a geo-physicist from Taiwan visited LARS on November 25-27 to study remote sensing as applied to geology and mineral exploration.

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Number 16

RECENT LARS PUBLICATIONS

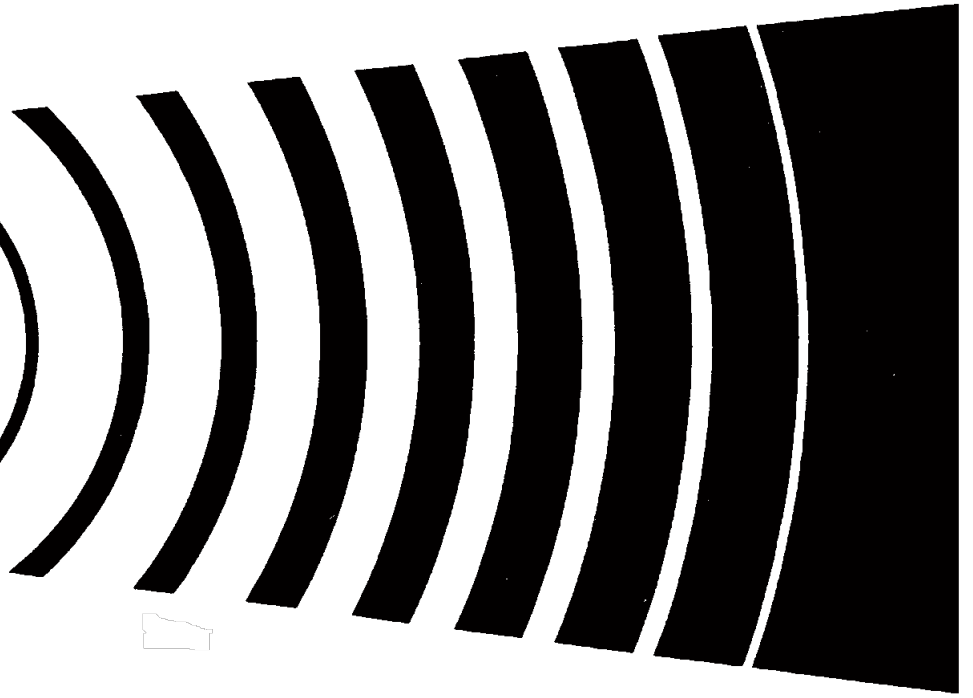
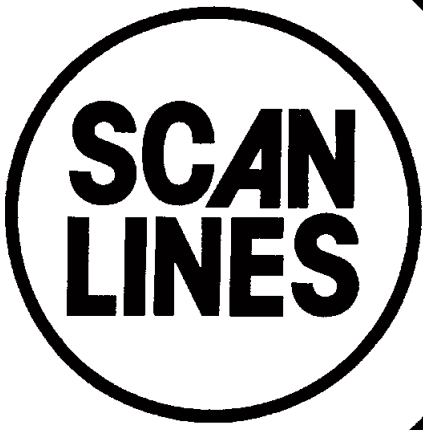
Information Note 101574

"The Digital Display Photographic Operations Manual," by  
Leslie S. Wilson.

RECENT REPRINTS OF LARS PUBLICATIONS

Information Note 110273

"The Atmospheric Effect in Remote Sensing of Earth Surface  
Reflectivities," by W. L. Murray and J. G. Jurica.



# Update

## SEASONS Greetings !!

### ITEMS OF INTEREST

- \* After a nine-month wait, many of the LARS staff were overjoyed by the arrival of the Zoom Transfer Scope, hereafter known as ZTS. The ZTS allows one to simultaneously view two different data sets compensating optically for scale differences. Some people feel that this capability will aid in the analysis of aircraft and ERTS data, since ground based information can now be overlaid on computer printouts. For a demonstration, hopefully with your own data set, see Dick Mroczyński or Donna Scholz.
- \* A certain amount of attention has recently been directed to the venerated LARS Vari-scan. This stalwart reminder of the Corn Blight Watch received a new portable power pack, but unfortunately it failed to kindle a spark in the machine. Now the Purdue Physical Plant is on tap to transfer a power box, giving a new supply of energy to the Vari-scan. Watch for upcoming announcements concerning availability of the Vari-scan for every day use.
- \* The Holiday season brings yet another shift in LARS personnel:  
  
Mike Collins has been promoted to Computer Operations Shift Supervisor!

Mary Ellen Hartman is the new full-time secretary for Tech. Transfer.

Lucille Spillman is replacing Marcia Wills as receptionist for Flex II.

Jeff Cockran is the new graduate student in the PY area.

Sharon Mayo is back with us--part-time.

We're losing some people too. Otis Griffith is leaving us for a job in Cedar Rapids, Iowa. Connie Harlan is returning to school, and Rhoda Nagle has gone back to Oregon. Our best wishes go with all of them.

## SEMINARS AND ADDRESSES

- \* Dave Landgrebe spoke on remote sensing at a Symposium entitled "Remote Sensing Applied to Energy-Related Problems" given by The University of Miami, in Florida on December 4.
- \* There was one seminar in the Flex I Conference Room this month: "Remote Sensing, Can It Be Used for Mapping the Sufficient Deposits in Norway?" by Bjørn Follestad.
- \* J. B. Peterson and Roger Hoffer presented a seminar entitled "Inventorying of Land Use and Water Resources" at the Asian division of the United Nations Development Program at UN headquarters in New York City on Thursday, December 12. They stayed over on the 13th to discuss possibilities of educational and land use reconnaissance contracts with UNDP.

## PROPOSALS AND PROJECTS FUNDED

- \* Paul Anuta received from TRW Incorporated, \$4800 for evaluation of effects of preprocessing on classification accuracy.
- \* Steve Luther has had two proposals funded: one from the Tennessee Valley Authority for \$3961 and one from Public Service Indiana for \$1191.

## TRAVEL

- \* Dick Weismiller and Steve Luther travelled to NASA/Houston December 2-4 to attend the LACIE Review and a quarterly review of the Regional Applications Project.

- \* Dave Landgrebe, Marvin Bauer, Phil Swain, Terry Phillips, John Lindenlaub, and Byron Blair participated in a review of the Large Area Crop Inventory Experiment (LACIE) at Johnson Space Center, December 3-5.
- \* Jan Cipra and LeRoy Silva were at Williston, N. Dakota December 4-5 to see the research farm where LARS will be collecting Exotech data for the Field Measurement Research Project next spring and summer.
- \* Barrett Robinson and Bill Simmons were at Johnson Space Center, Houston, December 5 and 6, and at the National Space Technology Laboratory, Bay St. Louis, Miss., December 11 and 12 to establish data acquisition and processing procedures for the Field Measurements Research project which LARS is coordinating.
- \* Paul Anuta and Edward Mikhail attended the International Conference on Automation in Cartography at the U.S.G.S. National Center in Reston, Virginia on December 9-11. While there, they discussed image processing requirements with U.S.G.S. personnel.
- \* On December 9 and 10 Terry Phillips, Phil Swain, John Lindenlaub and Paul Spencer went to Sioux Falls, S. D. to provide support and information on converting LARSYS to the EROS Data Center computer.
- \* Steve Luther and Bob Bailey and Luis Bartolucci presented thermal data of the Wabash River near Cayuga and data on the Ohio River to PSI on December 12.
- \* Several teams of Flex II Computer Facility Staff members have been going to Chicago this month to test the various software programs and systems involved in the 370/158 conversion expected in June. On these teams have been Howard Grams, Jeanne Etheridge, Paul Spencer, Bill Hockema, Mike Collins, Keith Philipp and Larry England of IBM.

## VISITORS

- \* Five supervisors and the District Conservationist from the Hendricks County, Indiana Soil and Water Conservation District visited Dick Gilbert on December 2.
- \* Leonard Gaydos and Mrs. Gaydos (the former Pat Sprague) spent the better part of two weeks in early December at LARS analyzing data for the U.S.G.S. project. Pat was a good data librarian for us; now she's a good data analyst.

- \* The Regional planner from the Kankakee-Iroquois Regional Planning Commission came to LARS to review ERTS-1 classification of Jasper County for regional land use applications on December 5.
- \* Edward Zamierowski of the Department of Biology, University of Dayton came to see Dick Weismiller on December 6.
- \* T. Taylor, J. Allen, M. Langford and N. Teague from the Division of Reclamation, Department of Natural Resources, State of Indiana came to LARS to see Dick Gilbert and Steve Luther and review ERTS-1 classification of strip mines on December 6.
- \* Harry Hitchcock and Steve Weber from TVA were here during the week of December 9-14 to analyze data on Knox Co., Tennessee.
- \* On December 16, 17 and 18, Mr. Youn from the staff of the Korean Institute of Technology visited LARS to find out how remote sensing might help his institution in their oceanographic work.
- \* Soil Conservation Service's Assistant State Conservationist, Robert Bollman and State Soil Scientist, Ray Sinclair came to LARS to review applications of ERTS-1 data for aiding soil surveys in Indiana on December 17.
- \* Dr. Amir Ahmad, President General, Cartographic Institute and Cadastre Survey of Kabul, Afghanistan spent December 20 at LARS.

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Number 17

RECENT REPRINTS OF LARS PUBLICATIONS

Information Note 042673

"Two Effective Feature Selection Criteria for Multispectral Remote Sensing," by P. H. Swain and R. C. King.

Information Note 011074

"Purdue/LARS Computer User's Guide" by Howard Grams.