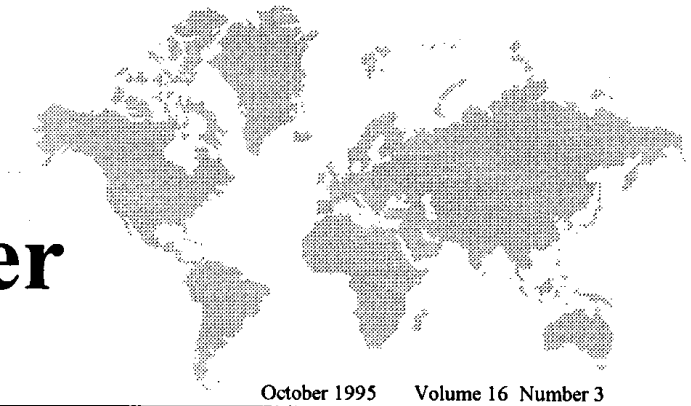
RSSG Newsletter

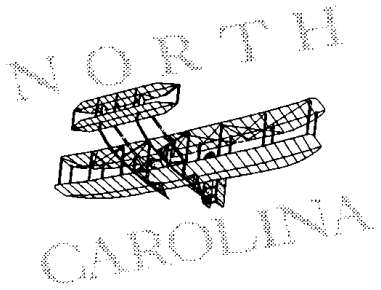


Remote Sensing Specialty Group
Association of American Geographers

October 1995 Volume 16 Number 3

From the Chair

As you read this issue of the **RSSG Newsletter**, we will be less than six months from the April 9-13, 1996 meeting in Charlotte, NC of the Association of American Geographers. One can only fathom where the time has gone! Nonetheless, this Issue serves as a convenient opportunity to assess the status of initiatives set at the Chicago AAG Business Meeting of the RSSG, and yes, prod those who in a weakened state agreed to lend their talents and services to the RSSG on behalf of its membership.



The May 1995 issue of the **RSSG Newsletter** presented the elected Officers and Directors; Regional Councilors; and Committee (i.e. Program, Honors, Publications, Communications, and Student Awards) Chairs, and defined their areas of responsibilities.. All should be prepared to report to the full membership of the Specialty Group at the upcoming 1996 Business Meeting. In addition, an informal social function is being planned by the Specialty Group's directors to immediately follow our Business Meeting. The event should give us an added opportunity to interact with friends and colleagues, and, more specifically, come together to honor the past recipients of the RSSG Outstanding Contributions Award and to celebrate with the 1996 honoree(s).

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Nominations Requested for RSSG Outstanding Contributions Award

The RSSG Outstanding Contributions Award and Medal are presented to a selected member (or members) of the AAG and RSSG who have made especially noteworthy contributions to the field of Geographic Remote Sensing. Past honorees have included: Professor David Simonett (posthumously), Professor Benjamin Richason, Jr. (posthumously), Professor Alan Strahler, Professor John Estes, Professor John Jensen and Professor Duane Nellis.

Candidates for the RSSG Outstanding Contributions Award are evaluated by a selection committee appointed by the RSSG board. The Chair of the RSSG Outstanding Contributions Award Committee for the next 3 years is Duane Nellis (Kansas State University). Nominations for the 1996 award are currently invited from the RSSG membership. The selection committee will make recommendations to the RSSG Chair for a final decision. . All nominations must be received **by February 1, 1996**. Nominations must include a letter of nomination and a complete vitae for each candidate. Send nominations to:

Dr. M. Duane Nellis
Dean s Office
College of Arts and Sciences
Kansas State University
Manhattan, KS 66506-1005
Tel. (913) 532-6900

From the Chair...Continued from page 1.

I hope you plan to attend!

One area of RSSG activity that you should be aware involves the work of the Publications Committee, chaired by Dale Quattrochi. Dale was asked, with the assistance of the Committee, to explore two issues important to the Specialty Group: development of a Special Issue in a suitable scientific journal, and exploration of the possibility of creating a monograph series, edited and authored by members and affiliates of the RSSG. We are pleased to announce that Kam Lulla, North American Editor of **GeoCarto International** and member of the RSSG, has agreed to allocate a forthcoming issue of the journal to the RSSG. I have asked Dale Quattrochi (NASA/Marshall Space Flight Center and RSSG Director) and Dan Brown (Michigan State University and RSSG Director) to serve as co-editors for the Special Issue. They are currently working on the theme of the Special Issue, and guidelines and associated mechanisms related to manuscript submission and review. Look for forthcoming information!

Regarding the second publication initiative, Dale and I have been in contact with Skip DeWall, Jr., President of Ann Arbor Press in Chelsea, Michigan. Through conversations and correspondence, Skip has indicated an interest in producing a remote sensing Monograph Series scholarly supported by the RSSG with possible cooperative arrangements with AAG and/or ASPRS. A draft contract has been provided for our consideration. Other publishers also will be contacted for comparative purposes. I am planning a presentation to you on the subject at the Charlotte RSSG Business Meeting. A copy of the material provided by Skip was forwarded to Ron Abler, Executive Director of the AAG, and John Jensen, President of the ASPRS and member of the RSSG, for their information and comment. Ron did offer that "its considerably easier to establish a publication series than it is to sustain one". We have much to consider!

Finally, the recently established University Consortium for Geographic Information Science (UCGIS) has now been incorporated. The May 1995 issue of the **RSSG Newsletter** informed the membership of the UCGIS. John Bossler (bossler@cfm.ohio-state.edu), Director, of the Ohio State University Center for Mapping, serves as the Interim President, and Ron Abler (rabler@aag.org) of the AAG serves as the Interim Treasurer.

The UCGIS is designed as a non-profit organization of universities and other research institutions dedicated to advancing our understanding of geographic processes and spatial relationships through improved theory, methods, technology, and data. The mission of the UCGIS is to serve as a unified and effective voice for the geographic information science research community; to foster multidisciplinary research and education in this field; and to promote the informed and responsible use of geographic information and analysis for the benefit of society. The goals are to provide ongoing research priorities to advance the theory and methods in geographic information science; to assess the current and potential contributions of GIS to national scientific and public policy issues; to expand and strengthen geographic information science education at all levels; to promote the access to geographic information; to provide the organizational infrastructure for collaborative interdisciplinary research in geographic information science.

The consortium is open to all U.S. academic and research organizations that meet the membership criteria established at the meeting: critical mass of faculty engaged in research and instruction in geographic information science; significant student enrollment in courses and programs in the spatial sciences; existence of Centers and Labs on campus devoted to geographic information sciences; demonstration of significant research productivity; support from senior administrators; and demonstration of how the institution will fulfill and/or contribute to the mission statement of

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UCGIS. The UCGIS is open to input from scientists and scholars in all disciplines involved in
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geographic information science in member institutions. Member institutions will have the opportunity to participate in reviewing and setting national research priorities in geographic information analysis, geographic information systems, and related specialties, and they will speak with a single voice in helping to formulate national science policy at the highest levels.

Consider your interests in geographic information science and that of your University, and contact John and/or Ron for more information as needed.

Steve Walsh, Chair
Professor of Geography
University of North Carolina
Chapel Hill, NC 27599-3220
Tel,: (919) 962-3867
FAX: (919) 962-1537
Walsh@geog.unc.edu

WANTED

Nominations are requested for the following RSSG offices:

- **Vice-Chair (2 year term)**
- **Director (2-year term)**
- **Student Director (1 year term)**

All nominees must be current members of the AAG and RSSG, and must have agreed to serve. Each officer's responsibilities were outlined in the May 1995 issue of the **RSSG Newsletter**. Nominations should be submitted **by December 23, 1995** to:

Dr. Douglas Ramsey
RSSG Secretary-Treasurer
Department of Geography and Earth Resources
Utah State University
Logan, UT 84322-5240
Tel.: (801) 797-3783 or 1790
FAX: (801) 797-4048
e-mail: doug@nr.usu.edu

1996 Student Awards Program

The RSSG Student Awards Committee, comprised of Bill Tyler (Environmental ResearchInstitute of Michigan), John Brockhouse (U.S. Military Academy) and John Harrington, Jr.(Kansas State University), is planning a Student Paper and Poster Presentation Competition for the 1996 AAG meetings in Charlotte, NC. In order to be eligible for the 1996 competition,students must send a copy of their AAG abstract and a note indicating the date and time of theirAAG-Charlotte presentation to John Harrington **by March 22, 1996**. For additional information or to participate in the competition, contact:

Dr. John Harrington, Jr.
Chair, RSSG Student Awards Committee
Department of Geography
Kansas State University
Manhattan, KS 66506
Tel.: (913) 532©6727
e-mail: jharrin@ksuvm.ksu.edu

REMOTE SENSING AT MICHIGAN STATE UNIVERSITY TO EXPAND

The Department of Geography at Michigan State University is embarking upon a major expansion of personnel and resources in basic science digital remote sensing, geographic information systems, and environmental research and teaching. Over the next few years the Department and University expect to invest considerable resources to complement and reinforce the University's collective assets in these areas. The Remote Sensing Initiative will be housed in the Geography Department but will attempt to integrate research and teaching across departmental and college boundaries. External funding of scholarships in the remote sensing/GIS arena with applications to
environmental change is a primary goal. The Department hopes to add a senior faculty member this year who will help build this initiative (see current ad in AAG Newsletter). Several other entry-level faculty positions will be added in the next few years as well as post-doctoral and graduate positions. Additional funding
for research and instructional equipment also will be available. The initiative will be an integral part of the Geography Department which includes strengths in cartography/GIS, physical, human/environment, and economic geography as well as professional programs in landscape
architecture and urban planning. Facilities include a campus-wide Remote Sensing, GIS and Cartography Center and a variety of computer facilities operated by the Department and the University.

For additional details, contact:

Dr. Richard Groop
Department of Geography
Michigan state University
315 Natural Science Building
East Lansing, MI 48824-1115
Tel.: (517) 355-4656
FAX: (517) 432-1671
e-mail: groop@pilot.msu.edu

USE YOUR NEWSLETTER

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

James W. Merchant
Conservation and Survey Division
University of Nebraska-Lincoln
113 Nebraska Hall
Lincoln, NE 68588-0517
Telephone: (402) 472-7531
FAX: (402) 472-2410
Internet: jm1000@tan.unl.edu

If possible, please submit contributions on a disk or via e-mail in Wordperfect or ASCII format.

1996 AAG ANNUAL MEETING
Charlotte, NC
Preliminary RSSG Program

The 1996 annual meeting of the Association of American Geographers will be held April 9-13, 1996 in Charlotte, NC. The RSSG is organizing six paper sessions and one panel discussion this year. The paper sessions include the following tentative sessions:

I. Remote Sensing of Wetlands
- Spencer, R., R.D. Ramsey, and A. Falconer, *Mapping Wetland Areas in Camp Ripley, Minnesota*
- Mahlke, J., *Inter-Annual and Seasonal Wetlands Change Detection Using IRS-1B Data*
- Fraser, R., *Multi-Lake Remote Sensing: Temporal, Spectral, Spatial Analyses*

II. Microwave Remote Sensing
- Thompson, L.S., D. Young, G. Adams, and T. Sos, *Interferometric Synthetic Aperture Radar*
- Townsend, P.A., and S.J. Walsh, *Influence of Flooding, Biomass, and Species Composition on Radar Backscatter of Bottomland Forests*

III. Remote Sensing for Change Detection
- Goodin, D.G., *A Spectral Mixing Model for Monitoring Seasonal NDVI Trajectories in Tallgrass Prairie*
- Tyler, W.A., M.W. Schoppmann, and J.E. Colwell, *Analysis of the Effects of Remote Sensing Temporal Intervals in the Study of Urban Expansion*
- Ramsey, R.D., and A. Falconer, *Climatic and Vegetation Phenology Variation as EcoRegions in the InterMountain West*
- Sinha, B., *Land Use Change Detection Using Landsat TM and IRS-1B Imagery*
- Price, K.P., E.A. Martinko, and D.C. Rundquist, *Relationships Between Multispectral/Temporal Measurements and Biophysical Characteristics of Prairie Treatments*

IV. Environmental Remote Sensing
- Olsenholler, J., and R. Cicone, *An Annual Summary of Asian Vegetation*
- Jakubauskas, M., and R. Weed, *The IRS Tasseled Cap: Derivation and Comparison with the MSS and TM Tasseled Caps*
- Quattrochi, D.A., and C.P. Lo, and J.C. Luvall, *Airborne Remote Sensing Data for Measurement of Thermal Energy Responses*
- Lo, C.P., D.A. Quattrochi, and J.C. Luvall, *NDVI and Thermal Irradiance of Urban Land Cover Types*
- Tuladhar, A.R., *The Greening of the Himalayas? Exploring Global Vegetation Index 1982-1990*

V. Multiscale Remote Sensing
- Walsh, S.J., A. Moody, T.R. Allen, and D.G. Brown, *Influence of Mountain Terrain on the Scale Dependence of NDVI*

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- Moody, A., and C.E. Woodcock, *Correcting Area Estimates from Coarse-Resolution Land-Cover Data*
- Patraw, K. and F. Dougher, *The Effect of Scale on Multitemporal Vegetation Classification*
- Halisky, M.G., A. Falconer, and R.D. Ramsey, *A Multi-Platform Approach to Produce a Vegetation Classification in Idaho*

VI. Remote Sensing for Landscape Analysis

- Nellis, M.D., C.E. Bussing, T.L. Coleman, M. Nkambwe, and S. Ringrose, *Spectral and Spatial Dimensions of Rural Land Systems in Botswana*
- Tilton, T.K., R.D. Ramsey, *The Environment and Archaeological site Location in Utah's West Desert*
- Chuang, L., *Access to and Understanding of China Socioeconomic and Geospatial Data Through CIESIN*
- Biggs, B., T. Van Niel, C. Homer, and R.D. Ramsey, *Comparison of Camp Williams and Gap Analysis Vegetation Classifications*

Last year the RSSG presented a panel discussion on the topic of *The Role of Remote Sensing in Geography*. It was very successful, and the session drew more people than could be accommodated in the room. For the 1996 meeting the RSSG program organizers would like to continue this tradition. This year's topic will be ***Orbital Sensors for the Next Millennium***. Invited participants include many of the major governmental and commercial remote sensing organizations planning to launch orbital sensors within the next five years.

The session will be moderated by William A. Tyler, of the Environmental Research Institute of Michigan (ERIM), and Mark E. Jakubauskas, University of Oklahoma. Each panelist will be given a ten minute period to describe the characteristics of their particular remote sensing system. After all panelists have described their respective sensor systems, they will be questioned by the moderators and the audience utilizing the remaining time for the session (approximately 40 minutes). Panelists have been invited from the following organizations:

- Terry Lehman, EOSAT
- Darrel Williams, NASA/Goddard Space Flight Center (Landsat-7)
- Ulli Hartman, ORBIMAGE
- Dennis Nazarenko, RADARSAT
- John Dykstra, SPACE IMAGING
- Clark Nelson, SPOT

We are looking forward to seeing you in Charlotte!

William A. Tyler, RSSG 1996 Program Chair
Environmental Research Institute of Michigan
1975 Green Road
Ann Arbor, MI 48105
Tel.: (313) 994-1200 (ext. 3609)
FAX: (313) 665-6559
e-mail: tyler@erim.org

Mark E. Jakubauskas, RSSG 1996 Associate Program Chair
Department of Geography
University of Oklahoma
Norman, OK 73019
Tel.: (405) 325-5325
FAX: (405) 325-3148
e-mail: jakubaus@uoknor.edu

THE CONSORTIUM FOR THE APPLICATION OF SPACE DATA TO EDUCATION(CASDE)

The University of Nebraska-Lincoln

The Consortium for the Application of Space Data to Education (CASDE) is undertaking a large multi-institutional project aimed at improving K-12 science education. CASDE became a reality through a $1.5 million NASA grant awarded on July 1, 1995, to the University of Nebraska-Lincoln (UNL) and the California Institute of Technology/Jet Propulsion Laboratory (JPL). The principal investigators are Donald C. Rundquist of UNL's Center for Advanced Land Management Information Technologies (CALMIT)/Conservation and Survey Division and Arthur I. Zygielbaum of JPL. The UNL/JPL partnership was initiated and facilitated byNebraska Senator Bob Kerrey. Other CASDE partners are Johns Hopkins University (JHU) and the NASA/Goddard Space Flight Center (GSFC).

The goal of the consortium is to organize, enhance, and disseminate NASA (and other) space data and analytical tools to educators and their students, but more importantly, the project staff will provide the necessary technical services and training to insure successful use of those data and tools. CALMIT will serve as the host center to provide access to and dissemination of materials via Internet, or through distribution of CD-ROM media.

Initial strategies are to install a workstation/server at CALMIT, develop appropriate network linkages and homepage references, and connect to pilot schools in Omaha, NE, Pasadena, CA, and Baltimore, MD. Space data of interest to the science teachers and students in those areas will be obtained (e.g., from GSFC) and operationalized for easy access. Satellite images of Nebraska will be collected daily in a real-time mode at CALMIT and made available for rapid dissemination to schools via both Internet and CD-ROM.

Innovative tools to visualize and analyze the science data will be developed/enhanced by JPL and CALMIT staff to allow interactive simulated aerial flights over landscapes of choice with the ability to extract pertinent information about locations within landscapes by means of simple point-and-click operations. The prototype visualization, with associated terrain coverages, will be the Missouri River and environs near Omaha, Nebraska. Subsequent prototypes will be developed for Pasadena and Baltimore. Additional animations/visualizations will be done for areas including the Crescent Lake National Wildlife Refuge in the Nebraska Sand Hills, the Black Hills of South Dakota, and a portion of both the Oregon and Lewis and Clark trails.

For additional details contact:

Dr. Donald C. Rundquist
Conservation and Survey Division
University of Nebraska-Lincoln
Lincoln, NE 68588-0517
Tel.: (402) 472©7536
FAX: (402) 472©2410
e-mail: dr1000@tan.unl.edu

WHAT'S NEW

Landsat 4 and 5 Digital Data Available From USGS

Approximately 44,500 Landsat Thematic Mapper (TM) scenes acquired from July 16, 1982 through September 27, 1985 by Landsat 4 and 5 are now available for purchase in digital formats from the U.S. Geological Survey s (USGS) Earth Resources Observation Systems (EROS) Data Center (EDC). TM scenes can be acquired by any customer, without restrictions on data use or sharing. Individual scenes are rated from 0-100% cloud cover and may show a choice of several acquisition dates for the same site during each year.

TM digital products are priced according to the type of geodetic reference data applied to the product. Systematically corrected TM scenes are processed using predicted geodetic position information down linked with the sensor data. Precision corrected TM scenes are registered to topographic maps and are geodetically accurate to approximately one pixel. Products are framed according to the World Reference System 2 (WRS2) standard, and each WRS scene contains approximately 75 MB for each of 7 spectral bands. The radiometric correction process applied to each TM product is identical. Both products are available in one of serval customer-specified map projections.

TM digital products are sold on either 9-track or 8-mm tape media for:

- Landsat TM Systematically Corrected - $425.00
- Landsat TM Precision Corrected - $600.00

TM photographic products are not available.

More than 350,000 scenes of Landsat Multispectral Scanner (MSS) data collected between 1972 and 1992 will continue to be available to any customer, without restrictions, at $200 per scene.

For further information contact:

Customer Services
U.S. Geological Survey
EROS Data Center
Sioux Falls, SD 57198
Tel.: (605) 594-6151
FAX: (605)594-6589
Internet: custserv@edcserver1.cr.usgs.gov

SPOT MetroView Demonstration Disk

Spot Image Corporation is testing a new product, *MetroView*. MetroView consists of satellite imagery, in black and white mode, which is enhanced and packaged for easy loading into many popular GIS software packages. The imagery is corrected to the Universal Transverse Mercator cartographic projection. A sample image of downtown Washington, D.C. is available on a 3.5" diskette. For information on availability of the demonstration disk, or additional details on MetroView, contact:

Mark Whalley
Manager, New Product Marketing & Development
Spot Image Corporation
1897 Preston White Drive
Reston, VA 22091-4368
Tel.: (703) 715-3100
FAX: (703) 648-1813
e-mail: whalley@spot.com

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Mission: Planet Earth CD-ROM

Mission: Planet Earth is a new CD-ROM containing 400 color images of the earth's surface and features the full-resolution (4-km) GeoSphere image of the Earth developed by Tom VanSant. Designed to run under Windows 3.1, the CD-ROM requires 4 MB RAM and 2 MB of disk space. It sells for $29.95. For additional details contact:

Lunar Eclipse Software
4350 North Fairfax Drive, Suite 900
Arlington, VA 22203
Tel.: (703) 841-9500
FAX: 703-841-9503

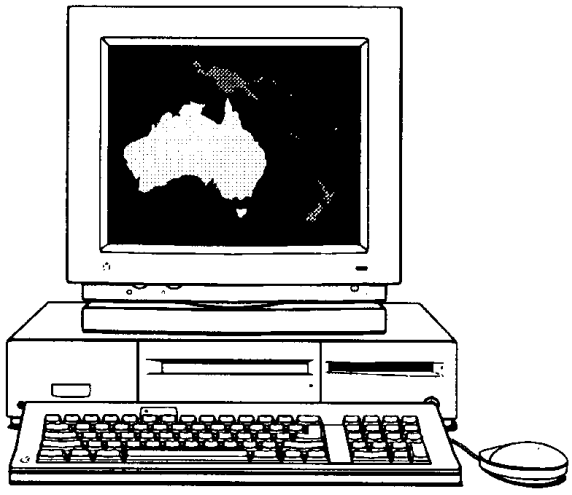
New Software Facilitates Remote Sensing Education

Two new computer-aided learning modules covering **Air Photo Interpretation** and **Multispectral Scanner Interpretation** have just been released. They complement the earlier **What is Remote Sensing?** and **Spectral Signatures** modules. The earlier modules won awards for excellence from the Australian Institute of Cartographers and the Australian Society for Educational Technology. Developed by Drs. Gail Kelly and Greg Hill and funded by the Australian Key Centre in Land Information Studies (AKCLIS), the modules make extensive use of animated computer graphics, aerial photography and satellite imagery. They can be used to show how to apply and make measurements from traditional aerial photos or satellite images.

A unique feature of the new modules involves an innovative games environment which tests the knowledge gained from the classroom. Organized around the theme of a Space Rally, each module offers a choice of three separate game locations and their associated images, to assess different facets of the student's learning. Scores and elapsed times are recorded for entry onto the Rally Honour Board. Each module can stand alone running on any IBM (or IBM compatible) personal computer with a minimum configuration: DOS environment, 5Mb free hard disk space per module, VGA Graphics card, color monitor and mouse. Presently the software will not run in a Windows environment.

Exercises are conducted in different geographical locations using varying scales of remotely sensed data (i.e., photography and scanner images). Users are exposed to oblique and vertical photography in module 3 while module 4 incorporates 10 and 20 meter SPOT data and LANDSAT 30 meter data. The price is $185 (AU) per module with multiple copy discounts available. For further information contact:

Australian Key Centre in Land Information Studies
GPO Box 2434
Brisbane QLD AUSTRALIA 4001
Tel: (07) 864 2900
Fax: (07) 2659



GEOSPATIAL ANALYSIS at WEBER STATE UNIVERSITY

Dr. Danny M. Vaughn, Associate Professor &
Director; Remote Sensing &
Geographic Information Systems Laboratory
Department of Geosciences
College of Science
Weber State University
Ogden, Utah 84404-2507

Geospatial Analysis at Weber State University is a study of the distribution and association of earth and environmental phenomena which include interactive processes operating singularly or in concert about an identified spatial region. Earth processes are analyzed using computer-assisted techniques in Geographic Information Systems and digital image processing of remotely sensed imagery. Given the complexity of natural and societal processes, Geographic Information Systems and Remote Sensing aid in providing a mechanism to simplify multi variate factors.

Since 1990, the RSGISL (Remote Sensing & Geographic Information Systems Laboratory) and Geospatial Analysis program have become an integral part of the curriculum in the College of Science. The Geospatial Analysis emphasis was developed by Dr. Vaughn in the Department of Geosciences, and approved by the Utah State Board of Trustees in the spring of 1992. The RSGISL was formally designed and developed by Dr. Vaughn during the fall of 1990 to:

- Provide and organized, highly technical facility to address geospatial questions through computer-assisted techniques.
- Train students and faculty in applied **geospatial analysis** using computer-assisted hardware and software.
- Provide a program within the discipline of geosciences that is competitive with any undergraduate institution in the country.
- Provide an academic climate that enables students an opportunity to pursue applied research.

CURRICULUM DEVELOPMENT

A minor in Geospatial Analysis includes three courses in geographic information systems, three courses in remote sensing, and elective courses in statistics, computer science, and applied sciences. The remote sensing series begins with traditional air photo interpretation. The second course is an introduction to multi spectral remote sensing, followed by a third course in applied digital image processing. The GIS series consists of an introduction to GIS concepts in the first course. The second course is all laboratory activity with the culmination resulting in a senior level research proposal that is orally presented and formally written. The third course is totally dedicated to directing students in their applied GIS research, culminating in an oral presentation of their results including maps, tables, and final paper. While an ambitious program, we feel the results provide a more functionally qualified graduate with skills that are marketable, and have been proven successful.

The ability to link other scientific disciplines in earth/environmental sciences can be demonstrated by noting the projects completed by students in the Geospatial Analysis program. Many of these studies have resulted in job opportunities, internships, and admission to graduate school. These projects are

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generated as part of the requirements for completion of the geospatial analysis program. Only a few representative topics are listed here:

1) An Assessment of Natural Hazards Along a Selected Region of The Wasatch Front. This student has recently accepted an internship with the Division of Comprehensive Emergency Management in Salt Lake city.
2) Modeling Wildlife Habitat Corridors. This student took a job with the Division of Wildlife Resources in Salt Lake City.
3) Modeling Avalanche Dangers Along Selected Regions of the Wasatch Front. This paper was presented at the 8th National Undergraduate Research Conference and was accepted for publication in the **National Proceedings.** This student was accepted to graduate school for the fall, 1994 quarter at Utah State University. He will study spatial analysis in the College of Natural Resources.
4) Modeling a Trails System along the Wasatch Front by Terrain Analysis. This paper was presented at the 8th National Undergraduate Research Conference and was accepted for publication in the **National Proceedings**. This study will be continued and output in the form of maps and spatial models will be developed for the City of Ogden Trails Committee.
5) Analysis of Georeferencing Algorithms to Ascertain Spatial Accuracy in Remotely Sensed Imagery. This paper was presented at the 7th National Undergraduate Research Conference and was accepted for publication in the **National Proceedings.** This student is the primary developer and director of a GIS program for a local city in Utah.
6) Assessing Differences Between Bayesian and Canonic Classification Algorithms. This paper was presented at the 7th National Undergraduate Research Conference and was accepted for publication in the **National Proceedings.** This student is a graduate student at the University of Hawaii.
7) Modeling Pine Beetle Infestation and a Time Series Study of Forest Change.
8) Using Spatial Analytical Techniques to Assess Natural Fuels in Forested Areas.

EXTRAMURAL ACTIVITIES

In the spring of 1990, Dr. Vaughn received a grant from NASA totaling $256,000 for three years. The Joint Venture between NASA and Weber State University is designed to integrate undergraduate institutions with NASA for the purpose of developing earth/space science programs and research associations between the space agency, faculty, and students. Over a dozen students have been paid scholarships in **geospatial analysis**. The RSGISL Exercises in GIS and RSGISL Exercises in Digital Image Processing are a reflection of extended applications which provide students with techniques and methods currently employed by a variety of local, state, and federal agencies. In September, 1993, Dr. Vaughn received a National Science Foundation grant through the Instrumentation and Laboratory Improvement program which was funded for $86,920 over three years. In 1994 he was awarded a Research Augmentation Grant through NASA for another $10,122.

LABORATORY DOCUMENTS AND TECHNICAL PAPERS

1) Vaughn, D.M.; 1995; RSGISL Exercises in Geographic Information Systems; 47 pp s.
    1) Preparing A Research Proposal, 3 pp s.
    2) Advanced Geographic Information Systems (AGIS) Operational Procedures, 5 pp s.
    3) Introduction to Digitizing I (Regular Polygons), 9 pp s.
    4) Digitizing II, Linear Strings (Streams), 3 pp s.
    5) Digitizing III, Linear Strings (Roads), 3 pp s.
    6) Digitizing IV, Polygons II (Irregular Shapes), 3 pp s.

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7) Adding a Layer and Linking Attributes, 2 pp s.
8) GIS Applications: Introduction to Modeling I, 4 pp s.
9) GIS Modeling Applications II: Digital Elevation Models (DEM s), 9 pp s.
10) GIS Applications: Modeling III (Distance Classification), 4 pp s.
11) GIS Modeling Applications IV: Weighted Modeling, 4 pp s.

2) Vaughn, D.M.; 1992; RSGISL Exercises in Digital Image Processing; 109 pp s.
1) Applied Statistics for Image Processing, 22 pp s.
2) Image Display and Visual Analysis, 7 pp s.
3) Applications in Graphic and Image Planes, 6 pp s.
4) Preprocessing: Image Enhancement by Contrast Stretch and Histogram Equalization, 7 pp s.
5) Band Rationing, 11 pp s.
6) Edge Enhancement and Spatial Filters, 5 pp s.
7) Geometric Transformation of Multi spectral Imagery 16 pp s.
8) Supervised and Unsupervised Classification, 14 pp s.

1) Vaughn, D.M.; 1992; RSGISL Technical Brief #1: Correcting Errors and Modifying Structures When Using the AGIS Digitizing Module; 7 pp s.

2) Vaughn, D.M.; 1992; RSGISL technical Brief #2: Geographic Information Systems: Modeling and Spatial Analysis; 9 pp s.

3) Weaver, D. & Vaughn, D.M.; 1992; RSGISL Technical Brief #3: Plotting with the Hewlett-Packard Draftpro Plotter using AGIS; 4 pp s.

4) Weaver, D & Vaughn, D.M.; 1992; RSGISL Technical Brief #4: Printing with the Tektronix Ink Jet Printer Using INK PLOT; 5 pp s.

5) Vaughn, D.M.; 1992; RSGISL Technical Brief #5: Reformatting Foreign Input Data, and Tape Backup-Restoring Procedures; 8 pp s.

6) Vaughn, D.M.; 1992; RSGISL Technical Brief #6: Trend Surface Modeling; 8 pp s.

7) Vaughn, D.M.; 1992; RSGISL Technical Brief #7: Data Storage and File Formats; 4 pp s.

8) Vaughn, D.M.; 1992; RSGISL Technical Brief #8: Special Operations I: Creating A Binary Mask and Developing Specific Algorithms in AGIS Activity MATH; 7 pp s.

9) Vaughn, D.M.; 1992; RSGISL Technical Brief #9: Special Operations II: Creating A Color Look-Up Table; 4 pp s.

10) Cope, M.P. & Vaughn, D.M.; 1992; RSGISL Technical Brief #10: Global Positioning Systems: Fundamentals and Principles of Operation; 34 pp s.

11) Vaughn, D.M.; 1993; RSGISL Technical Brief #11: Softcopy Photomapper: Creating A Stereo correlated Model Photogrammetrically Corrected For Relief Displacement; 8 pp s.

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EQUIPMENT & SOFTWARE

1) 17 386 and 486 PC computers and miscellaneous peripheral hardware
2) Altek 36"x48" Proline back lit digitizer.
3) Calcomp 24"x36" tablet digitizer.
4) 2 Bernoulli 44 external tape drives.
5) HP Scanjet IIC 24 bit color flatbed scanner.
6) HP DeskJet 1200C color inkjet printer.
7) Tektronix Colorquick inkjet printer.
8) Draftpro 8 pen plotter.
9) HP 650C E size color inkjet plotter w/postscript function.
10) 2 Pathfinder Basic Plus GPS receivers. and Base Station.

Software includes: PC ARC/INFO (ESRI, version 3.42), ARCVIEW (ESRI, version 2.0D), ERDAS Imagine Production (version 8.2), AGIS (Delta Data Systems), MapiX GIS (Delta Data Systems), MapiX RS (Delta Data Systems), PC TIN (ESRI, Canada, version 2.0), IDRISI (Windows 1.0, Clark University), Microdem (Peter Gouth, US Military Academy), SURFER (Golden Software, Windows version), PSI Plot (Poly Software International), Geographic Calculator (Blue Marble Graphics, version 3), Spyglass SLICER (Windows NT), Spyglass TRANSFORM (Windows NT), Spyglass PLOT (Windows NT), Trimble PFINDER software.

ANCILLARY LABORATORY ACTIVITIES

1) Currently developing new curriculum in softcopy photogrammetry and global positioning systems (GPS) mapping techniques.
2) Wrote a RSGISL Computer Information Series paper entitled, Internet Notes, 8 pp s for students engaged in the geospatial analysis program.
3) Developed and edited a departmental publication, **The Occasional Papers of the Department of Geosciences**. The purpose of these papers is to encourage students to formally submit their research papers for publication under the guidelines of an actual review process.
4) Arranged the acquisition of over a gigabyte of digital nine channel Calibrated Airborne Multispectral Imagery (CAMS) from Marshall Space Flight Center, Huntsville, Alabama to provide students with an opportunity to interpret and evaluate its usefulness in earth/environmental applications.
5) Currently restructuring introductory courses in physical geography, remote sensing, and geographic information systems around a planned multimedia facility scheduled to be complete by the beginning of the Fall, 1995 academic year.

For additional information, contact:

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International Geoscience and Remote Sensing Symposium (IGARSS '96)
Lincoln, Nebraska

The 1996 International Geoscience and Remote Sensing Symposium (IGARSS '96) will be held at the Cornhusker Hotel in Lincoln, NE May 27-31, 1996. Over 700 international remote sensing experts are expected to attend the conference. The Symposium will be sponsored by the IEEE Geoscience and Remote Sensing Society, USGS/EROS Data Center, NASA, and various units of UNL including the Department of Electrical Engineering and CALMIT.

IGARSS'96 ON-LINE. IGARSS'96 On-Line is your World Wide Web source for up-to-the-minute information about the 1996 International Geoscience and Remote Sensing Symposium. **IGARSS '96 On-Line can be accessed at http://doppler.unl.edu/igarss96**

For more information, please contact:

IEEE Geoscience and Remote Sensing Society
2610 Lakeway Drive
Seabrook, TX 77586
Tel: (713) 291-9222
FAX: (713) 291-9224
email: stein@harc.edu

The Pecora 13 Symposium

Human Interaction with the Environment: Perspectives from Space

Preliminary Announcement and Call for Papers

The Pecora 13 Symposium honors the memory of Dr. William T. Pecora, former Director of the U.S. Geological Survey, Under-Secretary of the Department of the Interior, and a pioneer in space-based remote sensing. During the past two decades the twelve Pecora Symposia have addressed many major topics in remote sensing including sensor development, policy issues, data access and archive, and applications of the technology in a wide variety of areas. In 1996, the Pecora 13 Symposium will focus on the role of remote sensing in assessment of **Human Interaction with the Environment: Perspectives from Space**.

Conference Objectives:

The principal objectives of the Pecora 13 Symposium are:

1. To better identify information requirements, and determine current information deficiencies, for addressing issues related to human interaction with the environment;

2. To report progress in mapping, monitoring and characterizing the biosphere and the extent and nature of human activity via remote sensing technology;

3. To define opportunities for enhancing progress in using remote sensing to enhance the quality of human life and for protecting the global environment.

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Call for papers

Persons wishing to submit papers are requested to contact the Symposium Technical Program Committee. Priority will be given to papers and posters that specifically address aspects of the conference theme - **Human Interaction with the Environment**. Topics of special interest include:

- Characterization of the Earth's environment via remote sensing
- Human dimensions of global change
- Earth science data set development
- International research and development endeavors
- Environmental monitoring and modeling
- Land cover/land use mapping and change analysis
- Data archive and access
- Integration of socioeconomic and natural resources information
- Food security and population vulnerability
- Land degradation and desertification
- Urban and settlement issues
- Impacts of global climate change
- Using remote sensing and GIS to impact public policy

Note that although slides and overhead transparencies will, of course, be accommodated, **special consideration will be given to papers that use state-of-the-art presentation techniques (e.g., multimedia, computer projection, animation, computer graphics, video)**. All accepted papers will be published in the **Pecora 13 Symposium proceedings.**

Those who wish to present a paper at the Pecora 13 Symposium must submit a brief proposal to the Symposium Planning Committee. The proposal must include the paper title, names and complete addresses of all authors (including telephone, fax and e-mail), and a 300-word abstract. Papers may be submitted for either oral presentation or for a poster presentation (including computer displays/demonstrations). Authors must clearly designate a preference for oral or other type of presentation. In addition, authors should indicate the format of visual aids they plan to use. Abstracts should be mailed **by January 10, 1996** to:

Technical Program Chair
Pecora 13 Symposium
U.S. Geological Survey
EROS Data Center
Sioux Falls, SD 57198
Telephone: (605) 594-6040
FAX: (605) 594-6589
E-mail: pecora13@edcserver1.cr.usgs.gov

The Symposium Planning Committee will also entertain proposals for a limited number of special sessions and panel discussions. Prospective session organizers must provide a 300-500 word proposal outlining the session objectives, format, content, speakers and other participants (including full, names and addresses). Proposals for such sessions must be directed to the Committee no later than **December 20, 1995**.

Pecora 13 On-Line

The Pecora 13 Planning Committee has established *Pecora13 On-Line*, a WWW Home Page at **http://edcwww.cr.usgs.gov/pecora13.html**. You are invited to visit often for the latest news on the Symposium program, special events, travel to Sioux Falls, recreational and entertainment opportunities, local weather and related information.

For additional details contact:

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