

The William T. Pecora Memorial Symposium

PECORA 16

*“GLOBAL PRIORITIES
IN LAND REMOTE SENSING”*

October 23 - 27, 2005

Sioux Falls Convention Center

Sioux Falls, South Dakota

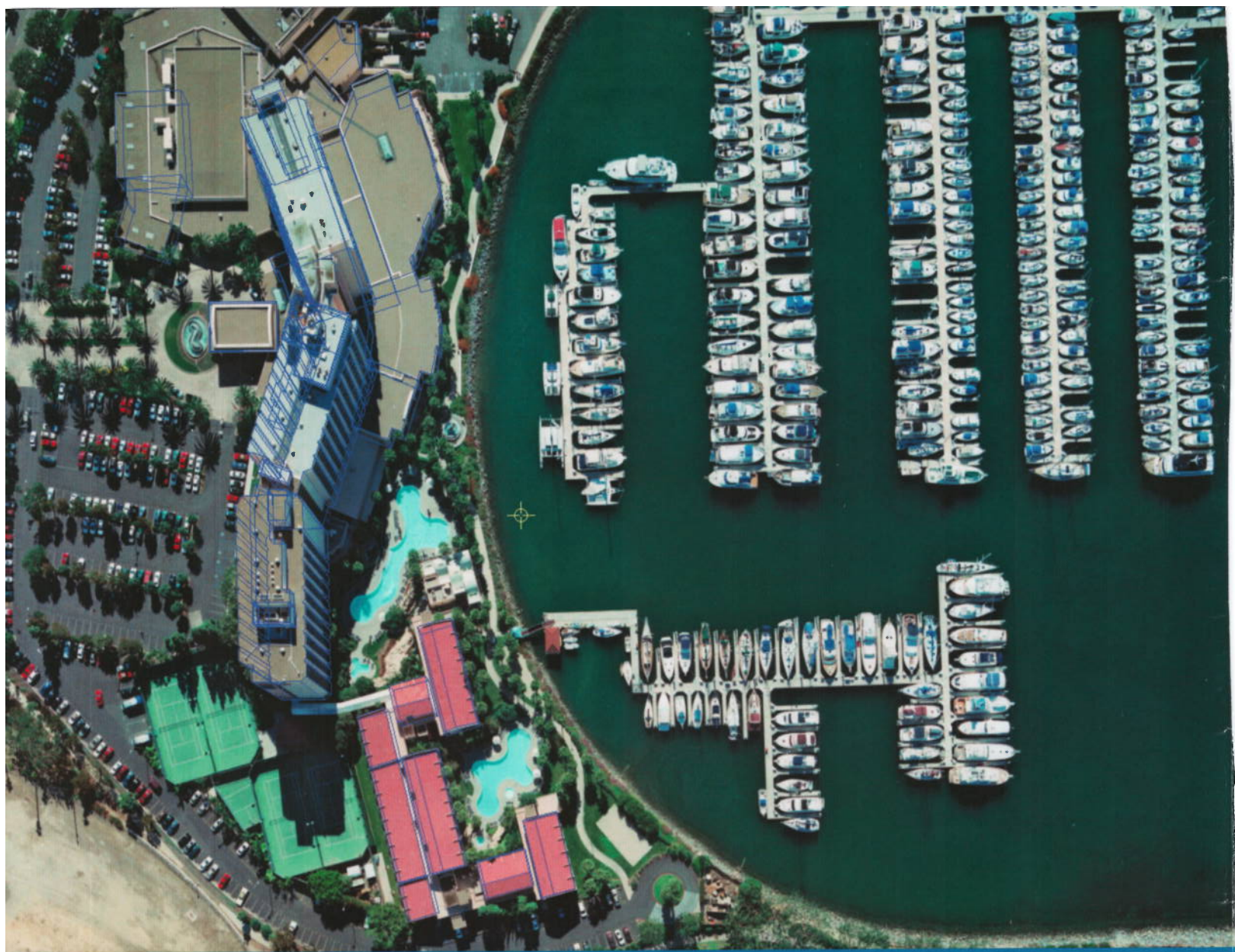
Preliminary Program

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<http://www.asprs.org/Pecora16>



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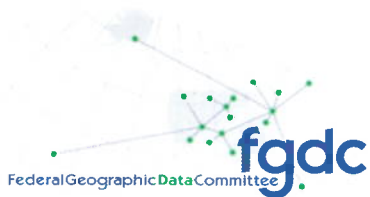
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PECORA 16
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Ivan DeLoatch
Lawrence R. Pettinger
James A. Sturdevant
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University of Nebraska – Lincoln

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University of New Hampshire

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James R. Plasker
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*American Society for Photogrammetry
and Remote Sensing*

* *Technical Program Committee*

Table of Contents

Sponsors1
Pecora 16 Steering Committee.....2
Invitation to Attend3
Symposium at a Glance4
EROS Open House & Pecora Award5
Workshops.....6
Volunteer Opportunities9
Pecora 16 Posters10
Keynote Address12
Concurrent Technical Sessions12
ASPRS Board of Directors
& Committee Meetings.....23
Hotel & Travel Information25
Registration Information26
Registration Form27
ASPRS Membership Application28



James A. Sturdevant

Invitation To Attend the 16th William T. Pecora Memorial Symposium

As Steering Committee Chairman of the 16th William T. Pecora Memorial Symposium, I am delighted to invite you to join us in Sioux Falls, South Dakota, October 23-27, 2005 for an exciting technical exchange. We will examine the full range of issues around the theme of "Global Priorities in Land Remote Sensing." The Symposium will continue the Pecora tradition of focusing on the applications of satellite and other land remote sensing data to study, monitor, and manage the Earth's land surface. Concurrent sessions will be held that address Land Use/Land Cover, Wildlife/Biodiversity, Water/Wetlands, Forestry, Environment, Data Archiving, Policy Issues and more. Dr. James Merchant and his technical program team have organized an outstanding program that will highlight technical accomplishments and policies of today and provide a forum for discussions of land remote sensing needs of tomorrow.

Kathie L. Olsen, Associate Director, Office of Science and Technology Policy, Executive Office of the President, is scheduled as the keynote speaker for our Symposium. Other Plenary sessions include: Advancing Scientific and Practical Applications of Remotely Sensed Data; Data Availability, Access and Preservation; Advancing the Technology of Remote Sensing; and Securing a Stable Future for Satellite Land Remote Sensing

The Symposium will also include an evening reception at the USGS National Center for Earth Resources Observation and Science (EROS) The EROS Center will host a lively social event and an open house for conference participants.

The combination of technical sessions, policy discussions, posters, workshops, and exhibits will make for a special opportunity for those involved in land remote sensing to share experiences, successes and ideas.

Please don't miss this opportunity to gather in the beautiful U.S. Upper Midwest in October.

A handwritten signature in black ink that reads "James A. Sturdevant". The signature is written in a cursive, flowing style.

James A. Sturdevant
Steering Committee Chair
Pecora 16 Symposium

Symposium-at-a-Glance

	7 am	8 am	9 am	10 am	11 am	noon	1 pm	2 pm	3 pm	4 pm	5 pm	6 pm	7 pm	8 pm	9 pm
Saturday, October 22 nd															
Symposium Registration															
ASPRS Executive Committee Meetings															
Sunday, October 23 rd															
Symposium Registration															
ASPRS Committee Meetings															
Workshops															
Monday, October 24 th															
Symposium Registration															
ASPRS Board Meeting															
Workshops															
Tuesday, October 25 th															
Symposium Registration															
Opening / Keynote Address / Plenary Session I															
Concurrent Technical Sessions															
Poster Session															
Exhibits															
Wednesday, October 26 th															
Symposium Registration															
Plenary Session II															
Plenary Session III															
ASPRS Sustaining Members Council															
Concurrent Technical Sessions															
Poster Session															
Exhibits															
Pecora Award & Open House at EROS															
Thursday, October 27 th															
Symposium Registration															
Poster Session															
Exhibits															
Concurrent Technical Sessions															
Plenary Session IV															

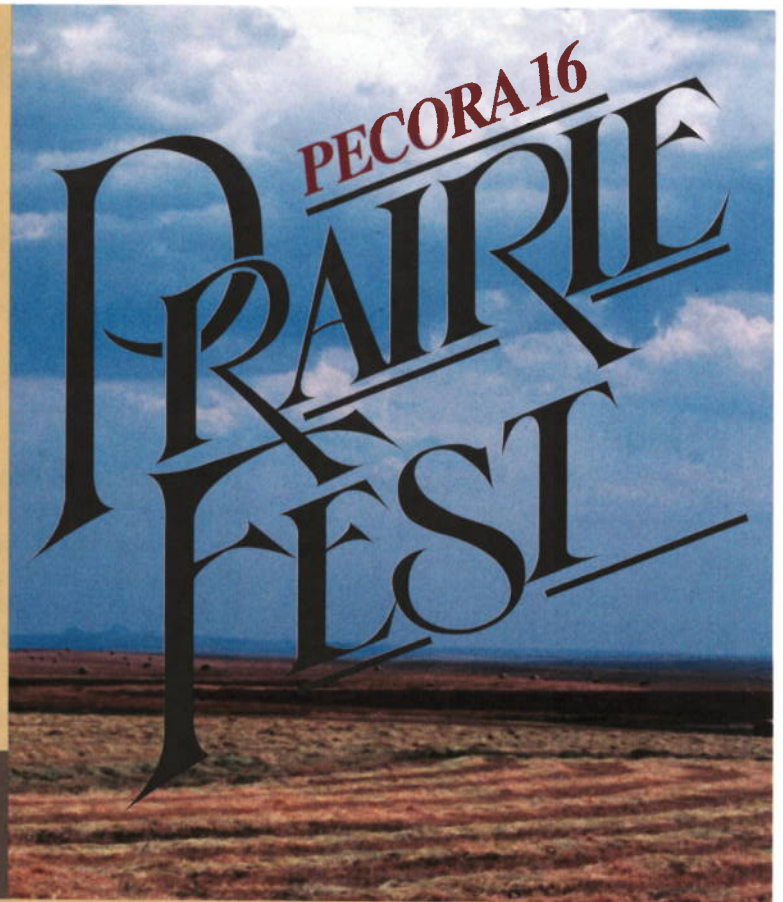
Symposium Registration Hours

Saturday, October 22 nd	5:00 pm - 7:00 pm
Sunday, October 23 rd	7:30 am - 4:30 pm
Monday, October 24 th	7:30 am - 4:30 pm
Tuesday, October 25 th	7:30 am - 4:30 pm
Wednesday, October 26 th	7:30 am - 4:30 pm
Thursday, October 27 th	7:30 am - 10:00 am

Pecora 16 Social Event at EROS

A Little Taste of Prairie Heritage

**National Center for EROS • Sioux Falls, SD
October 26, 2005 • 6:00 pm – 9:00 pm**



Prairie Fest Will Feature:

The Pecora Award Presentation

Tours of the EROS Campus

South Dakota Heritage Displays

Native American Historical Photography

Food and Drink from South Dakota

Live Music around the Bonfire



Complimentary transportation provided from Convention Center

ASPRS WORKSHOPS

Workshop registration is NOT included in the full Symposium registration fee. Workshops require separate registration and payment for each workshop. Please see the registration form on page 29. Availability is based on space.

SUNDAY, October 23

Workshop 1

Professional Airborne Digital Mapping Systems - An Overview

8:00 am - 5:00 pm

Dave Fuhr, *Airborne Data Systems*
Brian Huberty, *U.S. Fish & Wildlife Service*

Introductory Level Workshop

The primary objective of this tutorial is to review professional airborne digital mapping camera systems. We will discuss all advantages and disadvantages of these new, dynamic systems - technical, costs, feasibility, calibration and applications. Participants will leave with a better understanding of what it takes to map their projects by either contracting or acquiring airborne digital mapping camera systems.

- I. Introduction
- II. Geospatial Information - What and Where is the Information you Need?
 - A. Physical resolution
 - B. Spectral resolution
 - C. Positional accuracy
- III. History
- IV. Mapping and Multi-Spectral Airborne Cameras
- V. Platform UAV's and U2's
- VI. Camera Basics
 - A. Array sensors-CCD, CMOS
 - B. Linear/pushbroom sensors
 - C. Scanning mirror
 - D. Lenses
 - E. Filters/bandwidth
 - F. Electronic shutters
- VII. Camera Systems Design
 - A. Processing and storage systems
 - B. Aircraft power supply
 - C. Navigation GPS/IMU
 - D. Real-time data links
- VIII. Applications
- IX. References
- X. Future

Workshop 2

Assessing the Accuracy of GIS Information Created from Remotely Sensed Data: Principles and Practices

1:00 pm - 5:00 pm

Kass Green, *President, Alta Vista*
Russell G. Congalton, *University of New Hampshire*

Intermediate Level Workshop

In order to maximize the benefits of this course, participants should have previous experience with GIS and remotely sensed data. In addition, a good understanding of statistical principles is also strongly suggested.

This course focuses on the principles, techniques, and practical aspects of assessing the accuracy of GIS information derived from remotely sensed data. Participants will receive instruction in how to design accuracy assessment procedures, allocate accuracy assessment samples, collect both field and photo reference data, and analyze accuracy assessment results. While spatial accuracy is addressed, the course primarily focuses on methods and analysis for thematic accuracy assessment. Examples of accuracy assessment case studies based on actual project data will be presented and discussed. Each participant in this course will come away with a solid understanding of accuracy assessment procedures for spatial data, and the knowledge to properly interpret the results of such procedures.

- I. Introduction
- II. Overview
 - A. Why do an accuracy assessment?
 - B. Historical review
 - C. The error matrix
- III. Sample Design
 - A. What are the map classes to be assessed?
 - B. What is the appropriate sample unit?
 - C. How many samples should be taken
 - D. How should the samples be chosen?
- IV. Data Collections Considerations
 - A. What should be the source of the reference data?

- B. How should the reference data be collected?
- C. When to collect data?
- D. Ensuring objectivity and consistency

- V. Basic Analysis Techniques
 - A. Types of analysis
 - B. Analysis techniques
- VI. Analysis of Differences in the Error Matrix

Workshop 3

Remote Sensing of Vegetation

1:00 pm - 5:00 pm

Charles Olson, *Professor Emeritus, University of Michigan*

Introductory Level Workshop

The goal of this workshop is to provide an examination of morphologic and physiologic factors affecting signals upwelling from vegetated areas and their influence on remotely sensed data in the visible, near-IR, middle-IR, thermal and microwave spectral bands, with emphasis on the spectral bands of camera systems and the ETM+ sensor.

- I. Review of the Energy Flow Profile for remote sensing systems
 - A. Energy sources
 - B. Atmospheric transmission effects
 - C. Terrain interactions
 1. reflectance from first surface
 2. reflectance from additional surfaces - multiple reflections (or volume reflection)
 - D. Sensor Response (spectral bands)
 1. passive systems
 2. active systems
- II. Reflectance and transmittance of plant foliage
 - A. Broadleaved plants
 - B. Grasses
 - C. Needled plants (conifers)
- III. Reflectance from additional surfaces
 - A. Multiple reflections within the canopy
 - B. Stem/branches
 - C. Understory vegetation
 - D. Litter and Soil
- IV. Morphologic Effects on Volume Reflectance

- A. Branch angle
 - 1. "normal"
 - 2. stress related
 - 3. diurnal changes
- B. Foliage density (LAI)
 - 1. seasonal changes
 - 2. stress effects
- V. Composite Spectral Signatures
 - A. Identifying components
 - B. Integrating data from the several components

MONDAY, October 24

Workshop 4

Preparing For ASPRS Certification

8:00 am - 5:00 pm

Professor Robert Burtch, *Ferris State University*

Intermediate Level Workshop

Assumes participants have subject knowledge and are serious about taking the Certification Exam.

The purpose of this workshop is to prepare individuals who are planning to sit for the ASPRS Certification exams as a Certified Photogrammetrist or Certified Mapping Scientist in either Remote Sensing or GIS. The workshop will begin by explaining the purpose and form of the exam. It will then begin to identify key topical areas that an applicant should be aware of prior to taking the exam. Topics will begin with a review of the basic concepts and sample questions to show how these topics will be tested for on the exam. Finally, the workshop will try to identify resources in which exam takers should be aware of and study from in their preparation for the examination.

- I. Purpose of the Exam
 - A. Role of the exam in the certification
 - A. Role of the exam in the certification process
 - B. Format of the exam
 - C. Topical areas covered on each of the three different exams
- II. Photogrammetry
 - A. Important principles
 - B. Review questions
 - C. Resources for further study
- III. Remote Sensing
 - A. Important principles
 - B. Review questions
 - C. Resources for further study
- IV. Geographic Information Systems
 - A. Important principles
 - B. Review questions
 - C. Resources for further study
- V. Other Topical Areas of Importance in Preparation for the Exam

JOB FAIR

Calling all
Employers
looking for New
Staffers and Job
Seekers looking
for excellent
opportunities

An expanded Job Fair will be a part of this Symposium. An interview room will be available on Wednesday, October 26 and Thursday, October 27 for private discussions with prospective employees. Please contact Anna Marie Kinerney at ASPRS Headquarters: akinerney@asprs.org to schedule a time slot. Additionally, boards will be provided in the Exhibit Hall for posting of resumes and job openings. Please bring multiple copies of all postings.

Continuing Education Credits (CEUs)

ASPRS, in conjunction with the University of Maryland, College Park, is pleased to offer workshop attendees the opportunity to earn Continuing Education Credits (CEUs). All attendees are eligible for CEUs if they attend the above noted workshops, register for CEUs and pay the processing fee of \$25. For each workshop attended, one CEU for every 10 hours of eligible sessions attended is awarded to CEU registrants. (Full day workshops are 8 hours and receive 0.8 CEUs. Half day workshops are 4 hours and receive 0.4 CEUs). Registration forms will be distributed during the workshops.

CEU participants will receive a certificate of completion awarded by the University of Maryland, College Park, approximately one month after the Symposium.

Please note: CEUs are awarded to workshop attendees only. Tutorials, General & Technical Sessions, Poster Sessions, or any other scheduled special event at this Symposium are not eligible for CEUs.

Workshop 5

Image Classification Techniques for the Development of Accurate, Detailed, Quantitative Land Cover Data

8:00 am - 5:00 pm

Kenneth A. Stumpf and John Koltun,
Geographic Resource Solutions

Introductory Level Workshop

Attendees should be acquainted with the basic concepts of image classification and GIS. Attendees should be interested in learning more about how to use classification techniques in different ways to generate detailed, quantitative, and accurate results. Those considering image classification efforts will find the workshop informative and gain knowledge about useful alternative strategies. Participants actively involved in image classification projects will find the workshop challenging and useful in identifying and discussing problems that may be affecting their ongoing projects.

This workshop is designed as a workflow that takes participants through the different stages of a land cover mapping (data development) project while identifying problems, issues, and concerns and comparing and contrasting traditional and alternative techniques. The workshop is built around the four major parts of an Image Classification Project - Data Acquisition and Preparation, Image Classification, Pixel to Polygon Conversion, and Accuracy Assessment. The workshop wraps up with a comprehensive summary followed by final questions and answers.

I. Introduction

- A. Traditional image classification, output, and alternatives
 1. categorical map data
 2. quantitative map data
- B. An alternative classification methodology
- C. Comparison of classification data products

II. An Alternative Land Cover Mapping Approach

- A. Data acquisition and preparation
 1. procurement considerations
 2. illumination normalization
 3. training site selection
 4. quantitative "ground-truth"
- field data collection

- B. Image classification
 1. training set development
 2. classification
 - a) supervised
 - b) unsupervised
- C. Rule-based pixel aggregation to polygons
 1. mathematical filtering
 2. rule-based aggregation
- D. Accuracy assessment
 1. error matrices
 2. sources of bias

III. Summary

- A. The land cover mapping strategy
- B. Questions

Workshop 6

Identifying and Mapping Land Cover and Land Use Change Over Time

8:00 am - noon

Kass Green, *President, Alta Vista*

Introductory Level Workshop

Assumes that the participants have some experience with land cover mapping or are about to begin using these techniques

The purpose of this course is to introduce students to the concepts and techniques of change detection. Two primary questions are answered:

- How should change in land cover and land use be characterized?
- What types of GIS and remote sensing procedures can be used to locate, identify, measure, and incorporate change into land cover and land use applications?

The Workshop is organized as follows:

- I. Introduction
 - A. Definition of change detection
 - B. Discussion of the different goals of change detection
- II. Types of Change Detection Procedures Commonly Used
 - A. Tabular comparisons
 - B. Map to map comparisons
 - C. Multi-temporal image analysis
- III. Manual and Automated Methods for Change Detection
 - A. Single date analysis
 - B. Multiple date analysis
 1. image differencing
 2. unsupervised classification of multi-temporal imagery

3. Principal components analysis
- C. Map to image analysis
- IV. Requirements of Change Detection Projects
 - A. Specifying the type of change to be detected
 - B. Choosing the source data
 - C. Controlling all non-change variation

Each section of the workshop will be exemplified with real world case studies and real time demonstrations of change detection techniques.

**SAVE THE DATE!
& SUBMIT AN
ABSTRACT**

**ASPRS 2006
Annual Conference**

**"Prospecting for
Geospatial Information
Integration"**

**May 1-5, 2006
Reno, Nevada**

ASPRS has extended the deadline for submission of abstracts for the ASPRS 2006 Annual Conference "Prospecting for Geospatial Information Integration" to:
Monday, August 15, 2005.

See www.asprs.org/Reno2006 for details



Volunteer Opportunities

Complimentary Registration

If you are a student at an accredited college or university and would like a complimentary registration to The William T. Pecora 16th Memorial Symposium, consider serving as a volunteer. You only need to work 15 hours during the five days of the conference to receive a complimentary registration.

Please complete and fax this form, including three choices for assignments each day in order of preference ("1" being first), to the attention of either:

Mary O'Neill
 Engineering Resource Center
 Box 2220, Harding Hall
 (or 9th Street and 13th Avenue
 if using delivery service)
 South Dakota State University
 Brookings, SD 57007
 (605) 688-5597 (phone)
 (605) 688-5880 (fax)
 mary.oneill@sdstate.edu

OR

Karisa Vlasek
 Univ. of NE at Omaha
 AH 422, 6001 Dodge Street
 Omaha, NE 68182
 (402) 554-2042 (phone)
 (402) 554-2695 (fax)
 kvlasek@mail.unomaha.edu

Assignments will be made on a first come basis and cannot be guaranteed.

Name _____
 Mailing Address _____
 City/State/Zip _____
 Daytime Phone _____
 E-Mail Address _____
 College/University _____
 Emergency Contact w/phone _____

Please make three choices in order of preference for each day you are attending ("1" being your first choice)

Sunday, October 23

	Preference	Hours Available
ASPRS Registration Desk 7:00 am – 4:30 pm	_____	_____
ASPRS Staff Office 7:00 am – 5:30 pm	_____	_____
Workshops 7:30 am – 5:00 pm	_____	_____
Floater (assist where needed) 7:00 am – 3:00 pm	_____	_____

Monday, October 24

ASPRS Registration Desk 7:00 am – 4:30 pm	_____	_____
ASPRS Staff Office 7:00 am – 5:30 pm	_____	_____
Workshops 7:30 am – 5:00 pm	_____	_____
ASPRS Booth setup 12 noon – 4:00 pm	_____	_____
Floater (assist where needed) 7:00 am – 3:00 pm	_____	_____

Tuesday, October 25

ASPRS Registration Desk 7:00 am – 4:30 pm	_____	_____
ASPRS Staff Office 7:00 am – 5:30 pm	_____	_____
Keynote Address 7:45 am – 10:00 am	_____	_____
Poster Sessions 7:30 am – 11:00 am	_____	_____
Technical Sessions 10:30 am – 4:30 pm	_____	_____
Exhibit Hall Doors 10:00 am – 7:00 pm	_____	_____
Exhibit Hall Box Lunch 11:45 am – 12:45 pm	_____	_____
Floater (assist where needed) 7:00 am – 7:00 pm	_____	_____

Wednesday, October 26

ASPRS Registration Desk 7:00 am – 3:30 pm	_____	_____
ASPRS Staff Office 7:00 am – 4:00 pm	_____	_____
Plenary Session 7:45 am – 10:00 am	_____	_____
Technical Sessions 10:30 am – 4:30 pm	_____	_____
Exhibit Hall Doors 10:00 am – 7:00 pm	_____	_____
Exhibit Hall Box Lunch 11:45 am – 12:45 pm	_____	_____
Floater (assist where needed) 7:00 am – 5:00 pm	_____	_____

Thursday, October 27

ASPRS Staff Office 7:30 am – 12 noon	_____	_____
ASPRS Exhibit Booth 11:00 am – 1:00 pm	_____	_____
Technical Sessions 7:45 am – 9:30 am	_____	_____
Exhibit Hall Doors 9:00 am – 12 noon	_____	_____
Closing Session 10:00 am – 12 noon	_____	_____
Floater (assist where needed) 7:00 am – 4:00 pm	_____	_____

PECORA 16 POSTERS

Tuesday 10:00 am - 7:00 pm, Wednesday 8:00 am - 5:00 pm, Thursday 8:00 am - 10:30 am

Presenters will be available to discuss their posters on Tuesday from 5:30 pm - 7:00 pm.

A Comparative Evaluation of ISODATA and Spectral Angle Mapping for the Detection of Saltcedar Using Airborne Hyperspectral Imagery

Sunil Narumalani, *University of Nebraska - Lincoln*

Deepak Mishra, Jared Burkholder, Paul Merani, and Gary Wilson

A Low Cost Architecture for Improving Access and Archiving

Jeff Bradley, *SAIC, Under Contract to the USGS National Center for EROS*

Barry Eberhard and Jim VerMeer

Access to Metadata Catalogs Replicated from LP DAAC

Calli Jenkerson, *SAIC, Under Contract to the USGS National Center for EROS*

Advanced Land Imager Assessment System (ALIAS)

Jim Nelson, *SAIC, Under Contract to the USGS National Center for EROS*

Jon Christopherson and Doug Hollaren

Application of Interferometric Synthetic Aperture Radar (InSAR) to Study Ground-Surface Deformation Above Aquifer

Zhong Lu, *USGS National Center for EROS*

Russ Rykhus and Ohig Kwoun

Assessing Alpine Glacial Lake Conditions in the Hindu Kush and Himalaya Using ASTER

Michael Bishop, *University of Nebraska - Omaha*

David Kovar, John Shroder, Jeffrey Olsenholler and Jeffrey Kargel

Assessing Land Surface Dynamics Across the Nebraska Sand Hills Using Advanced Microwave Scanning Radiometer (AMSR-E) Data Products

Marcela Doubková, *University of Nebraska - Lincoln*

Geoffrey Henebry

Assessing Short-term AVHRR-NDVI Change Using an Expert Classifier

Roberto Bonifaz, *University of Nebraska - Lincoln*

James Merchant, David Stensrud, and Christopher Godfrey

Assessment of Oak Wilt Incidence and Distribution Over Time Using Color Infrared Aerial Photography and Logistic Regression

Kathleen Ward, *USDA Forest Service, North Central Research Station*

Susan Burks

Burned Land Mapping from Remote Sensing Imagery

Claudio Conese, *CNR IBIMET*

Bonora Laura

A Comparative Analysis of Land Use and Impervious Surfaces Between Brownsville and Matamoros

Jean Parcher, *U.S. Geological Survey*

Comparing ASTER and Landsat-7 ETM+ Data for Seasonal Wetland Mapping in the Lower Kentucky Lake Basin

Qiaofeng (Robin) Zhang, *Murray State University*

Detecting Bare Earth and Vegetation Change Using Pre- and Post-Hayman Fire Lidar at Cheesman Lake, CO

Jason Stoker, *SAIC, Under Contract to the USGS National Center for EROS*

Elevation Derivatives for National Applications

Sandra Franken, *SAIC, Under Contract to the USGS National Center for EROS*

Evaluating MODIS Data to Estimate Irrigated Crop Production in Afghanistan Using a Simplified Energy Balance Model

Gabriel Senay, *Under Contract to the USGS National Center for EROS*

Mike Budde, Jim Verdin, Jim Rowland and Christine Adams

Evaluation of Fine-Resolution Satellite Imagery on Supervised Classification at Different Spatial and Radiometric Resolutions in Urban Areas

Pravara Thanapura, *Engineering Resource Center, South Dakota State University*

Suzette Burckhard and Dwight Galster

From Tokyo To Tahoe: The Making Of Aster Science

Bhaskar Ramachandran, *SAIC, Under Contract to the USGS National Center for EROS*

Generating Individual Film Frame Records From Photo Indices

Kent Lethcoe, *SAIC, Under Contract to the USGS National Center for EROS*

Roger Sneve

High Resolution Ocean Color Remote Sensing of Benthic Habitats: A Case Study at the Roatan Island, Honduras

Deepak Mishra, *University of Nebraska - Lincoln*

Sunil Narumalani, Donald Rundquist, and Merlin Lawson

Hybrid Image Classification Using a Shared Memory Parallel Algorithm

Rhonda, D. Phillips, *Department of Computer Science, Virginia Polytechnic Institute and State*

Layen T. Watson and Randolph H. Wynne

Improved DEM Estimation of the Sulzberger Ice Shelf Region, West Antarctica Using SAR Interferometry and ICESat Laser Altimetry

Sangho Baek, *SAIC, Under Contract to the USGS National Center for EROS*

Oh-Ig Kwoun, Alexander Braun, Hyongki Lee, Zhong Lu, and C.K. Shum

InSAR and The Hector Mine Earthquake: Crustal Deformation vs Atmospheric Anomaly

Jim Calzia, *U.S. Geological Survey*

Investigating Leaf Area and Urban Temperature with ASTER

Ryan Jensen, *Indiana State University*

Perry Hardin and Mark Jackson

Lake Watersheds as Hydro-ecological Basis for the Classification of Nebraska Reservoirs

Henry N. N. Bulley, *University of Nebraska - Lincoln*

James W. Merchant, David B. Marx, John C. Holz and Aris Holz

Land Management Applications of the EROS Digital Photo Archive

Randy McKinley, *SAIC, Under Contract to the USGS National Center for EROS*

Landsat Data Products from EROS: Recent Updates and Future Enhancements

Rynn Lamb, SAIC, *Under Contract to the USGS National Center for EROS*

Linda Jonescheit

Landsat-Based Fire Atlases for Land Management

Donald Ohlen, SAIC, *Under Contract to the USGS National Center for EROS*

Steve M. Howard and Zhi-Liang Zhu

Level 1 Data Product Availability from Earth Observing-1 (EO-1)

Jeffrey Danielson, SAIC, *Under Contract to the USGS National Center for EROS*

Rynn Lamb, Todd Taylor, Pam Van Zee, and Jared Shaw

Mapping Percent Vegetation Cover for Shrublands and Grasslands in the Southwestern United States using In-situ Reflectance Spectra and Satellite Imagery

Brian Tolk, SAIC, *Under Contract to the USGS National Center for EROS*

Kurtiz Nelson and Xeuxia Chen

Mapping the Vertical Component of Landscape Change

Dean Gesch, *USGS National Center for EROS*

Minnesota Forest Change

William Befort, *Minnesota Department of Natural Resources*

Dennis Kepler

Next Generation Historical Film Access and Data Delivery

Max Borchardt, SAIC, *Under Contract to the USGS National Center for EROS*

Ryan Longhenry, Tim Smith, Mike North, and Ken Boettcher

Object-oriented Classification of High-resolution Coastal Wetland Imagery

Jiyul Chang, *South Dakota State University*

Carol Johnston

Optical and Radar Imagery for Estimating Soil Conservation

Anne Smith, *Agriculture and Agri-Food Canada*

H. McNairn, E. Huffman, I. Jarvis, A. Pacheco, N. Daub, and E. Gauthier

Regional Groundwater Recharge Assessment using Remote Sensing Driven Models

Richard Fernandes, *Natural Resources Canada, Canada Centre for Remote Sensing*

Rasim Latifovic, Shusen Wang, Alex Chicagov, Gunnar Fedosejevs, Khurshid Shahid, and Yinsuo Wang

Remapping the Geology and Tectonics of Afghanistan using Landsat ETM+ and ASTER Imagery

Philip Davis, *U.S. Geological Survey*

Robert Bohannon

Remote Detection of a Saltcedar Infestation near Lake Sakakawea, North Dakota, using Airborne Hyperspectral Imagery

Bradley Rundquist, *University of North Dakota*

David Brookman and Paige Baker

Remote Sensing Derived Urban/Rural Development Mapping for Local and Regional Planning

Kevin Dobbs, *University of Kansas*

Paul Liechti

Remotely Sensed Data on the Study of the Wide Area of a Lake

Maria Lazaridou, *Aristotle University of Thessaloniki, Greece*

Patmios Evangelos

Riparian and Wetland Mapping using Multiple Sources of Digital Data, Decision Tree Models, and Valley Bottom Delineation

Jay Kost, SAIC, *Under Contract to the USGS National Center for EROS*

Greg Dillon

SAR Polarimetric Band Analysis, Statistics, and Signal Scattering Parameters for Terrain Characterization

Edmundo Simental, *U.S. Army Engineer Research and Development Center*

Verner Guthrie and Bruce Blundell

Satellite Images Intra-pixel Classification: Solving Under-determined Models in Linear Unmixing; Mix-unmix Classifier

Thomas Ngigi, *Center for Environmental Remote Sensing, Chiba University*

Tateishi Ryutaro

Spatial Assessment of Two Satellite-based Land-cover Datasets over the Continental U.S.

Pei-yu Chen, *Blackland Research and Extension Center, Texas Agricultural Experiment Station*

Mauro Di Luzio and Jeffery Arnold

Study of the November 2002 M7.9 Denali Fault Earthquake with Satellite Radar

Zhong Lu, SAIC, *Under Contract to the USGS National Center for EROS*

Tim Wright and Chuck Wicks

Management of LP DAAC Data

Karla Sprenger, SAIC, *Under Contract to the USGS National Center for EROS*

The EROS Data Capture and Processing Facility Captures and Processes the World's Data with Exceptional Reliability

Timothy Flahaven, SGT, *Under Contract to the USGS National Center for EROS*

William McElroy, Jayson Holter, and Keith Alberts

The use of a Satellite Image Archive to Assess the Impact of Grazing Management on Inaccessible Public Lands

Robert Washington-Allen, *Utah State University*

Douglas R. Ramsey, Neil West

Uses of Remote Sensing, GPS and GIS for Lagoon Marine Resource Management in the Solomon Islands

Matthew Lauer, *University of California*

USGS Topographic Science Websites and Viewers: Communicating Scientific Data

Sandra Franken, SAIC, *Under Contract to the USGS National Center for EROS*

Using Changes in Spatial Reflectance Patterns to Target Tropical Forest Stands for Field Surveys of Indicators of Ecological Sustainability

Naikoa Aguilar-Amuchastegui, *University of Nebraska - Lincoln*

Geoffrey Henebry

Using Remotely Sensed Vegetation Condition Index to Rate Drought Insurance for Smallholder Farmers in Zimbabwe

Ephias Makaudze, *Ohio State University*

Mario Miranda, and Brent Sohngen

PECORA 16 SYMPOSIUM TECHNICAL SESSIONS & SCHEDULE

Tuesday, October 25, 2005

Registration

7:30 am - 4:30 pm

Introductory Remarks & Welcome

8:00 am - 8:15 am

Introductory Remarks

James Sturdevant, Chair, Pecora 16 Symposium, *U.S. Geological Survey (USGS) National Center for Earth Resources Observation and Science (EROS)*

Welcome to Sioux Falls and to the Pecora 16 Symposium

R.J. Thompson, *Chief, USGS National Center for EROS*

Keynote Address: Federal Science and Technology Policy for Land Remote Sensing: What's New?

The Honorable Kathie L. Olsen, *Associate Director, White House Office of Science and Technology Policy*

8:15 am - 9:10 am

Discussion will focus on the role of the Federal government and, specifically, the Office of Science & Technology Policy (OSTP) in developing science and technology policy as it relates to land remote sensing. One of OSTP's major roles is to build strong global partnerships and domestic partnerships with government, industry, and academia to obtain advice, facilitate collaborations, and evaluate new opportunities. This allows us to maximize the benefit from our Federal investments in science and technology. OSTP also leads the interagency effort to develop science and technology policies and budgets, and oversees the coordination of interagency research and development activities. Critical to this effort is the National Science and Technology Council (NSTC). NSTC activities, led out of OSTP, are the principal means for government agencies to develop joint priorities and coordinate interagency activities in science and technology. Several NSTC activities are ongoing that contribute to developing Federal research and development priorities for land remote sensing. In particular, two high priority interagency activities will be discussed: 1) the development of a strategic plan for water availability and quality research and development, and 2) the U.S. interagency support for the intergovernmental Global Earth Observation System of Systems (GEOSS).



Kathie L. Olsen is the Associate Director for Science for the Office of Science and Technology Policy in the Executive Office of the President. Her responsibilities include advising the President on science and technology, and providing leadership and coordination for our government's role in the national science and technology enterprise. Prior to her current position, she was Chief Scientist at the National Aeronautics and Space Administration (May 1999-April 2002) and the Acting Associate Administrator for the new Enterprise in Biological and Physical Research (July 2000-March 2002). Olsen also served as the Senior Staff Associate for the Science and Technology Centers in the National Science Foundation Office of Integrative Activities. A graduate of Chatham College, Olsen earned her PhD in Neuroscience at the University of California, Irvine. She has received awards from the National Science Foundation Director's Superior Accomplishment; Barry M. Goldwater Educator Award from the American Institute of Aeronautics and Astronautics-National Capital Section; the Barnard Medal of Distinction, and the NASA's Outstanding Leadership Medal.

10:00 am - 7:00 pm

Exhibit Hall Open

10:00 am - 7:00 pm

Posters on display

10:00 am - 10:30 am

Break - Beverages available in Exhibit Hall

10:30 am - 12:00 noon

Concurrent Technical Sessions I

Land Use and Land Cover Mapping

Chair: Thomas Loveland, *USGS National Center for EROS*

Applications of the 2001 National Land Cover Database

Collin Homer, *SAIC, Under Contract to the USGS National Center for EROS*

Process and Challenges of Implementing the Multi-Resolution Land Characteristics 2001 Database for the Yukon Flats, Alaska

Damion Kintz, *SAIC, Under Contract to the USGS National Center for EROS*

The Future Face of Land Cover Mapping: Merging Medium and High Resolution Imagery to Produce Large Area Land Cover Maps

Michael Palmer, *Space Imaging, Inc.*

Andrew Brenner

Land Cover Mapping for a Five State Region: A Retrospective of the SWReGAP Project

John Lowry, *Utah State University*

Douglas Ramsey, Lisa Langs and Jessica Kirby

Plenary Session I: Advancing Scientific and Practical Applications of Remotely-Sensed Data

9:10 am - 10:00 am

Organized by James Irons, *NASA Goddard Space Flight Center*,
James Merchant, *University of Nebraska- Lincoln* and Paul Greenfield, *USDA Forest Service*

Spaceborne Land Remote Sensing Before, During, and After the Present EOS Era

Vincent V. Salomonson, *NASA Goddard Space Flight Center (Emeritus)*

The launch of TIROS-I in 1960 when viewed sparked a remarkable interest and growth in the use of spaceborne observations for gaining better understanding of processes and trends occurring in the Earth-atmosphere system. The launch and operation of Landsat-1 (then called Earth Resources Technology Satellite/ERTS-1) in 1972, and follow-on missions extending to Landsat-7, has had a profound impact on land science and related resource management activities around the world. More recently the NASA Earth Observing System (EOS) is taking the use of spaceborne observations for studying land, ocean, and atmospheric phenomena and related applications to a new plateau of accomplishment. The EOS Terra and Aqua missions are exemplary in that regard as evidenced by the advancing and growing use and application of observations from the ASTER, MODIS, MISR, AMSR, et al. instruments for land science in particular as well as other disciplines. The future following after the EOS series and other satellite missions now operating world-wide also looks bright, but not without very significant challenges associated with limited or declining budgets concurrently accompanied by increasing needs to better understand and predict the effects of climate change and anthropogenic activities on the sustainability and maintenance of the resources of the earth. It is clear that careful and strategic development of advanced technologies to provide better observations must be undertaken in the face of fiscal and related political constraints. Some of the general possibilities include, for example, increased use of hyperspectral, laser/lidar, and active microwave technologies along with more aggressive fusion of the observations from such instruments. Related, but equally challenging, steps need to be taken to provide easily accessed and processed, content-rich observations and results into the proper hands so that quantitatively-based, rigorous and well-founded conclusions can be made subsequently by decision-makers world-wide.



Vincent V. Salomonson is a Senior Scientist and Director of Earth Sciences (Emeritus) in the Earth Sciences Directorate at the Goddard Space Flight Center, NASA. He also serves as the Science Team Leader for the NASA Earth Observing System (EOS) facility called the Moderate Resolution Imaging Spectrometer (MODIS). Prior to being Senior Scientist he was the Director of the Earth Sciences Directorate at Goddard from 1990-2000, as the Deputy Director for Earth Sciences in the Space and Earth Sciences Directorate (1988-1990), Chief of the Laboratory for Terrestrial Physics (1980-1988), Project Scientist for Landsat 4 and 5 (1977-1989), the Head of the Hydrospheric Sciences Branch (1973-1980), and as a research meteorologist (1968-1973). Salomonson has served the IEEE Geoscience and Remote Sensing Society (GRS-S) and the ASPRS in several capacities, including as past president of ASPRS. He holds BS degrees in Agricultural Engineering and Meteorology from Colorado State University and the University of Utah respectively, an MS in Agricultural Engineering from Cornell University, and a PhD in Atmospheric Science from Colorado State University. He received the William T. Pecora award in 1987.

Invasive Plants

Chair: Bradley Rundquist, *University of North Dakota*

Using MODIS Data for Cheatgrass (Bromus tectorum) Identification and Mapping

Christopher McGinty, *Utah State University*

Douglas Ramsey and John Lowry

Detection and Monitoring of Invasive Plants using Low-cost UAV: A Case Study using Squarrose Knapweed

Mark Jackson, *Brigham Young University*

Perry Hardin

Remote Sensing of Phragmites Australis with Hyperion Imagery

Bruce Pengra, *South Dakota State University*

Using a Self-Built Hyperspectral Library for Identifying and Mapping Purple Loosestrife

Guoxiang Liu, *Clemson University*

Jeff Allen, Kang Lu, Jeff Parkey,
and Donald Van Blaricom

Photogrammetry and Image Analysis

Chair: Jie Shan, *Purdue University*

A Statistical Approach to Multiresolution Image Fusion

Oguz Gungor, *Purdue University*

Jie Shan

Resolving Parameter Dependencies in Geometric Sensor Models

In-seong Jeong, *Purdue University*

James Bethel

Performing Geometric Assessment of Remote Sensed Data Sets

Michael Choate, *SAIC, Under Contract to the USGS National Center for EROS*

Michael Coan, Gregory Stensaas
and Jon Christopherson

Wavelet Analysis of Images for Stereo Matching

Hongwei Zhu, *University of Wisconsin-Madison*

Paul Miller, Frank Scarpace, and K.G. Karthikeyan

Tuesday, October 25, 2005

Disaster Response and Mitigation

Chair: Jesslyn Brown, SAIC, Under Contract to the USGS National Center for EROS

The Role of Remote Sensing in Improving Drought Decision Support

Jesslyn Brown, SAIC, Under Contract to the USGS National Center for EROS

Tsegaye Tadesse and Michael Hayes

USGS EROS Tsunami Response

Brenda Jones, SAIC, Under Contract to the USGS National Center for EROS

Remote Sensing of Eco-climatic Conditions Associated with the 2004 Desert Locust Outbreak in West Africa

Assaf Anyamba, Goddard Earth Sciences and Technology Center, UMBC, NASA Goddard Space Flight Center

Keith Crossman, Compton Tucker, Jennifer Small and Tim Love

ASTER Data Applications in Times of Crisis

Kenneth Duda, SAIC, Under Contract to the USGS National Center for EROS

Remote Sensing Policy I

Chair: Bruce Quirk, USGS National Center for EROS

Future of U.S. Commercial Remote Sensing from Space

Raymond Heidner, The Aerospace Corporation
Joe Straus

Value Pricing for Civilian Agency Imagery Portfolio Purchases

Frank Wong, The Aerospace Corporation

The Dynamic Market for Remotely Sensed Data

Kass Green, The Alta Vista Company

USGS Product Characterization Program

Philip Rufe, USGS

Education and Knowledge Transfer

Chair: Milda Vaitkus, University of Nebraska-Lincoln

Bringing Land Remote Sensing to the Public and the Classroom

Jeannie Allen, NASA Goddard Space Flight Center

The USGS AmericaView Program: Facilitating the Science and Use of Remote Sensing through a Joint Federal-State Education and Training Initiative

Theresa Crooks, AmericaView, Inc.

Buck Sharpton

SDView: Remote Sensing Partnerships, Infrastructure and Data for South Dakota

Mary O'Neill, South Dakota State University

Kevin Dalsted, Pravara Thanpura, David Clay, Sung Shin, Cheryl Reese, Jae H. Lee, Jungyeon Kim and Hee J. Jeon

GeoWall: Low-cost 3-Dimensional Display Technology for Land Remote Sensing

Brian Davis, SAIC, Under Contract to the USGS National Center for EROS

Paul Morin

Lidar

Chair: Jason Stoker, SAIC, Under Contract to the USGS National Center for EROS

Lidar Surface Extraction Performance vs. Laser Pulse Energy

Eva Paska, The Ohio State University

Charles Toth

Detection and Analysis of Characteristic Detail in Lidar-Derived Data Surfaces

Eric Kolstad, Mississippi State University

Charles O'Hara

Traffic Flow Estimate from LiDAR data: Operational Experiences

Shahram Moafipoor, The Ohio State University

Charles K. Toth and Dorota A. Grejner-Brzezinska

12:00 noon - 1:30 pm

Lunch in the Exhibit Hall

Included with full registration - ticket required

1:30 pm - 3:00 pm

Concurrent Technical Sessions II

U.S. Land Cover Change

Chair: Brian Wardlow, University of Kansas

Monitoring United States Land Use and Land Cover Change with Historical Landsat Data

Thomas Loveland, USGS National Center for EROS

Terry Sohl, Kristi Sayler, Mark Drummond, Roger Auch, and Rachel Kurtz

National Land Cover Database Change Product

Michael Coan, SAIC, Under Contract to the USGS National Center for EROS

Collin Homer

Oregon Forestland Change Mapping

Stephen Lennartz, Space Imaging, Inc.

Maria Fiorella

Projecting Land Use Change Through 2020 Using Theoretical, Statistical, and Deterministic Modeling Techniques

Terry Sohl, SAIC, Under Contract to the USGS National Center for EROS

Kristi Sayler and Thomas Loveland

Forestry I

Chair: James Vogelmann, SAIC, Under Contract to the USGS National Center for EROS

Using Multiple Satellite Sensors to Compare Temporal Longleaf Pine Leaf Area

Ryan Jensen, Indiana State University

Perry Hardin and Mark Jackson

Remote Sensing of Mangrove Forest Composition, Distribution, and Response to Environmental Stressors

Le Wang, *Texas State University - San Marcos*
Wayne Sousa

A Spectral Library of the Native Forests of New Zealand

Mike Tuohy, *Massey University, New Zealand*
Andreas Hueni

Expert Classification Technique for Mapping Teak Plantation Areas in Thailand

Siripun Taweasuk, *Thammasat University, Thailand*
Prasong Thammapala

Image Processing

Chair: Dennis Helder, *South Dakota State University*

Landsat 7 SLC-Off Gap-Filled Product Development

James Storey, *SAIC Technical Services, USGS National Center for EROS*

Pasquale Scaramuzza, Julia Barsi and Gail Schmidt

A First Approximation of Tasseled-Cap Values for the Advanced Land Imager

Michael Finn, *USGS*

Matthew Reed and E. Lynn Usery

Tasseled Cap Coefficients for the QuickBird-2 Sensor: Multiple Derivation Techniques and Comparison

Lance Yarbrough, *University of Mississippi*

Greg Easson and Joel Kuszmaul

Study on the Relative Radiometric Gain Correction over the Dynamic Range of all Reflective Channels of the Landsat 5 Thematic Mapper

Sriharsha Madhavan, *South Dakota State University*

Dennis Helder

Panel Discussion: Multi-Platform Sensing and Sensor Networks in the Face of Large Scale Natural Disasters: What could have our profession done to better prepare for the Tsunami disaster?

Sponsored by ISPRS WG I/3 - Multi-Platform Sensing and Sensor Networks

We, as humans, often wonder, what could we have done to lessen the enormity of the Tsunami disaster? And for us, as remote sensing professionals, the question becomes far more imposing, if not guilt inducing. Did we have the pieces, from a technological point of view, to precisely anticipate the time of the first wave to overcome the shores of these unassuming cities and villages?

The short answer is that available imaging systems alone can not provide the data required for an adequate early warning system for a disaster of this kind. But to combine traditional remote sensing with other systems, such as seismological detectors and ocean wave sensors, would certainly provide a far better early warning system. Such a system would possibly be adequate to avert the enormous humanitarian,

economic and environmental impact a similar disaster may bring about.

The premise for this panel session is that the integration of ground- and ocean-based sensors, with airborne and space-borne systems, can provide an enhanced capability in comprehensive monitoring, modeling, validation, and early warning. This panel will discuss the concept of Multi-Platform Sensing and Sensor Networks, the technological issues, operational aspects and potential funding sources.

Organizer and Chair: Raad Saleh, *Global Sensing Group*

Panelists:

Khaled S. Al-Damegh, *Astronomy and Geophysics Research Institute, Saudi Arabia*

Tarek Rashed, *University of Oklahoma*

José L. Colomer, *Institut Cartographic de Catalunya, Spain*

Brenda K. Jones, *SAIC, Under Contract to the USGS National Center for EROS*

Policy II

Panel Discussion: Commercial Remote Sensing Space Policy - 2 Years Later

The President authorized a new national policy on April 25, 2003 that establishes guidance and implementation actions for commercial remote sensing space capabilities. This goal of this policy is to advance and protect U.S. national security and foreign policy interests by maintaining the nation's leadership in remote sensing space activities, and by sustaining and enhancing the U.S. remote sensing industry. This panel will focus on various implementation challenges and achievements over the past 2 years to foster economic growth, contribute to environmental stewardship, and enable scientific and technological excellence.

Organizer and Chair: Tahara Moreno, *NOAA*

Panelists:

Jay Feuquay, *USGS*

Joanne Gabrynowicz, *University of Mississippi*

Michael Hales, *NOAA*

Kevin O'Connell, *Center for Intelligence Research and Analysis*

Matthew O'Connell, *ORBIMAGE*

Geology and Soils

Chair: Charles Trautwein, *USGS National Center for EROS*

Geologic Mapping through Linear Spectral Unmixing of MTI Imagery

Paul Pope, *Los Alamos National Laboratory*

Mary Greene

Soil Cohesion Analysis in the Tableland Coast in Northeast Region of Brazil through ASTER Images (VNIR and SWIR)

Rosangela Santos, *Universidade Estadual De Feira De Santana, Brazil*

José Alberto Quintanilha

Tuesday, October 25, 2005

Exploitation of ASTER Imagery in Mining-related Environmental Management

Stephane Chevrel, *BRGM*, France

Anne Bourguignon, Francis Cottard and Yann Itard

Investigating Environmental Problems in the Khorat Plateau, NE-Thailand

Friedrich Kuehn, *Federal Institute for Geosciences and Natural Resources (BGR)*, Germany

Namphon Khampilang, Sakda Khundee, Tippawan Onsongchan, Suree Teerarungsigul, Akkhapun Wannakomol, and Weerachat Wiwegwin

Sensors I

Chair: David Meyer, *SAIC*, Under Contract to the *USGS National Center for EROS*

Results of USGS Testing of Digital Aerial Systems: Products and Future Characterization Methods

Donald Moe, *SAIC*, Under Contract to the *USGS National Center for EROS*

Philip Rufe and Jon Christopherson

ALOS: Filling the Gap for Earth Observations

Donald Atwood, *Alaska Satellite Facility*

Scott Arko

An Inexpensive Unmanned Aerial Vehicle for Limited-Area Photography

Perry Hardin, *Brigham Young University*

Mark Jackson and Ryan Jensen

On-Orbit Generic Sensor Modeling and Modulation Transfer Function (MTF) Simulation

Taeyoung Choi, *South Dakota State University*

Dennis Helder

3:00 pm - 3:30 pm

Break - Beverages available in Exhibit Hall

3:30 pm - 5:00 pm

Concurrent Technical Sessions III

Land Use/Land Cover Assessment

Chair: Guoxiang Liu, *Clemson University*

Enhanced Land Cover Classification in a Tropical Kenya Landscape

T.J. Baldyga, *University of Wyoming*

S.N. Miller, K.L. Driese, R. Sivanpillai, and C. Maina-Gichaba

Tracking Environmental Change in Southern Senegal using High Resolution Satellite Imagery

Eric Wood, *SAIC*, Under Contract to the *USGS National Center for EROS*

Gray Tappan

National Land Use Change by Remote Sensing in China: A Five-year Survey

Yonghong Zhang, *Chinese Academy of Surveying and Mapping*, China

Jixian Zhang, Jicheng Zhao, Jin Ma, Yinxuan Cao, and Yan Long

Forestry II

Chair: Paul Greenfield, *USDA Forest Service*

Assessing Biomass and Forest Area Classifications from MODIS While Increasing the Number of Forest Inventory Data Panels

Dumitru Salajanu, *USDA Southern Research Station, Forest Inventory and Analysis*

Dennis Jacobs

Efficacy of Radarsat-1 Synthetic Aperture Radar Imagery for Improving Landsat Thematic Mapper-based Image Classification of Forest Cover Types

Mark Nelson, *USDA Forest Service, North Central Research Station*

Marvin Bauer and Kathy Ward

Classification and Forest Parameter Extraction of Patagonian Lenga Forests with ASTER and Landsat ETM+ Data

Sandra Eckert, *University of Zurich*, Switzerland

José Lencinas and Tobias Kellenberger

Forestry Coverage Multitemporal and Multispectral Study in Dolomiti Territory

Bruno Marcolongo, *C.N.R. - I.R.P.I.*, Italy

Alessandro Angerer

Water Resources I

Chair: Robert Vincent, *Bowling Green State University*

Mapping the Bacterial Content of Surface Waters with Landsat TM Data: Importance for Monitoring Global Surface Sources of Potable Water

Robert K. Vincent, *Bowling Green State University*

R. McKay, L. McKay, Mamoon Al-Rshaidat, Kevin Czajkowski, Thomas Bridgeman, and Jeffrey Savino

Computer Animation of Cyanobacteria Blooms in Lake Erie from July-October, 2003 As Mapped from SeaWiFS Data with a New Phycocyanin Algorithm

Padmanava Dash, *Bowling Green State University*

Robert K. Vincent

Perennial/Intermittent Stream Classification using GIS and Remote Sensing Information in the Upper Midwest

Miguel Restrepo, *SAIC*, Under Contract to the *USGS National Center for EROS*

Pamela Waisanen and Bruce Worstell

Current and Future Applications of Remote Sensing for Routine Monitoring of Surface Water

Kwabena Asante, *SAIC*, Under Contract to the *USGS National Center for EROS*

James Famiglietti

Biophysical Characterization

Chair: Marguerite Madden, *University of Georgia*

Time Lag and Seasonality Considerations in Evaluating AVHRR NDVI Response to Precipitation

Lei Ji, *Cooperative Institute for Research in the Atmosphere, Colorado State University*

Albert Peters

Tuesday, October 25, 2005

Retrieval of Vegetation Biophysical Characteristics from Remotely Sensed Data

Anatoly Gitelson, *University of Nebraska-Lincoln*
Andres Vina and Donald Rundquist

Remote Sensing Derived Leaf Area Index and Applications in Plant Yield Estimation

Anne Smith, *Agriculture and Agri-Food Canada*
C. Nadeau, J. Freemantle, J. Miller, H. When, P. Teillet, I. Kehler, and N. Daub

Retrieval of Leaf Biochemical Concentrations from Leaf Reflectance Data by Genetic Algorithm-Partial Least Square Regression

Lin Li, *Indiana University-Purdue University*
Susan Ustin

Integrated Resources Analysis

Chair: Brian Huberty, *U.S. Fish and Wildlife Service*

UNESCO Crosscutting Project on the Application of Remote Sensing for Integrated Management of Ecosystems and Water Resources in Africa: Achievements and Challenges

Jimmy Adegoke, *University of Missouri-Kansas City*
Justin Ahanhanzo

Land Management Applications of the EROS Digital Photo Archive

Randy McKinley, *SAIC, Under Contract to the USGS National Center for EROS*

Kenneth Boettcher and Tim Smith

Creating detailed Land Management Units based on High-Resolution Remote Sensing Data and DEM - derived Terrain Attributes using Spatially Weighted Multivariate Classification

Georgina Warren, *Curtin University of Technology, Australia*

Graciela Metternicht and Jane Speijers

The Canadian Moderate Resolution Mapping System

Rasim Latifovic, *Canada Centre for Remote Sensing*
Richard Fernandes, Alex Trischtchenko, and Bill Park

Panel Discussion: Future of the Nation's Land Remote Sensing Archive

Sponsored by the ASPRS Data Preservation and Archive Committee and the Department of the Interior's Archive Advisory Committee

This will be an interactive session wherein the session participants will be asked to provide input to the U.S. Geological Survey on the future user requirements for the Nation's long-term land remote sensing archive (i.e., what should be included as part of the long-term remote sensing record for the earth's land surfaces?)

The session will include a brief summary on the current land remote sensing archive and a rationale on the need for defining the future data requirements of the land remote sensing archive (i.e., the acquisition, preservation, and distribution needs).

Moderator: Thomas Holm, *USGS National Center for EROS*

Speakers:

Amy Budge, *Earth Data Analysis Center, University of New Mexico*

Jay Feuquay, *USGS*

Sensors II – Advanced Land Imager

Chair: Karen Zanter, *USGS National Center for EROS*

Improved Leaky Detector Correction for EO-1 ALI Imagery

Ron Morfitt, *SAIC, Under Contract to the USGS National Center for EROS*

Gyanesh Chander, Brian Markham, Dennis Helder, and James Storey

Advanced Land Imager (ALI) Relative Gain Characterization and Correction

Amit Angal, *South Dakota State University*
Dennis Helder

Radiometric Characterization and Performance Assessment of the Advanced Land Imager Using Bulk Trended Data

Timothy Ruggles, *South Dakota State University*
Dennis Helder, Doug Hollaren, Ron Morfitt, and Jim Nelson

Radiometric Processing and Calibration of EO-1 Advanced Land Imager Data

Brian Markham, *NASA Goddard Space Flight Center*
Lawrence Ong, Jeff Mendenhall, Gyanesh Chander, Ron Morfitt, and Doug Hollaren

5:30 pm - 7:00 pm

**Exhibitors' Reception
Poster Session**

Presenters will be with their displays for discussion.

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Wednesday, October 26, 2005

Plenary Session II: Data Availability, Access and Preservation

8:00 am – 10:00 am

Embracing the overall theme of the Pecora 16 Conference this plenary session will discuss the possibilities for data availability, access, and preservation as related to the new initiative of the Global Earth Observation System of Systems. Lessons learned as well as new opportunities related to data availability, access, and preservation will be discussed within this session.

Organized and chaired by Kevin Gallo, *National Oceanic and Atmospheric Administration* and Sylvia Edgerton, *Department of Energy*

Greg Withee, Assistant Administrator for Satellite and Information Services, *NOAA*, and Co-Chair of the *U.S. Interagency Committee on Earth Observations*

Panelists:



JOHN FAUNDEEN

Archivist,
USGS National Center for EROS



RAYMOND MCCORD

Environmental Information Manager,
*Environmental Sciences Division,
Oak Ridge National Laboratory*



RICHARD REYNOLDS

Electronics Engineer,
NOAA

10:00 am – 5:00 pm

Exhibit Hall open

10:00 am – 10:30 am

Break - Beverages available in Exhibit Hall.

10:30 am – 12:00 noon

Concurrent Technical Sessions IV

Mapping Urban Environments

Chair: Robin Zhang, *Murray State University*

Mapping Urban Land Use / Land Cover Using Quickbird NDVI Imagery for Runoff Curve Number Determination

Pravara Thanapura, *South Dakota State University*

S. Burckhard, M. O'Neill, and D. Galster

Multi-sensor Analysis of an Urban Ecosystem

Kevin Gallo, *NOAA, NESDIS*

Lei Ji

Assessing Urban Growth and Environmental Change Using Remotely Sensed Data

George Xian, *SAIC, Under Contract to the USGS National Center for EROS*

Mike Crane and Cory McMahon

Segmentation of Urban Built-up Areas using an Expansion Scheme of Landsat Multispectral Images

Jorge Lira, *Instituto de Geofisica-UNAM, Mexico*

Lourdes Hildago

Agriculture I

Chair: Benjamin Richason III, *St. Cloud State University*

Cropland Data Layer Program Update

Rick Mueller, *USDA, NASS*

Dave Johnson and Patrick Willis

Increasing the Detail of Land Use Classification – the Iowa Experience

R. Peter Kollasch, *Iowa Department of Natural Resources*

Moving Research to Operations: Status of Global Monitoring of Food Production at USDA

Bradley Doorn, *USDA Foreign Agricultural Service*

State-Level Crop Mapping in the U.S. Central Great Plains Agroecosystem Using MODIS 250-Meter NDVI Data

Brian Wardlow, *University of Kansas*

Stephen Egbert

Water Resources II

Chair: Henrt Bulley, *University of Nebraska - Omaha*

Effect Assessment of Two Land-cover Datasets on Stream Flow Simulations Using A Spatially Distributed Hydrologic Mode

Pei-Yu Chen, *Blackland Research and Extension Center, Texas Agricultural Experiment Station*

Mauro Di Luzio and Jeffrey Arnold

Monitoring Changes to Water Resources in the Rio Grande/Rio Bravo Basin in Texas and Northern Mexico Since 1985

Gordon Wells, *University of Texas at Austin*

Teresa Howard, Gayla Malson, Linda Prosperie, Larry Teng, Solar Smith, and Craig Tapley

Riparian and Wetland Mapping Using Multiple Sources of Digital Data, Decision Tree Models, and Valley Bottom Delineation

Jay Kost, *SAIC, Under Contract to the USGS National Center for EROS*

Greg Dillon

Assessing Impacts on Everglades Ecosystems using Remotely Sensed Data

Marguerite Madden, *University of Georgia*

Thomas Jordan and Louis Manglass

Wildlife and Biodiversity

Chair: Allan Falconer, *George Mason University*

Mapping Ecological Systems in Western Washington for the USGS Gap Analysis Program (GAP)

Thomas Miewald, *Space Imaging, Inc.*

Jocelyn Aycrigg, Rex Crawford, Chris Chappell, and Alexa McKerrow

Refining Biodiversity Conservation Priorities

Grant M. Harris, *USDA Forest Service*

Clinton N. Jenkins and Stuart L. Pimm

Establishing a Data Framework for Calculating Consistent and Sensitive Measures

Gene Fosnight, *SAIC, Under Contract to the USGS National Center for EROS*

Holly Strand and Benjamin White

Managing Human-Leopard Conflicts in Pauri Garhwal, Uttaranchal, India using a Geographical Information System

Manoj Agarwal, *Wildlife Institute of India*

Devendra Singh, S.P. Goyal, and Qamar Quershi

MODIS

Chair: Matthew Hansen, *South Dakota State University*

Monitoring Global Land Cover using Sub-pixel Cover Estimations

Matthew C. Hansen, *South Dakota State University*

John R. G. Townshend, Mark Carroll, and Charlene Dimiceli

Land Cover Mapping of Greater Mesoamerica using MODIS data

Chandra Giri, *SAIC, Under Contract to the USGS National Center for EROS*

Clinton Jenkins

Monitoring Post-Fire Vegetation Recovery of Wildland Fire Areas in the Western United States Using MODIS

Brad Quayle, *USDA Forest Service*

Ken Brewer and Kelly Williams

Global Mapping of Fire-Affected Area Using Multi-Temporal MODIS Data

David Roy, *South Dakota State University*

L. Boschetti and C.O. Justice

Data Archive and Access I

Chair: Gilbert Rochon, *Purdue University*

The National Center for Earth Resources Observation and Science (EROS) Preserves the National Archive of Landsat Data

Cheryl Greenhagen, *SAIC, Under Contract to the USGS National Center for EROS*

Footprint Coverages: A Land Remote Sensing Research Analysis Tool

John Faundeen, *USGS National Center for EROS*

Americas ALOS Data Node: Providing Earth Observation Data

Scott Arko, *Alaska Satellite Facility*

Don Atwood and Nettie La Belle-Hamer

Enhancement of a Multi-National Decision Support System in Mesoamerica

Jessica Coughlin, *IAGT*

Surface Modeling

Chair: Michael Oimoen, *SAIC, Under Contract to the USGS National Center for EROS*

Using LiDAR to Study Surface Water Runoff and Impervious Surface Delineation

Thomas Pagh, *i-TEN Associates, Inc.*

Carol Murdock

Elevation Determination by Shadow Measurements from Vertical Monoscopic Aerial Imagery

Henry Cordova, *Broward County Government, Florida*

Temporary Floodwater Storage Volume Estimations Using 1-m LiDAR and 30-m NED DEMs in the Red River Basin of the North

Sarita Pachhai, *University of North Dakota*

Bradley C. Rundquist and Wesley D. Peck

Some Aspects of Using Fourier Analysis to Support Surface Modeling

Nora Csanyi, *The Ohio State University*

Charles Toth

12:00 noon - 1:30 pm

Lunch in the Exhibit Hall

Included with full registration - ticket required.

Wednesday, October 26, 2005

Plenary Session III: Advancing the Technology of Remote Sensing: A Roundtable Discussion

1:30 pm - 3:00 pm

Previous Plenary talks have illustrated the advent of Global Earth Observation Systems of Systems, the current and future state of satellite remote sensing, and the good that we have done with past and current systems. We now want to dream about what future systems can potentially do to harness the power of remote sensing for the benefit of society, and the leadership of government, academia, and industry to shape the vision in to reality.

Organized and chaired by Scott Loomer, *National Geospatial-Intelligence Agency* and John Lyon, *U.S. Environmental Protection Agency*

Panelists:



RUSSELL CONGALTON
Professor,
University of New Hampshire



MITCHELL GOLDBERG
Chief, SMCD,
NOAA



KASS GREEN
President,
The Alta Vista Company



THOMAS LOVELAND
Research Geographer,
USGS National Center for EROS



WALTER S. SCOTT
Executive Vice President &
Chief Technical Officer,
DigitalGlobe

3:00 pm - 3:30 pm

Break - Beverages available in Exhibit Hall.

3:30 pm - 4:30 pm

Concurrent Technical Sessions V

Mapping Impervious Surfaces

Chair: George Xian, *SAIC, Under Contract to the USGS National Center for EROS*

Estimation, Mapping and Change Analysis of Impervious Surface Area by Landsat Remote Sensing

Marvin Bauer, *University of Minnesota*
Brian Loeffelholz and Bruce Wilson

Mapping Urban Imperviousness Using Remotely Sensed Data and Regression Tree Models

Cory McMahon, *SAIC, Under Contract to the USGS National Center for EROS*
George Xian and Mike Crane

Estimation of Impervious Surfaces in Difficult Terrain for Assessing Urban Growth

Mike Crane, *USGS National Center EROS*
George Xian and Cory McMahon

Agriculture II

Chair: Bradley Doorn, *USDA Foreign Agricultural Service*

Analysis of AWIFS Imagery for Crop-Specific Classifications

Mike Craig, *USDA NASS*
Martin Ozga and Claire Boryan

Using Remote Sensing to Measure Yield Losses Due to Water and N Stress

David Clay, *South Dakota State University*
Jiyul Chang, Sharon Clay, and Ki-In Kim

A Global Map of Irrigated Area at the End of the Last Millennium using Multiple Satellite Sensor Data

Prasad Thenkabail, *International Water Management Institute (IWMI)*
C. Biradar, H., Turrall, and M. Schull

Time Series Analysis

Chair: Bradley Reed, SAIC, Under Contract to the USGS National Center for EROS

A Comparative Analysis to Understand the Influence of Dataset Choice for Land Surface Phenology Research in the Northern Latitudes

Kirsten de Beurs, *University of Nebraska-Lincoln*

Geoffrey Henebry

Trends in Eurasia Vegetation Dynamics

Bradley Reed, SAIC, Under Contract to the USGS National Center for EROS

Phenological Monitoring of Climate Change Impacts in Shenandoah National Park

Jonathan Smith, USGS

Douglas Muchoney, Bradley Reed and Sharon Hamann

Rangeland Resources

Chair: Douglas Ramsey, *Utah State University*

Rangeland Biocomplexity and Cattle Stocking Rates In Kansas

Jonathan Thayne, *University of Kansas*

Kevin Price and Randall Boone

Modeling Biophysical Factors in Grassland using Remote Sensing: Seasonal Effects

Matthew Ramspott, *University of Kansas*

Kevin Price, Cheryl Murphy, and Bryan Foster

Assessing A Multitemporal and Multiscale Remote Sensing Approach for Characterizing Rangeland Condition on the Central Great Plains

Geoffrey Folker, *University of Kansas*

Kevin Price and Loren Graff

Environmental Remote Sensing

Chair: Le Wang, *Texas State University - San Marcos*

Early Detection of Oak Wilt Disease: A Hyperspectral Approach

Blake Weissling, *University of Texas at San Antonio*

Hongjie Xie

Light Absorption Model for Water Content to Improve Soil Mineral Estimates in Hyperspectral Imagery

Michael Whiting, *University of California-Davis*

Alicia Palacios Orueta, Lin Li, and Susan Ustin

Impact of Sub-pixel Parameterization of Land Cover on Evapotranspiration Patterns Across Canada

Vladimir Korolevich, *Canada Centre for Remote Sensing*

Richard Fernandes, Shusen Wang, Anita Simic, and Fanfei Gong

Data Archive and Access II

Chair: Karla Sprenger, SAIC, Under Contract to the USGS National Center for EROS

An Archive of Satellite Imagery for the Intermountain Region of the United States

Chris Garrard, *Utah State University*

Douglas Ramsey

U.S. Geological Survey Commercial Remote Sensing Data Contract

Mike Duncan, USGS

Dissemination of LANDFIRE Data

Jeffrey Eidschink, *USGS National Center for EROS*

SRTM/DEM

Chair: Kristine Verdin, SAIC, Under contract to the USGS National Center for EROS

A New Approach for DEM Void Filling used to Fill SRTM Voids

Gregory Grohman, *National Geospatial-Intelligence Agency*

Evaluation of Different Voidfill Solutions to Fill SRTM Elevation Data

Jennifer Lock, *Intermap Technologies Corp.*

Trina Kuuskivi and Xiaopeng Li

Hydrologic Derivatives from SRTM: Prototype for the Rio Grande Basin

Kristine Verdin, SAIC, Under Contract to the USGS National Center for EROS

6:00 pm – 9:00 pm

Pecora Award and Open House at National Center for Earth Resources Observation and Science (EROS)

(See page 5 for details)

Presentation of the 2005 William T. Pecora Award

The William T. Pecora Award is presented annually by the Department of the Interior (DOI) and the National Aeronautics and Space Administration (NASA) to recognize outstanding contributions by individuals or groups toward the understanding of the Earth by means of remote sensing. We are pleased to present the 2005 Pecora Award at the National Center for EROS Open House on Wednesday, October 26.

The Pecora Award was established in 1974 to honor the memory of Dr. William T. Pecora, former Director of the U.S. Geological Survey and DOI Under Secretary. Dr. Pecora was a motivating force behind the establishment of a program for civil remote sensing of the Earth from space. His early vision and support helped established what we know today as the Landsat satellite program. The Award consists of a citation and plaque that are presented to each recipient by representatives from DOI and NASA. The name of each recipient is also inscribed on permanent plaques that are displayed by the sponsoring agencies.

Concurrent Technical Sessions VI

Carbon Assessment

Chair: Mark Jackson, *Brigham Young University*

Using Time-Series Airborne Multispectral Sensor Imagery to Characterize Grassland Cover and Land Management Practices Influencing Soil Carbon Stocks

Kevin Price, *University of Kansas*

Matthew Ramspott, Bryan Foster, and Cheryl Murphy

Comparative Analysis of NPP/GPP Products Estimated from Empirical and Biogeochemical Models

Li Zhang, *SAIC, Under Contract to the USGS National Center for EROS*

Bruce Wylie and Shuguang Liu

Remote Estimation of Net Ecosystem Carbon Dioxide Exchange in Crops: Principles, Algorithm Calibration and Validation

Anatoly Gitelson, *University of Nebraska-Lincoln*

Andrés Viña, Shashi Verma, Donald Rundquist, Galina Keydan, Bryan Leavitt, Timothy Arkebauer, George Burba and Andrew Suyker

New 25-year, 4-km resolution AVHRR Data Set for Land Cover and Climate Studies

Felix Kogan, *NOAA, NESDIS, ORA*

Guo Wei

Radar Remote Sensing

Chair: Russell Rykhus, *SAIC, Under Contract to the USGS National Center for EROS*

Flood Monitoring Using SAR Imagery in an Emergency Response Environment

Russell Rykhus, *SAIC, Under Contract to the USGS National Center for EROS*

Oh-Ig Kwoun, Brenda Jones, and Ron Risty

An Overview of Studies of Aleutian Volcanoes with Satellite Radar Interferometry

Zhong Lu, *SAIC, Under Contract to the USGS National Center for EROS*

C-Band Differential InSAR Observations of Water-Level Change Under Swamp Forests

Oh-Ig Kwoun, *SAIC, Under Contract to the USGS National Center for EROS*

Zhong Lu

The Use of Satellite Radar Remote Sensing Imagery in the Detection of Archaeological Sites in the Central Mesopotamian Plain of Iraq

Benjamin Richason III, *St. Cloud State University*

Data Comparisons, Validation and Accuracy

Chair: Sunil Narumalani, *University of Nebraska - Lincoln*

The Use of EOS Land Validation Test Sites for the Comparison of Vegetation Indices Derived from Different Earth Remote Sensing Satellites

John Dwyer, *USGS National Center for EROS*

Jeff Morisette

Modeling Land Surface Phenology using NDVI, EVI, and WDRVI: A Comparative Analysis

Geoffrey Henebry, *University of Nebraska-Lincoln*

Evaluating the Effects of Spatial Scale on Remotely-Sensed Mapping of Burn Severity: A Comparison of Landsat and MODIS Data

Kurtis Nelson, *SAIC, Under Contract to the USGS National Center for EROS*

Zhiliang Zhu, Lee Vierling, and Donald Ohlen

Relationships Between MODIS LAI and NDWI for Continental Australia

Michael Hill, *Bureau of Rural Sciences, Australia*

Alex Held and Udaya Senarath

Wildfires

Chair: Jeffrey Eidenshink, *USGS National Center for EROS*

A General Approach to Updating Vegetation, Fire Fuels and Ecosystem Conditions for LANDFIRE Project

Zhi-Liang Zhu, *USGS National Center for EROS*

James Vogelmann, Daniel Steinwand, and Matthew Rollins

Hierarchical Classification of Vegetation Cover Using Decision Tree Methods

Xuexia Chen, *SAIC, Under Contract to the USGS National Center for EROS*

Zhi-Liang Zhu, James Vogelmann, Brian Tolk, and Jay Kost

Improving the Conterminous U.S. Greenness Data Set for Fire Monitoring

Jeffrey Eidenshink, *USGS National Center for EROS*

Roberta Bartlette and Debra Tirmenstein

Mapping Burn Severity with Satellite Data: An Analysis of Ecosystem Differences and Time Lapse Since Fire

Zhiliang Zhu, *SAIC, Under Contract to the USGS National Center for EROS*

Donald Ohlen, Stephen Howard, Carl Key, and Nate Benson

Policy III

Chair: James Irons, *NASA Goddard Space Flight Center*

Integrating Landsat Sensors onto National Polar-orbiting Operational Environmental Satellite System Platforms

James Irons, *NASA Goddard Space Flight Center*

William Ochs

Progress in Implementing the U.S. Commercial Remote Sensing Space Policy

Jennifer Willems, *USGS National Center for Earth Resources Observation and Science*

Digital Imagery Policies, Standards, Guidelines

Philip Rufe, *USGS*

Greg Stensaas and George Lee

Data Archive and Access III

Chair: Laura Rocchio, *Science Systems and Applications (SSAI), Goddard Space Flight Center*

The Landsat Legacy: Tracking Down Three Decades of Knowledge

Laura Rocchio, *SSAI, NASA Goddard Space Flight Center*

Gail Hodge, Terry Arvidson, Darrel Williams, and James Irons

The Landsat Long Term Data Record: Characterization and Compilation

Terry Arvidson, *Lockheed Martin*

Samuel Goward, Darrel Williams, John Faundeen, Brian Markham, James Irons, Jeffrey Masek, Shannon Franks, Laura Rocchio, Gail Hodge, and Jeanne Allen

Distribution, Retrieval and Processing Capabilities Available through the Land Processes Distributed Active Archive Center

Thomas Kalvelage, *SAIC, Under Contract to the USGS National Center for EROS*

Jennifer Willems

Atmospheric Radiation Measurement (ARM) Thumbnail Browser – A New Way to Browse and Order ARM Data Files

Giriprakash Palanisamy, *Oak Ridge National Laboratory*

Raymond McCord, Richard Ward, Betsy Horwedel, and Dale Kaiser

Climate and Atmosphere

Chair: Jimmy Adegoke, *University of Missouri-Kansas City*

Influence of Local Land cover/land use Change on U.S. Climate Normal Temperatures

Robert Hale, *CIRA/Colorado State University*

Kevin Gallo

The Use of Land Surface Remote Sensing Data in Weather and Climate Models

Xubin Zeng, *University of Arizona*

Mike Barlage and Wang Zhuo

Voxel-based Analysis and Visualization of Rainfall Data

Shalini Venkataraman, *Louisiana State University*

Kwabena Asante

8:00 am - 10:30 am

Posters on display

9:00 am - 11:00 am

Exhibit Hall open

9:30 am – 10:00 am

Break - Beverages available in Exhibit Hall.

ASPRS BOARD of DIRECTORS and COMMITTEE MEETINGS

Saturday, October 22

7:30 am – 5:00 pm

Executive Committee

Sunday, October 23

8:00 am – 9:00 am

Division Directors

Committee Chairs

9:00 am – 10:00 am

External Affairs Committee

9:00 am – 11:00 am

Evaluation for Certification Committee Electronic Communications Committee

10:00 am – 12 noon

Professional Practice Division (PPD)

11:00 am – 12 noon

Geographic Information Systems Division (GISD)
Remote Systems Applications Division (RSAD)

1:00 pm – 3:00 pm

Region Officers

Lidar Subcommittee of Primary Data Acquisition Division
Journal Policy and Publications Committees

3:00 pm – 5:00 pm

Membership Committee

Convention Planning and Policy Committee
Data Preservation and Archiving Committee

5:00 pm – 5:30 pm

Photogrammetric Applications Division

5:00 pm – 6:00 pm

By-Laws Committee

Primary Data Acquisition Division

5:30 pm – 6:30 pm

Division Directors

Monday, October 24

7:30 am – 5:00 pm

Board of Directors

Wednesday, Oct. 26

8:00 am – 9:00 am

Sustaining Members Council

ASPRS encourages those who are interested in participating on a committee or a division to come to these meetings. This is the place to bring your ideas, concerns, and suggestions.

Thursday, October 27, 2005

Plenary Session IV: Securing a Stable Future for Satellite Land Remote Sensing

10:00 am – 12:00 noon

Man and nature are altering global land cover at unprecedented rates. The 1999 launches of the Landsat 7, Terra, and IKONOS satellites ushered in a new era of land observations from multiple platforms that has dramatically advanced capabilities for monitoring change at multiple scales. As these three satellites reach the end of their design lives, plans to sustain and advance land observing capabilities have faced challenges and uncertainties. Our distinguished speakers will address the evolving roles of government, academia, and private industry as the national and international communities strive to formulate strategies for the future of Earth observations.

Organized and chaired by James Irons, *NASA Goddard Space Flight Center* and Andrew Bruzewicz, *COE*

Future of Land Remote Sensing: Time to Think Again

Samuel Goward, *Professor, University of Maryland*



Monitoring the Earth with remote sensing technologies began in earnest a half century ago. Visionaries such as Pecora, Nordberg and many others began to recognize the significant value that monitoring the continents from space would bring to understanding our planet as our home. The first great initiative in this direction was the Landsat mission, which has continued (mostly) unabated, because (and despite) of the best intents of US engineers, scientists, businessmen and bureaucrats. Many further steps in this direction followed that innovation, including the EOS Terra/Aqua series and the more recent governmental declarations about “operational” US land remote sensing programs.

Considering the technological advances that have occurred in the last half century, it is nothing short of astonishing that so little forward progress has been achieved in spaceborne land remote sensing systems in recent decades. We know full well the limitations of the first generation technologies including radiometry, geometry and temporal coverage. However, much of our time is spent simply keeping mission alive. There is much more to do. Today, there are broad and substantial opportunities to move from our 1950's heritage to 21st century innovative thinking.

What is currently missing and terribly needed, is the type of innovative thinking, free from political or economic constraints, that would permit us to explore anew how to monitor the continents. The last time great minds really got together to think about land space observatories was about 1960. It is time to clear the slate and begin again to think creatively about observing our planet as our home.

Responding to the Challenge of a New Generation of Earth Observations

Jay Feuquay, *Coordinator, Land Remote Sensing Program, U.S. Geological Survey*



A new era for moderate resolution land observation satellite data has arrived. The recently adopted declaration by the third Earth Observations Summit coupled with the US 10-year Strategic Plan for Earth Observations show that the systematic observation and recording of the state of the earth is more important than ever. The USGS' Land Remote sensing Program will support a global Earth observation program through data capture, research, and partnerships with commercial, federal and international institutions.

The December 2004 tsunami disaster while a terrible human tragedy was a good example of the utility of land remote sensing data applied to emergency response. In this case the 30-year record of Landsat observations proved useful for comparing pre- and post disaster conditions. The tsunami event is one of many examples of the value of data capture and archiving. However, attention must be directed to planning for the future and the USGS' Land Remote Sensing Program will take a leadership role in that future.

It is encouraging that the Administration, in a tight budget environment, continues to support Landsat activities and development of replacement systems. Plans for a Landsat continuity mission, hosted on a NOAA National Polar-orbiting Operational Environmental Satellite System strengthen a viable future in the post Landsat 7 era. New processing systems, developed by commercial operators and by the USGS are proving effective in maximizing the utility of current Landsat 7 data. Data buys by federal agencies will encourage the development of commercial systems. In all these dimensions (and others), the USGS' Land Remote Sensing Program will support and lead in the development, coordination and applications of the next generation of Earth observing programs.

Building the Future of Land Remote Sensing One Pixel at a Time

William B. Gail, *Vice President, Mapping and Photogrammetric Solutions, Vexcel Corporation*



The prosperity and security of society depend increasingly on our ability to obtain remotely sensed land information and apply it effectively. Governments rely on this information for treaty verification, urban planning, and resource management. Businesses require it to improve the efficiency of their operations. Location-based information accessed over the Internet has become indispensable to us all. What actions must we take today to ensure that needed land remote sensing capabilities are available in the future? Recent long-term planning activities, including the GEOSS 10-year plan, the NASA Roadmap, and the NRC Decadal Study have attempted to address this issue. Yet the more sophisticated our needs become, the more complex the challenges we face in building the future. These challenges are many: anticipating the needs of future generations; building observing systems that meet these needs; efficiently transforming scientific advances into real-world applications; leveraging the power of the private sector; harnessing advances in information and telecommunications technologies. We face a new world in which everything is digital, consumer use of remote sensing data is greatly expanded, the boundary between remotely-sensed and in-situ information is blurred, and the value of a provider is measured by how quickly they adapt to evolving user demands. Our ability as a community to successfully address these issues will have a substantial impact on society.

12:00 noon

Conference Adjournment

Jim Sturdevant



SIoux FALLS



HOTEL & TRAVEL INFORMATION

You don't want to miss this very important conference – the 16th in a series of William T. Pecora Memorial Symposium on Remote Sensing in Sioux Falls, South Dakota. The theme this year will be *Global Priorities in Land Remote Sensing*. In addition to experiencing a superb program of workshops, general, plenary, technical and poster sessions, and an exhibit hall with the latest products and services, you will have an opportunity to visit the USGS National Center for EROS for a reception, full tour and evening of networking with your fellow attendees.

HOTEL

Adjoining the Convention Center by enclosed walkway is the Sheraton Sioux Falls Hotel, a full service hotel with indoor pool, fitness center, business center, restaurant and gift shop. This complex is located just 5 minutes from the airport and downtown Sioux Falls. As a PECORA 16 Symposium attendee, you are eligible for the specially negotiated daily room rate of \$74 (single/double occupancy).

Sheraton Sioux Falls Hotel

1211 N. West Avenue

Sioux Falls, South Dakota 57104

(888) 627-8088 Toll Free

Reservations may be made through the ASPRS website at <http://www.asprs.org/Pecora16/hotel.html>

DISCOUNT ROOM RATES

If making reservations by phone, please be sure to identify yourself as an American Society for Photogrammetry and Remote Sensing Conference attendee to receive the special discounted room rate. There are a limited number of government rate rooms available as well.

Early reservations are strongly advised as the ASPRS special rate expires on September 19 and there is no guarantee that rooms will be available at that late date.

SHUTTLE SERVICE TO SHERATON SIOUX FALLS HOTEL

Complimentary 24 hour shuttle service to and from the airport is provided by the Sheraton Sioux Falls Hotel. Phones for pickup are located in the baggage claim area.

CONFERENCE CENTER

The Sioux Falls Convention Center, a state-of-the-art center, has been chosen as the site for the Pecora 16 Symposium. All sessions and the Exhibit Hall will be in the Convention Center.

AIRLINES

Sioux Falls, South Dakota ranks among the top ten most desirable cities in the U.S. It's easy to get to Sioux Falls with over 50 daily flights and the airport is only one and one half miles from downtown. Air service to Sioux Falls is provided by the following airlines:

- Allegiant Air 1-800-432-3810
- America West Airlines 1-800-235-9292
- Delta Airlines 1-800-221-1212
- Northwest Airlines 1-800-225-2525
- United Express 1-800-241-6522

WEATHER

The average Fall temperatures reach a high of 60°F. and a low of 36°F. Be sure to bring a warm jacket for evening activities.

RESTAURANTS

There are more than 400 restaurants catering to everyone's tastes including Midwestern steaks, gourmet game and freshwater fish.

By all out-of-town Conference attendees staying at the Sheraton Sioux Falls Hotel, the Symposium Committee is able to contain registration fees, making the conference more affordable for everyone. Thank you for choosing the Sheraton Sioux Falls.

In the unlikely event of cancellation of this entire conference by the Symposium Committee, the Symposium Committee will refund 100% of registration fees paid. The Symposium Committee assumes no liability for penalty fees on airline tickets, deposits for hotel accommodations, or any other fees, charges, penalties, or other incidental costs that a registrant might incur as a consequence of a conference cancellation.

REGISTRATION INFORMATION

How to Register

Please register on-line or by using the registration form in this Program on page 27. The form may be duplicated as needed. Complete the form (type, print clearly, or attach a business card). Your name badge will reflect this information. Payment will be accepted by Visa, MasterCard, American Express, checks made payable to **Pecora 16 Symposium**, and signed government purchase orders or training orders. **Registrations received without payment will not be processed. Please do not mail your registration form after you have registered by fax or online.**

Online:

www.asprs.org/Pecora16
(Visa, MasterCard, or
American Express only)

Mail To:

Pecora/ASPRS Specialty
Conference Registration
9213 Mintwood Street
Silver Spring, MD 20901 USA
(all forms of payment)

Fax To:

Pecora/ASPRS Specialty
Conference Registration
301-608-2699 (fax)
301-608-3720
Toll-free 888-233-2864

(Visa, MasterCard, American Express/purchase orders only)

Confirmations

Your registration will be confirmed by mail or fax. Please notify the Meeting Registrar at 301-608-3720 or 888-233-2864 if you have not received your confirmation **within two weeks**, or if you have any questions. Your registration packet will be available at the Symposium Registration Desk in the Sioux Falls Convention Center during registration hours. A registration is not considered complete until all registration fees are received by the Meeting Registrar.

Workshop Registration

Workshops require individual registration and an additional fee to the conference registration fees. **They are not included in the full conference registration fee.** Availability is based on space. We do not reserve spaces without full payment in advance and there is no waiting list. Workshop registrations must be postmarked by September 23, 2005. ASPRS reserves the right to cancel any workshop if the minimum number of registrations is not received by September 23, 2005. On-site registration will be available for confirmed workshops with available space.

Spouse/Guest Registration

A separate registration fee has been set for spouses and guests. (See Registration Form). This fee includes admission to the Exhibit Hall, the Exhibitors' Reception and the EROS tour and reception. Admission to the Keynote Plenary and technical sessions is **not** included with this registration. If spouses or guests wish to attend any of these sessions, they may register at the appropriate rate.

On-site Registration

On-site registration will be located in the Sioux Falls Convention Center.

HOURS:

Sat. 10/22	5:00 am - 7:00 pm
Sun. 10/23	7:30 am - 4:30 pm
Mon. 10/24	7:30 am - 4:30 pm
Tues. 10/25	7:30 am - 4:30 pm
Wed. 10/26	7:30 am - 4:30 pm
Thurs. 10/26	7:30 am - 10:00 am

Disability Assistance

If you have special needs addressed by the Americans with Disabilities Act, please contact ASPRS Headquarters at 301-493-0290 ext. 106. A written statement will be required outlining your particular needs. **ALL SUCH REQUESTS MUST BE RECEIVED BY SEPTEMBER 23, 2005** in order that appropriate arrangements can be made

Badges/Tickets

You must wear your name badge during conference hours. The appropriate badge is needed to enter the workshops, general and technical sessions, the Exhibit Hall, and the social event at EROS. A charge of \$5 will be made for replacement of lost badges. Lost tickets will not be replaced. Tickets must be presented at the collection point for all ticketed events.

Exhibit Hall

Everyone entering the Exhibit Hall must register and have a name badge, including children over 12 years of age. Children under 12 years of age are not permitted in the Exhibit Hall at any time due to insurance and safety regulations

Refund Policy

All refunds are subject to a \$50.00 processing fee and will be issued one month after the conference. To qualify for a full refund, a written cancellation must be received by the Meeting Registrar by September 27, 2005. For cancellations received by October 11, 2005, a 50 percent refund will apply. No refunds will be made after October 11, 2005. Cancellations for medical emergencies after the above deadlines require a note from your physician, signed by the physician.



The William T. Pecora 16th Memorial Symposium 2005

Register on-line at www.asprs.org/Pecora16 or complete this form (type, print clearly, or attach a business card) and return to ASPRS Pecora Symposium Registration, 9213 Mintwood Street, Silver Spring, MD 20901. Phone: 301-608-3720 or toll-free: 888-233-2864 (all forms of payment accepted by mail) or fax to 301-608-2699 (Visa, MasterCard, and American Express or purchase orders only).

Personal Information

Preferred first name on badge: _____

Name (please print): _____

Organization Name (if applicable): _____

Street Address: _____

City: _____ State/Province: _____

Zip Code/Postal Code: _____ Country: _____

Business Phone: _____ Home Phone: _____

Business Fax: _____ Email: _____

Emergency Contact Name: _____ Emergency Contact Phone: _____

Spouse/Guest Name: _____

ASPRS Member (# _____) Non-Member

Current membership status will be verified.

please check the appropriate boxes

ASPRS Member Registration Fees		Through September 23, 2005	After September 23, 2005
<input type="checkbox"/> Full		\$325	\$425
<input type="checkbox"/> Daily			
<input type="checkbox"/> Tuesday 10/25		\$100	\$175
<input type="checkbox"/> Wednesday 10/26		\$100	\$175
<input type="checkbox"/> Thursday 10/27		\$100	\$175
<input type="checkbox"/> Student, full		\$65	\$80
<input type="checkbox"/> Student, daily			
<input type="checkbox"/> Tuesday 10/25		\$25	\$35
<input type="checkbox"/> Wednesday 10/26		\$25	\$35
<input type="checkbox"/> Thursday 10/27		\$25	\$35
<input type="checkbox"/> Spouse/Guest		\$85	\$85
<input type="checkbox"/> Speaker, full		\$225	\$250
<input type="checkbox"/> Speaker, daily			
<input type="checkbox"/> Tuesday 10/25		\$100	\$125
<input type="checkbox"/> Wednesday 10/26		\$100	\$125
<input type="checkbox"/> Thursday 10/27		\$100	\$125

Non-Member Registration Fees		Through September 23, 2005	After September 23, 2005
<input type="checkbox"/> Full		\$425	\$525
<input type="checkbox"/> Daily			
<input type="checkbox"/> Tuesday 10/25		\$200	\$275
<input type="checkbox"/> Wednesday 10/26		\$200	\$275
<input type="checkbox"/> Thursday 10/27		\$200	\$275
<input type="checkbox"/> Student, full		\$80	\$105
<input type="checkbox"/> Student, daily			
<input type="checkbox"/> Tuesday 10/25		\$35	\$35
<input type="checkbox"/> Wednesday 10/26		\$35	\$35
<input type="checkbox"/> Thursday 10/27		\$35	\$35
<input type="checkbox"/> Spouse/Guest		\$85	\$85
<input type="checkbox"/> Speaker, full		\$225	\$250
<input type="checkbox"/> Speaker, daily			
<input type="checkbox"/> Tuesday 10/25		\$100	\$125
<input type="checkbox"/> Wednesday 10/26		\$100	\$125
<input type="checkbox"/> Thursday 10/27		\$100	\$125

Workshop Fees (not included in registration fee)		
	Member	Non-Member
<input type="checkbox"/> Workshop 1—Sunday	\$195	\$295
<input type="checkbox"/> Workshop 2—Sunday*	\$150	\$250
<input type="checkbox"/> Workshop 3—Sunday*	\$150	\$250
<input type="checkbox"/> Workshop 4—Monday	\$195	\$295
<input type="checkbox"/> Workshop 5—Monday	\$195	\$295
<input type="checkbox"/> Workshop 6—Monday*	\$150	\$250

*denotes a half day workshop.

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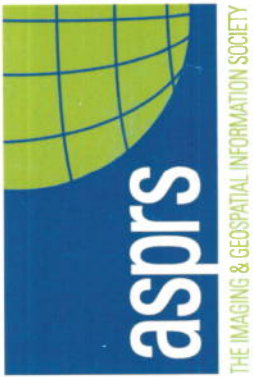
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