2015 IGTF

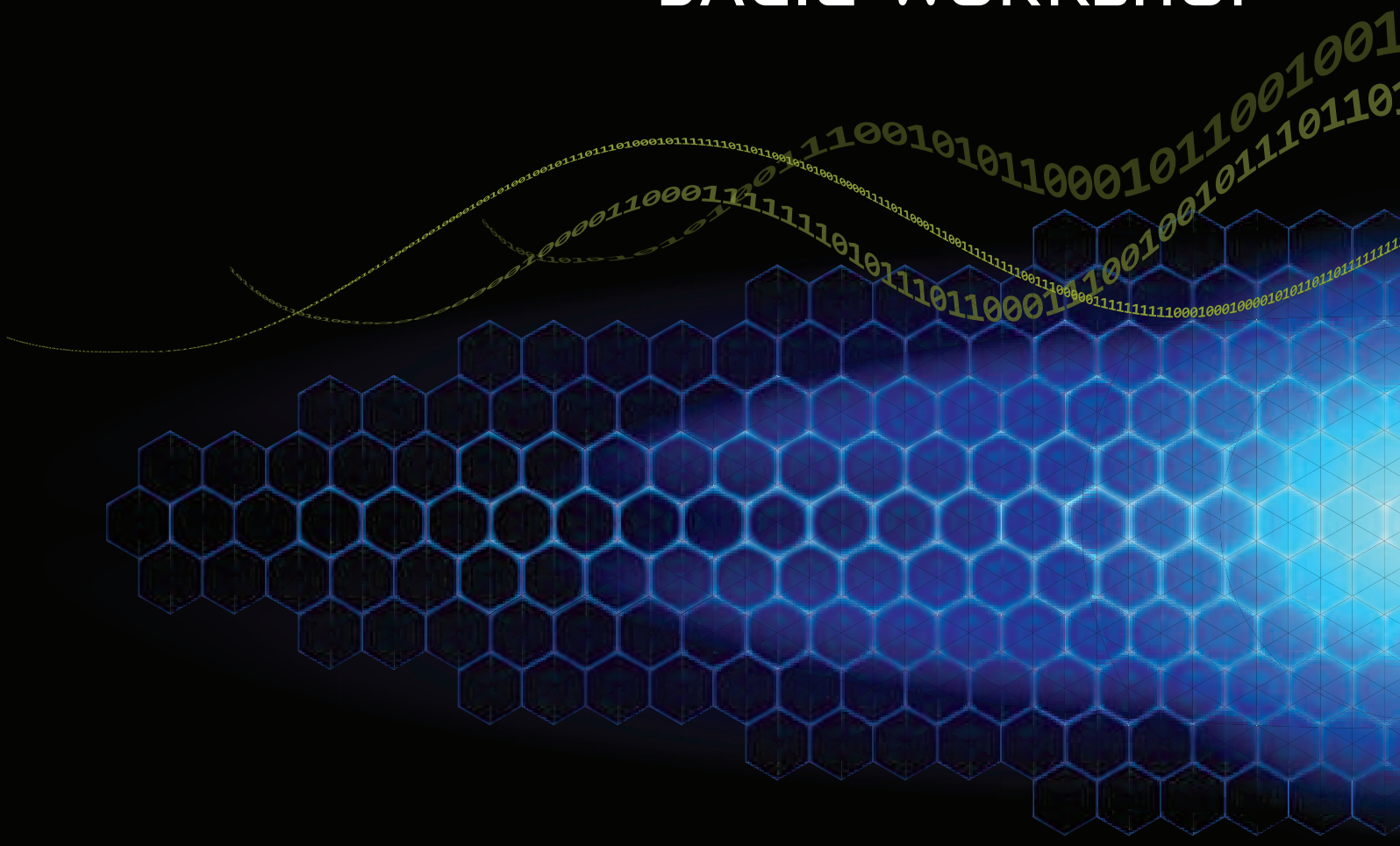
Imaging & Geospatial Technology Forum

asprs

The Imaging & Geospatial Information Society

2015 ASPRS ANNUAL CONFERENCE

AND CO-LOCATED JACIE WORKSHOP



FINAL PROGRAM

MAY 4-8, 2015 | TAMPA, FLORIDA | TAMPA MARRIOTT WATERSIDE HOTEL

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Thank You to Our Sponsors

GRSG Geological Remote Sensing Group

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American Society for Photogrammetry and Remote Sensing (ASPRS)

WiFi Information

Complimentary wireless internet connectivity is provided for this conference. Please see the insert in your registration packet for password information.

Program Key

IGTF & JACIE Workshop Registration Desk Hours

Technology Floor & Poster Session Information

Refreshment Breaks

Social Event & Networking

Workshops & Adult Learning Opportunities

Presenter Preparation Room

Plenary Presentations

Thank You Technical Program Organizers

The IGTF 2015 technical program was organized in a new way this year. The focus of the new program was more in line with the ASPRS mission and goals. As such, Committee Chairs, Division Directors and Supporting Organizations were asked to direct their own session. We would like to thank those involved in this very difficult process.

ASPRS Committee Chairs and Division Directors:

E&PD Education & Professional Development
Catherine Lockwood and Larry Handley

GISD Geographic Information Systems Division
David Alvarez

LD Lidar Division
Christopher E. Parrish and Jason Stoker

PAD Photogrammetric Applications Division
Robert Thomas

PDAD Primary Data Acquisition Division
Pierre le Roux

PPD Professional Practice Division
Michael J. Zoltek

RSAD Remote Sensing Applications Division
Stuart Blundell and John McCombs

SAC Student Advisory Council

Supporting Organizations:

AAGS American Association of Geodetic Surveying
Ronnie Taylor, Michael Dennis and Dave Zilkoski

CaGIS Cartography and Geographic Information Society
E. Lynn Usery

GRSG Geological Remote Sensing Group
Christian Haselwimmer

International Association of Pattern Recognition (IARP) Technical Committee 7 (remote sensing)
Jie Shan

TRB Transportation Research Board
Rachel Lewis and Curtis Clabaugh

UASD / AUVSI - Unmanned Autonomous Systems Division & Association for Unmanned Vehicle Systems International
Mike Greeson

JACIE Joint Agency Commercial Imagery Evaluation
Changyong Cao, Jon Christopherson, Kevin Gallo, Mitch Goldberg, Anya Hartpence, Dath Mita, Curt Reynolds, Raad Saleh, Aparajithan Sampath, Greg Stensaas, Kurtis J. Thome

NGA/ Civil Air Patrol
Sheldon Piepenburg, John Desmarais, Joan Vallance Whitacre and Dennis Walker

Thank You to the ASPRS National Technical Planning Committee

NTPC Chair:
Alan Mikuni, *GeoWing Mapping*

Qassim Abdullah, *Woolpert Inc,*
Peter Becker, *Esri*
Stuart Blundell, *Exelis*
Brenda Burroughs, *Optech*
Lewis Graham, *GeoCue Corporation*
Dave Henderson, *Topcon Positioning Systems*
Dave Johnson, *USDA/ NASS*
Tommy Jordan, *University of Georgia*
Jeff Lovin, *Woolpert Inc,*
Marguerite Madden, *University of Georgia*
Charles Mondello, *Pictometry*
Brian Murphy, *Altivan*
Mary Potter, Keystone Aerial Surveys, Inc.
Charles Toth, *The Ohio State University*
Mike Tulley, Aerial Services, Inc.
Jeff Yates, *DAT/EM Systems International*

Welcome Reception - Social Event

Location: The Florida Aquarium, 701 Channelside Drive, Tampa, Fl
Date: Tuesday, May 5th
Time: 6:00 pm until 9:00 pm

Come and Swim with the Fishes Without Getting Wet!

Begin your week at IGTF 2015 with a fun and interesting outing - join us at the Welcome Reception. A live band, NautiKool, will welcome you into The Florida Aquarium and a whole new world. An Awards presentation will occur at 7:30 pm on the stage.

Transportation: Walking is the easiest and the walk is short and very safe along The Tampa Riverwalk. Or complimentary motor coach service is available, loading at the Tampa Marriott Waterside Hotel lobby entrance. The first bus departs at 5:45 pm.

Food & Beverage: Heavy hors d'oeuvres and one complimentary beverage per guest, cash bar open all evening.

Come and experience the underwater world of Florida and the Gulf of Mexico!

More information on page 31.

THE FLORIDA AQUARIUM

Dear Colleagues:

Welcome to the NEW ASPRS Annual Conference – IGTF 2015! As you know, the ASPRS annual conferences have been renamed to the **Imaging & Geospatial Technology Forum (IGTF)**. This new brand gives ASPRS annual conferences a fresh and recognizable name, something easy and memorable.

The redesign has been created to encompass the broadest terms for our industry, "Imaging" and "Geospatial", while incorporating the idea of "Technology" as the center and reason we all come together. We decided to use the word "Forum" instead of conference because Forum means *"to assemble or a meeting place for the discussion of questions, promoting open discussion and sharing"*. And the sharing of ideas and open discussion is the core value for each ASPRS conference. All these elements together formed the new look and feel for ASPRS annual conferences - **The Imaging & Geospatial Technology Forum - IGTF 2015**.

Hold on to your hats because we have made some fantastic improvements for the new IGTF. The IGTF branding is more than mere marketing – it is a rethinking and reengineering of the ASPRS annual meeting into a more modern and energized conference format. There is more networking time, fewer conflicting technical sessions, more exhibitor-friendly arrangements, and less time away from home. And, we are feeding attendees at lunchtime in the exhibit area on Wednesday, May 6th!

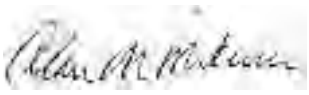
The Welcome Reception is still here and will be held on Tuesday, May 5th at The Florida Aquarium – just a short walk along the river or a shuttle will be available from the hotel lobby beginning at 6:00 pm. If you are a "regular" at the annual conference, take note, the timing of activities is also new this year.

But don't worry, not everything has changed, we are not giving up pre-conference workshops and committee meetings, although both will be scheduled more conveniently. We will still have sessions for speaker presentations, but fewer of them, with increased prestige given to poster presenters. We will still present many, many scholarships and awards.

The technical program is a bit different; it has been organized to align directly with the divisions and committees of the Society. Some time slots will emphasize technologies, while others will emphasize applications for those technologies, and still others will focus on cross-cutting themes. Enriching the technical program, ASPRS is happy, once again, to have as conference partners the geospatial experts from NGA and the commercial imagery evaluators/buyers from **JACIE** (NASA, USGS, NOAA, USDA). ASPRS is also excited to have new groups participating in our conference – the machine vision and pattern recognition folks from **IAPR**, the energy industry exploration and environmental professionals from **GRSG NA**, the transportation infrastructure folks from **TRB**, the geodetic survey and control people from **AAGS**, the cartographers from **CaGIS**, and the citizens serving communities from **CAP**, the **US Air Force Auxiliary**.

Our plenary speakers will offer market awareness (**Jon Christopherson**, *with a survey of global commercial space assets*), tell you where billions of dollars will be spent (**Tim Stryker** *from the White House*), and inspire you with applications of geospatial information that you may not have considered before *(surprise speaker)*.

On behalf of the National Technical Planning Committee, I would like to welcome you to Tampa and the all new IGTF 2015. Thank you for joining us for this exciting event.



Alan Mikuni
GeoWing Mapping, Inc., and
ASPRS National Technical Planning Committee Chair

Media Sponsors

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A Spatial Media publication. Gene Roe leads an expert editorial team, bringing insights and commentary to readers via websites, blogs, eNewsletters & the print editions. Spatial Media (Frederick, Maryland) is an advanced internet media provider, operating websites, eNewsletters and interactive magazines. Publications include The American Surveyor (www.amerisurv.com), GISuser.com, LBSzone.com, Machine Control Magazine (www.machinecontrolonline.com) and others.

COORDINATES
www.mycoordinates.org

COORDINATES is an international monthly magazine on positioning, navigation and geospatial technologies and applications. In its 9th year, it is widely circulated in Asia, Australia, New Zealand, Europe, N. America. Download the complete magazine including the AD's free from www.mycoordinates.org

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DIRECTIONS MAGAZINE
www.directionsmag.com

Directions Magazine is the industry's oldest and most respected source of geospatial information technology news and commentary. Through our articles, newsletters, webinars and social media, we engage our audience, informing them about the latest industry developments and inspiring them to solve real-world business challenges using the latest geospatial information technology. Thanks to our knowledgeable staff, immersed in the industry for decades, our audience gets the insider information they need to excel — right at their fingertips, whenever and wherever they need it. Help us build an interactive and engaged community of professionals, teaching and learning from one another.

EARTH IMAGING JOURNAL
http://eijournal.com/

Earth Imaging Journal is a bimonthly print magazine covering a range of earth observation and geospatial technologies and applications. Content is crafted to satisfy novice through professional. Content is written by industry professionals, researchers and magazine staff to illuminate the broad band of applications, products and processes that are shaping the international Earth imaging market. See more at http://eijournal.com

EARTH MAGAZINE
earthmagazine.org

Each monthly issue of EARTH gives readers definitive coverage on topics from natural resources, energy, natural disasters and the environment to space exploration and paleontology and much, much more. EARTH explores the science behind the headlines with timely, relevant editorial content, numerous photos, illustrations, and great maps, with an increasingly diverse mix of topics in each issue. Awareness of our planet has never been as critical as it is today.

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GISCAFE.COM
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GISCafe is a portal offering GIS and geospatial professionals complete GIS product catalog listings, technical papers, GIS news, CEO interviews, multimedia presentations, priority press releases, event postings, job placement and more. Each GISWeekly Review delivers to its readers news concerning the latest developments in the GIS industry, in a readable newsletter format with feature stories and news bytes. GISCafe receives more than 100,000 unique visitors and its daily newsletter has more than 40,000 subscribers. Subscribe to the daily newsletter at GISCafe.Com.

GISUSER.COM
www.gisuser.com

A Spatial Media publication. Gene Roe leads an expert editorial team, bringing insights and commentary to readers via websites, blogs, eNewsletters & the print editions. Spatial Media (Frederick, Maryland) is an advanced internet media provider, operating websites, eNewsletters and interactive magazines. Publications include The American Surveyor (www.amerisurv.com), GISuser.com, LBSzone.com, Machine Control Magazine (www.machinecontrolonline.com) and others.

LIDARNEWS.COM
www.lidarnews.com

LiDAR News (www.lidarnews.com), a Spatial Media publication, that promotes the adoption of LiDAR and 3D imaging technology. Gene Roe leads an expert editorial team, bringing insights and commentary to readers via websites, blogs, eNewsletters & the print edition of LiDAR Magazine. Spatial Media (Frederick, Maryland) is an advanced internet media provider, operating websites, eNewsletters and interactive magazines.

POB
www.pobonline.com

Founded in 1975, Point of Beginning, also known as POB, serves the surveying and mapping profession through an informative national print publication, bimonthly eNewsletters, a comprehensive website, digital magazines and a professional online community, www.RPLS.com.

SENSORS & SYSTEMS
www.sensorsandsystems.com

Sensors & Systems, covers the integrated technologies of GIS, remote sensing, modeling, spatial analysis, surveying and sensor technologies for the stewardship of our planet. We focus on some of the key challenges that these tools help us address, including energy, water, food, biodiversity, environment and security.

XYHT
www.xyht.com

xyHt magazine is North America's newest cutting-edge resource for precision measurement, positioning and imaging. Today's geospatial professional now sees surveying, GIS, GNSS, BIM, UAS, mapping, remote sensing and photogrammetry as interwoven fields and xyHt invites you to stay ahead of the latest trends! Subscribe today for free.

Frequently Asked Questions

How do I get help in an Emergency?

Contact an ASPRS staff person or pick up any house phone in the Tampa Marriott Waterside Hotel and ask for Security. Give all details of the emergency including the location.

PLEASE DO NOT CALL 911.

Where is the Conference Registration Desk?

The Conference Registration Desk is located in the Tampa Marriott Waterside Hotel on the second floor near the Grand Ballroom.

What are the Conference Registration Desk Hours?

Sunday, May 3	3:00 pm to 6:00 pm
Monday, May 4	6:30 am to 5:00 pm
Tuesday, May 5	6:30 am to 6:30 pm
Wednesday, May 6	7:00 am to 5:45 pm
Thursday, May 7	7:00 am to 5:00 pm

Conference Registration materials are available only during the above hours. Once the Conference Registration Desk is closed, materials will not be available until the following morning.

What are the Technology floor Hours?

The technology floor is located in the Grand Ballroom on the second floor of the Tampa Marriott Waterside Hotel.

Wednesday, May 8th – 10:30 am to 7:00 pm
- Exhibitors' Welcome Lunch – 12:30 pm to 1:30 pm
- Exhibitors' Reception - 5:30 pm to 7:00 pm

Thursday, May 7th - 10:00 am to 3:30 pm
- Lunch on Technology Floor – 12:00 pm to 1:00 pm

Are Workshops included with the registration fees?

No. Workshops require individual registration and a separate fee in addition to the general conference registration fees. Conference registration is not required to attend a workshop but early registration is advisable. Availability is based on space.

Is there a charge for the User Group Meetings?
No, the User Group Meetings are free of charge; however, some may require advance registration.

Are Daily Registrations permitted for all categories?
Daily registrations are available for the IGTF 2015 conference only. If registering for only one day, you may purchase some social tickets for that day only.

Is there an ASPRS staff office on-site?

Yes, the ASPRS staff office is located in the Tampa Marriott Waterside Hotel on the second floor, in meeting room 1.

What should presenters do after they register?

ALL PRESENTERS ARE REQUIRED TO CHECK IN AT THE CONFERENCE REGISTRATION DESK BY INITIALING THE MASTER FINAL PROGRAM NEXT TO THEIR NAME AND INCLUDING EITHER A CELL PHONE NUMBER OR A HOTEL ROOM NUMBER. A Master Program will be posted at the Conference Registration Desk. This information is essential for the moderators to determine that all presenters have arrived and are prepared to make their presentations.

Do presenters bring their own laptops?

ASPRS does ***NOT provide laptops or desktop computers,*** laser pointers, internet or flip charts for speakers. Projectors will be provided in all meeting rooms.

What does ASPRS provide in each Technical Session room? Each technical session room will be equipped with a LCD projector, screen, microphone and podium. ***ASPRS does NOT provide internet access, laser pointers, or laptop computers for the technical sessions.***

Do Presenters have a Preparation Room?

Yes, the ***Greco Boardroom*** on the third floor has been reserved for Presenters. The room will be available on a first come basis and should be used for rehearsal only.

Tuesday, May 5th	8:00 am – 5:00 pm
Wednesday, May 6th	8:00 am – 5:00 pm
Thursday, May 7th	8:00 am – 4:00 pm

This room will be equipped with an LCD projector and screen. All presenters must bring their own laptops for all presentations. We encourage all presenters to review their materials prior to their presentation.

Do Session Chairs need to check-in?

Yes, as soon as you arrive, at the Conference Registration Desk a Master Final Program will be posted. Please put your initials and cell phone number or hotel room number beside your name on this Master Program. We are asking the presenters to do the same thing. This will be our way of knowing that moderators and presenters have arrived.

Prior to your session, check back at the Conference Registration Desk Master Final Program to confirm that all of your presenters have arrived at the conference.

What are Poster Presenters expected to do?

ASPRS provides to each poster presenter one side of a poster board and push pins. Poster boards will be located outside the Technology floor in the foyer. All poster presenters should plan to arrive no earlier than 7:30 am on Tuesday, May 5th to display their work and affix it to their assigned board. Poster presenters **MUST ALSO CHECK IN AT THE CONFERENCE REGISTRATION DESK BY INITIALING THE MASTER FINAL PROGRAM NEXT TO THEIR NAME.** A Master Program will be posted at the Conference Registration Desk. This information is essential for the conference coordinators to determine that all poster presenters have arrived and are prepared to make their presentations.

All posters must be removed by 5 pm Thursday, May 7th. ASPRS is not responsible for posters that are not removed. All poster packaging must be removed from the poster area once posters are installed. After the technology floor closes on Wednesday, May 6th, all poster boards will be moved to the foyer area.

Why do I need a badge?

Your badge is proof that you paid your registration fee. For entrance to the General Sessions, plenary and technical sessions, and Technology floor, you need to wear your name badge.

What if I forget or lose my badge?

A charge of $5 will be made for replacement of lost badges.

Why do I need tickets for certain events?

Your tickets are proof of payment for certain events and must be presented at the collection point. Lost tickets will not be replaced.

Is there an additional charge for the Welcome Reception?

All daily registrants, unregistered guests, and children must purchase tickets if they wish to attend the Welcome Reception. The ticket cost for children under 13 is $35 each. Children 13 years of age and over must have an adult ticket. All tickets must be purchased in advance no later than 10 am on Monday, May 4, 2015. The cost of an adult ticket is $45.

How can I visit the Technology floor if I am not registered for the conference?

Technology floor only badges may be purchased at the Conference Registration Desk in the Tampa Marriott Waterside Hotel. Everyone entering the Technology floor must have a name badge, including children over 13 years of age. Children under 13 years of age are not permitted in the Technology floor at any time due to insurance and safety regulations.

Will it be possible to post resumes and job openings?

Yes, posting boards are provided near the Technology floor for all resumes and job openings. Please bring multiple copies of all postings to allow interested parties to take one and check the board frequently for new materials. Also remember to attend the employer meet and greet that is listed in the program matrix with the technical sessions.

How do I get a copy of the Proceedings?

All registrants, except for those registered as Spouse/Guest, will receive access to the online proceedings are of the conference website. Access for additional people can be ordered on-site for $20. ASPRS has requested proceedings from all speakers and is not responsible for the number of proceedings submitted.

How can someone from outside the hotel contact me?

Messages cannot be personally delivered to Conference attendees due to the varied schedules of everyone in attendance. Cell phone numbers should be made available to anyone needing to contact a conference attendee.

Is there a Lost and Found?

Please contact the Tampa Marriott Waterside Hotel Security for all lost and found items.

Where can I store my bags/luggage?

Please contact the Hotel Bell Desk for storage of your personal items. There may be a fee for this service. ***ASPRS is NOT responsible for your bags or luggage during the Conference and will not hold personal items.*** Bags/luggage/personal items may NOT be stored at the ASPRS Registration Desk.

Is the JACIE Workshop a separate registration fee?

Yes, in order to attend the JACIE Workshop sessions, you must purchase an additional registration. You may register onsite for the JACIE Workshop sessions at the Conference Registration Desk.

Awards and Scholarships

Awards for Outstanding Papers, Professional Achievement, Service and Region activities are determined by committee selection; scholarships and academic awards are also determined by committee selection but are chosen from among current applications. For details on the application process, see:
http://www.asprs.org/ASPRS-Awards-and-Scholarships.html

Welcome Social Reception
Tuesday, May 5th
- Conference Management Awards
- Region Awards

Keynote Address
Wednesday, May 6th
- Honorary Member Award
- Photogrammetric (Fairchild) Award
- Leidos Estes Award

General Session, Memorial Address and 26th Annual Awards Presentation
Thursday, May 7th
- Memorial Address and 26th Annual Awards Presentation: 8:00 am-9:30am
- General Session: 10:00am-11:45am

Welcome Social Reception Tuesday, May 5th

ASPRS Conference Management Awards

2015 recipient: Conference Director Alan Mikuni
2014 recipient: Conference Director Jeffrey S. Lovin

Purpose: The intent of this award is to recognize the great effort put forth by the individuals who volunteer their time to assist in the planning and execution of a successful annual conference.

Donor: The ASPRS Foundation

Award: The award is an engraved plaque with the conference program cover.

ASPRS Region Awards

2015 Region of the Year Award
Not available at press time – see Errata Sheet

Purpose: The Region of the Year Award was established in 1968 to recognize excellence at the regional level in providing service to the members and to the profession at large.

Donor: The ASPRS Foundation

Award: The Region of the Year Award includes a hand engrossed certificate and possession of the Region of the Year banner for one year for the winner and certificates for first and second honorable mention.

2015 Region Newsletter of the Year Award

Not available at press time – see Errata Sheet

Purpose: The Society first bestowed this award in 1980 to recognize excellence of the Region in providing service to the members and to the profession at large through publications of a newsletter.

Donor: The ASPRS Foundation

Award: The Newsletter of the Year Award includes a hand engrossed certificate.

2015 Region Website of the Year Award

1st Place: Western Great Lakes Region
2nd Place: Rocky Mountain Region
3rd Place: Potomac Region

A scoring and weighting system applied by a third party neutral judge is used to decide the winners of the Region Website of the Year Award.

The winning websites demonstrate high quality look and feel in the site design and effectively convey accurate, informative and timely content. Each site is easy to navigate with few or no broken links and page file sizes are minimized to reduce page loading times. The sites display content of unique regional flavor.

Purpose: The Region Website of the Year Award serves to recognize excellence among the regions in providing service to members and to the profession at large through web site publication.

Donor: The ASPRS Foundation

Award: The Region Website of the Year Award, inaugurated in 2003, includes hand-engrossed certificates for all winners.

2015 Region Chapter of the Year Award
Not available at press time – see Errata Sheet

Keynote Address
Wednesday, May 6th

- Photogrammetric (Fairchild) Award
- Leidos/ Estes Memorial Teaching Award

ASPRS Honorary Member

2015 Recipients: Not Available at Press Time

The Honorary Member is the highest award an ASPRS member can receive, and there are only 25 living Honorary Members of the Society at any given time. Candidates are chosen by a Nominating Committee made up of the past five recipients of the award and chaired by the most recent recipient. Initiated in 1937, this life-time award is given in recognition of individuals who have rendered distinguished service to ASPRS and/or who have attained distinction in advancing the science and use of the geospatial information sciences. It is awarded for professional excellence and for at least 20 years of service to ASPRS.

Purpose: to recognize an individual who has rendered distinguished service to ASPRS and/or who has attained distinction in advancing the science and use of the mapping sciences. It is awarded for professional excellence and for service to ASPRS and consists of a plaque and a certificate.

Donor: The ASPRS Foundation

The Photogrammetric (Fairchild) Award

2015 Recipient: Prof. George Vosselman

The 2015 Photogrammetric Award (Fairchild) is awarded to Prof. George Vosselman in recognition of his major contributions to the science and art of photogrammetry. Since 1986, his work has been entirely based on digital photogrammetry and includes an early adoption of artificial intelligence concepts and the Bayes Statistics for image matching, novel concepts in image understanding and analysis for mapping, significant achievements in LiDAR point cloud processing with image integration, both for the generation of very high resolution digital terrain models and for object extraction and scene understanding. Vosselman was one of the early adopters of computer vision methods in photogrammetry and today works in the forefront of combining knowledge from both fields to advance imaging science and technology.

Vosselman received his MSc degree from Delft University of Technology in the Netherlands, in 1986. He then moved to Stuttgart, Germany for his PhD, supervised by Professors Fritz Ackermann and Wolfgang Förstner, which he defended in 1991. In 1992 he spent a period of six months with Robert Haralick at the University of Washington in Seattle. Haralick is one of the most renowned pioneers of early computer vision with a distinct understanding of the advantages of photogrammetric concepts based on solid statistics. In 1993, at the age of 29, Vosselman was appointed a full professor of photogrammetry and remote sensing at Delft University of Technology. In 2004, he continued his scientific career at ITC in Enschede, now part of the University of Twente.

As a professor, Vosselman has supervised a significant number of M.Sc. and PhD students, including many from abroad. He has published approximately 150 scientific papers in a wide range of technical journals in the field of photogrammetry and laser scanning. Many of his contributions were extremely influential, which is visible, for example, from the fact that 16 of them have more than 100 citations each and from his h-index of 37. He is also a co-author of a chapter on computer vision in the 5th and 6th edition of the ASPRS *Manual of Photogrammetry*. Between 2005 and 2012, he was the Editor-in-Chief of the ISPRS *Journal of Photogrammetry and Remote Sensing* (ISPRS J). It is due to his dedicated activities that with a 5-year impact factor of 4.2 ISPRS J ranks among the top journals in the field internationally. George has been the recipient of numerous awards including the Hansa Luftbild Award (German Society of Photogrammetry, 1993), the Otto von Gruber Award (ISPRS, 2000), the Schwidefsky Medal and the Karl Kraus Award (both ISPRS, 2012).

For many years Vosselman served as the Dutch Delegate to EuroSDR and as a Board member of Geo-Information Netherlands (GIN). He has chaired several ISPRS Working Groups, and is a member of the Netherlands and the German Geodetic Commission, as well as of the scientific committee of the Belgium National Geographic Institute.

Purpose: The Photogrammetric (Fairchild) Award is designed to stimulate the development of the art of aerial photogrammetry in the United States. Practicability is the essence of the Award and is the basis for the review of all candidates.

Donor: The ASPRS Foundation and Lockheed Martin

Award: The award consists of a silver presentation plaque mounted on a walnut wood panel and an engraved plaque.

Leidos/ Estes Memorial Teaching Award

2015 Recipient: J.B. Sharma

Sharma is a faculty member at the University of North Georgia (UNG), and is the Assistant Head of the Department of Physics. Sharma received his MSc and PhD from the University of Georgia and his BS from Jacksonville State University. Sharma is also a part of the UNG Institute for Environmental Spatial Analysis (IESA). He was awarded the Georgia Professor of the Year in 1999 by the Carnegie Foundation and an Excellence in Teaching Award by the University System of Georgia, also in 1999. He is the UNG Eminent Scholar for Teaching and Learning since 2009. Sharma has a special interest in both physics and remote sensing education. He is involved in novel curriculum development in introductory college physics courses based on active learning that is enhanced and personalized with instructional technology. He is active in applied remote sensing research, in particular in high spatial resolution remote sensing with data from multiple sensors and Geographic Object Based Image Analysis (GEOBIA)

techniques. He has a special interest in geo-spatial problems that bridge the physical and social domains, undergraduate research and K-12 Physics/Remote Sensing outreach.

The Leidos (formerly SAIC) Estes Memorial Teaching Award was inaugurated in 2003 and is named in honor of Professor John E. ("Jack") Estes, teacher, mentor, scientist, and friend of the American Society for Photogrammetry and Remote Sensing.

Purpose: This award is designed to recognize individual achievement in the promotion of remote sensing and GIS technology, and applications through educational efforts. Award recipients are chosen based on documented excellence in education, teaching, mentoring and, training.

Donor: Leidos through the ASPRS Foundation

Award: The award consists of a presentation plaque and a cash award of $2,000.

81st Installation of ASPRS Officers Dessert Reception Wednesday, May 6th

Welcome A. Stewart Walker

President's Report

Presidential Citations A. Stewart Walker

2015 Recipients:

ASPRS Map Accuracy Standards Working Group:

Qassim Abdullah
David Maune
Douglas Smith
Hans Karl Heidemann

Task Force on Streamlining the Governance and Management of ASPRS:

Ryan Bowe
Ekaterina Fitos
Douglas Smith

Purpose: First awarded in 1992, Presidential Citations are presented by the ASPRS President to members of ASPRS and other societies, family members, and friends in recognition of special, personal, and meritorious contributions to the operation or advancement of the Society and its interests during the presidential year.

Donor: The ASPRS Foundation

Award: The Presidential Citation is a hand-engrossed certificate.

Recognition of Retiring Members of Board of Directors and Executive Committee
David Alvarez, GIS Division
Lorraine Amenda, Northern California Region
Terry A. Curtis, Puget Sound Region
Lucinda A. Clark, Intermountain Region
David W. Kreighbaum, Heartland Region
Steven Lambert, Southwest U.S. Region
Pierre LeRoux, Primary Data Acquisition Division
Brian E. Murphy, Sustaining members Council
Jeffrey M. Young, Rocky Mountain Region

Teller's Report
Larry Hothem

Installation of New and Re-elected Directors
A. Stewart Walker
Matthew D. Dunbar, GIS Division
Gregory Brunner, Heartland Region
Alan Mikuni, Pacific Southwest Region
Gregory Stensaas, Primary Data Acquisition Division
Pierre LeRoux, Unmanned Autonomous Systems (UAS) Division
David A. Brown, Puget Sound Region
Jeffrey M. Young, Rocky Mountain Region
Brenda S. Burroughs, Sustaining Members Council

Installation of New Assistant Directors
Allen Cook, Primary Data Acquisition Division
Mary Latiolais, GIS Division
Bruce Quirk, UAS Division

Installation of President-Elect & Vice President
Charles Toth, President-Elect
Rebecca A. Morton, Vice-President

Installation of Incoming President
E. Lynn Usery

E. Lynn Usery **presents awards to retiring President**
A. Stewart Walker

Col. Claude H. Birdseye President's Citation
2015 Recipient: A. Stewart Walker

Purpose: The Col. Claude H. Birdseye President's Citation was established in 1965 as a tribute to one of the founders and the first president of the Society. Each year at the Annual Convention it is conferred on the outgoing president in recognition of her/his contributions to the Society.

Donor: ASPRS Foundation

Award: The Birdseye Citation carries with it a gold Past President's Key, and a hand-engrossed certificate. The retiring President will also receive a photo plaque of the Board of Directors and his Presidential Gavel mounted on a walnut plaque.

Michael Baker 75th Anniversary Presentation
UAS Division, First Year Presentation

General Session
Thursday, May 7th

Welcome
A. Stewart Walker

ASPRS Fellow Award
2015 Recipients:

Not Available at Press Time

Purpose: Started in 1992, the designation of Fellow is conferred on Society members who have been active for a total of at least ten years and who have performed exceptional service in advancing the science and use of the mapping sciences and related disciplines. It is awarded for professional excellence and for service to the Society.

Donor: the ASPRS Foundation

Award: The ASPRS Fellow Award includes a hand-engrossed certificate.

ASPRS Outstanding Technical Achievement Award (OTAA)

2015 Recipient: Tom Barclay for the TerraServer research and development

APSRS awards the 2015 OTAA to Tom Barclay for the development of the Microsoft TerraServer which was the precursor to today's mapping websites that provide geospatial professionals and the general public with on-line access to traditional maps, satellite, aerial and street-view imagery using common browsers on personal computers and mobile devices.

The TerraServer evolved from research on the scalability of relational database management system which Tom conducted with the late James Gray. The TerraServer pioneered the early work of building a massively large image database of aerial and satellite imagery that standard web browsers can access without the need for special plug-ins or other applications.

Barclay is currently partner architect and development manager of Bing Imagery Technologies and the Bing Search team at Microsoft. He has been with Microsoft Corporation since 1994 and was the lead researcher on Microsoft TerraServer. Prior to his career at Microsoft, Barclay was a software consultant with Digital Equipment Corporation from 1976 to 1994. Barclay is interested in database design, scientific computing, and data mining.

Today, online mapping websites enable PC and smartphone users to view traditional maps, aerial or satellite imagery, or "street view" images of their neighborhood, place of work, or vacation destination practically anywhere in the world. These applications did not exist until the late 1990s. Researchers Barclay and Gray at Microsoft Research's Bay Area Research Center in San Francisco, California, pioneered the early work of building a massively large image database of aerial and satellite imagery that standard web browsers can access without the need for special plug-ins or other applications.

The original motivation for the project was to test the scalability of a new version of the Microsoft SQL Server relational database management system (RDBMS). Working with the SQL Server team, the research project was to build a single database instance that was big (1 terabyte [TB] or larger); public (accessible on the Internet); interesting; accessible via standard web browsers (no plug-ins required); real (had a commercial purpose); fast; and easy to use, build, and deploy. Finding an interesting, real, and large dataset that wasn't already widely available was a challenge. At the time, circa 1996, the geographic information system (GIS) community was able to store and display street and world maps through web browsers. But the industry had not been able to build and deploy high-resolution imagery such as that found today on sites like Bing Maps or Google Maps.

The website then known as Microsoft TerraServer and has evolved to today's Bing Maps initially stored 2.3 TB of U.S. Geological Survey (USGS) grayscale "digital orthophoto quadrangle" (DOQ) imagery and 1 TB of declassified Russian military satellite data that were provided by Sovinformsputnik's U.S. partner, Aerial Images, Inc. The Microsoft TerraServer researcher's novel approach was to take the very large images—varying from 25 MB to 200 MB each—and tile them into very small, 200 x 200 pixel JPEG compressed "tiles" that ranged from 6 KB to 36 KB, depending on the image content. The pixels were selected from the source imagery such that a "seamless mosaic" of large expanses of Earth would appear to the user as a single, large image. The Microsoft TerraServer tiling and mosaic scheme proved to be a breakthrough in the GIS industry. The Microsoft TerraServer tiling approach is used by all major high-resolution imagery sites, including Google Earth, Google Maps, MapQuest, and Yahoo Maps.

TerraServer is the first mapping service on the Internet with programmatic interfaces. At its release, it was the largest data collection accessible via web services. The TerraServer project generated a significant amount of feedback to the Microsoft SQL team on how to scale databases to large datasets. SQL Server was the foundation for the Virtual Earth technology.

References:

Barclay, T., et al, 1998, Microsoft TerraServer, *Science@Microsoft: The Fourth Paradigm in Practice,* http://msdn.microsoft.com/en-us/library/aa226316(v=sql.70).aspx (Last date accessed: 13 December 2014).

Barclay, T., Jim Gray and Don Slutz, 1999, Microsoft TerraServer: A Spatial Data Warehouse, http://research.microsoft.com/pubs/68574/msr_tr_99_29_terraserver.pdf (Last date accessed: 13 December 2014).

The ASPRS Outstanding Technical Achievement Award was introduced for the first time in 2012. This Award consists of a silver presentation plaque mounted on a wood panel plus a check for $5,500.

Purpose: This generous grant is designed to reward the developer[s] of a specific breakthrough technology which causes quantum advances in the practice of photogrammetry, remote sensing or geographic information systems in the United States.

Donor: In 2011, ASPRS and the ASPRS Foundation received a very generous individual donation from Honorary Member and ASPRS Fellow Clifford W. Greve to endow a new Outstanding Technical Achievement Award. This award is now fully endowed at the $5,500 level.

ASPRS Outstanding Service Award

2015 Recipients:

Jim Crabtree for his many years of dedicated work on the Evaluation for Certification Committee.

John Faundeen for his leadership as Chair of the Data Preservation and Archiving Committee. He has been a leader in both the US and the international community regarding preservation of remotely sensed data and making those data available to user communities around the world.

John Iiames for his work over the last 6 years as the Book Review Editor of *PE&RS,* obtaining appropriate books and selecting and editing reviews.

Bobbi Lenczowski for her long-standing, selfless service to the Society and for her continuing work as Secretary of the ASPRS Board of Directors

Alan Mikuni, Rebecca Morton and Pierre LeRoux for spearheading the ASPRS UAS Technical Demonstration and Symposium, which took place in Reno, Nevada, in October 2014 and attracted more than 500 participants.

Purpose: Established in 1991, The Outstanding Service Award is given to Society members in recognition of outstanding and unusual efforts in helping ASPRS develop and carry out its program over a sustained period. Recipients have performed outstanding service at the chapter, regional, or national level. Awardees' service includes any activities, including professional, that have helped the Society achieve its goals and objectives.

Donor: The ASPRS Foundation

Award: The Outstanding Service Award consists of a bronze plaque

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Memorial Address and 26th Annual Awards Presentatons Thursday, May 7th

Memorial Address
Presented by Past President Karen Schuckman

26th Annual Awards Presentation
Scholarships and Academic Awards

- Robert E. Altenhofen Memorial Scholarship
- Abraham Anson Memorial Scholarship
- John O. Behrens ILI Memorial Scholarship
- Robert N. Colwell Memorial Fellowship
- DigitalGlobe Foundation Award
- William A. Fischer Memorial Scholarship
- International Educational Literature Award
- Francis H. Moffitt Memorial Scholarship
- Kenneth J. Osborn Memorial Scholarship
- Ta Liang Memorial Award
- Paul R. Wolf Memorial Scholarship
- Z/I Imaging Award

Outstanding Papers Awards

- Boeing Award for Best Paper in Image Analysis and Interpretation
- John I. Davidson President's Award for Practical Papers
- ERDAS Award for Best Scientific Paper in Remote Sensing
- ESRI Award for Best Scientific Paper in GIS
- Talbert Abrams Award

Service Award

- Ford Bartlett Membership Award

Robert E. Altenhofen Memorial Scholarship

2015 Recipient: Mostafa Arastounia

Arastounia is a doctoral candidate at the University of Calgary, Canada, Department of Geomatics Engineering, with a specialization in feature recognition from 3-D LIDAR. He has an extremely strong background in photogrammetry and geomatics. He is well-published in ISPRS Archives and Annals and numerous other papers. He has two excellent academic letters of recommendation, has served as a teaching assistant and has been very active professionally. His faculty advisor is Professor Derek Lichti.

Purpose: First given in 1986, the Robert E. Altenhofen Memorial Scholarship is intended to encourage and commend college students who display exceptional interest and ability in the theoretical aspects of photogrammetry.

Donor: The ASPRS Foundation. This award was originally established by Mrs. Helen Altenhofen as a memorial to her husband, Robert E. Altenhofen, past president of ASPRS. He was an outstanding practitioner of photogrammetry and made notable contributions to the mathematical aspects of the science.

Award: The Altenhofen Scholarship consists of a check for $2,000 and a hand-engrossed certificate.

Abraham Anson Memorial Scholarship
And the
John O. Behrens Institute for Land Information Memorial Scholarship

2015 Recipient: Caitlin A. Ruby

Caitlin Ruby is selected as the recipient of both the Abraham Anson Memorial Scholarship and the John O Behrens ILI Memorial Scholarship.

Ruby, from the University of Southern Mississippi, is pursuing a Bachelor's degree in Geography with an emphasis on Geographic Information Technologies and is on track to receive her degree in May, 2015. She is applying to graduate programs with focus areas in Geography, Geosciences, Watershed Analysis and Environmental Sustainability in order to continue her involvement in advanced spatial technologies. In recognition of her combination of practical experience and education with the pursuit of excellence in geospatial technologies and remote sensing, she is awarded these two scholarships. Ruby demonstrates the commitment, dependability and motivation which were exemplified by John O. Behrens and Abraham Anson. She also demonstrates her own exceptional interest in pursuing scientific research and education in geospatial sciences and applying it to a career in natural resource conservation.

Anson Scholarship Purpose: To encourage students who have an exceptional interest in pursuing scientific research or education in geospatial science or technology related to photogrammetry, remote sensing, surveying and mapping to enter a professional field where they can use the knowledge of their discipline to excel in their profession.

Donor: This award is presented by the ASPRS Foundation from funds donated by the Anson bequest and contributions from the Society and the Potomac Region as a tribute to Abe Anson's many contributions to the field of photogrammetry, remote sensing, and long, dedicated service to the Society.

Award: The award consists of a certificate, a check in the amount of $2,000 and a one-year student membership (new or renewal) in the Society.

The John O. Behrens ILI Memorial Scholarship was established by the Institute for Land Information (since officially dissolved) as a tribute to the many contributions of Mr. Behrens to the field of geographic and land related information and technology. John O. Behrens was a founder of the ILI and the author of many articles about the value of spatial information, land assessment and taxation, and land information policy. In recognition of Mr. Behrens outstanding contributions over his distinguished career, funds from the ILI have been donated to the ASPRS Foundation to be administered for the John O. Behrens ILI Memorial Scholarship.

Behrens Scholarship Purpose: To encourage students/persons who have an exceptional interest in pursuing scientific research or education in geospatial science or technology or land information systems/records to enter a professional field where they can use the knowledge of this discipline to excel in their profession.

Donor: The ASPRS Foundation from funds donated by the ILI.

Award: The Award consists of a certificate and a check in the amount of $2,000.

Robert N. Colwell Memorial Fellowship

2015 Recipient: Nicholas Roberts

Roberts is completing a PhD degree in Earth Sciences at Simon Frazer University in British Columbia, Canada. He is using advanced radar analysis to enhance the understanding of landslide processes and the associated risk for the city of La Paz and the rural village of Yocarhuaya, Bolivia, where especially high landslide activity causes loss of life and property damage. His research has identified and characterized several large, previously unknown landslides that underlie the La Paz region. These findings are contributing to improved risk reduction, landslide mitigation, and land-use planning in the region. Over his 12-year academic career, Roberts has analyzed a wide variety of remotely sensed data—traditional and digital aerial photographs, stereo optical satellite data, lidar, sonar, radar, and InSAR—to characterize and understand the mechanisms causing several of the world's largest landslides. He has provided new insights into the behavior of major landslides (and in some cases the resulting tsunamis) in Canada, Iran (the largest known landslide on Earth), Tajikistan, Mongolia, the Philippines, and Bolivia. Roberts has achieved a high level of success in practical applications of geospatial technology because he has effectively combined four important components: a strong background in geologic mapping, field studies, and dating techniques; expertise in a wide range of remote sensing capabilities; a solid understanding of advanced radar processing; and collaborations with local scientists and land use planning officials to apply the results of his research. He has published in peer-reviewed journals, presented at leading conferences, and taught air photo interpretation in Canada and Bolivia. He has practical experience as a geomatics consultant in assessing landslide threats along 800 miles of natural gas pipelines in northern Canada and Alaska using high-resolution lidar and aerial photography.

After completing his degree, Roberts will join the U.S. Geological Survey as a post-doc to continue this research. Having noticed a paucity of researchers with advanced experience in both geosciences and applied geomatics, he has set as one of his career priorities to train graduate and undergraduate students in these fields.

Over the course of more than a half century, Robert N. Colwell developed a reputation as one of the world's most respected leaders in remote sensing, a field that he stewarded from the interpretation of aerial photographs during World War II, to the advanced acquisition and analysis of many types of geospatial data from military and civilian satellite platforms. His career included nearly 40 years of

teaching and research at the University of California, Berkeley, a distinguished record of military service reaching the rank of Rear Admiral, and prominent roles in private industry and as a consultant for many U.S. and international agencies. Among the many awards bestowed upon him, Colwell had the distinction of being one of the 25 Honorary Members of ASPRS.

Purpose: Established in 2006 to encourage and commend college/university graduate students or post-doctoral researchers who display exceptional interest, desire, ability, and aptitude in the field of remote sensing or other related geospatial information technologies, and who have a special interest in developing practical uses of these technologies.

Donor: The ASPRS Foundation, from funds donated by students, associates, colleagues and friends of Robert N. Colwell.

Award: The Award now consists of a grant of $6,500 and a one-year student or associate membership (new or renewal) in ASPRS.

The DigitalGlobe Foundation Award

2015 Recipient: Chunyuan Diao

Diao is PhD student in the Geography/Remote Sensing Program at University of Buffalo, New York. Diao has been selected to receive a DigitalGlobe Foundation data grant for his graduate work on Monitoring spatio-temporal dynamics of saltcedar invasion with high-resolution satellite imagery. Invasive species threaten the functioning of natural ecosystems and cause substantial economic losses at the global scale. Among a number of exotic plants, saltcedar is particularly problematic in the southwestern United States through profoundly altering riparian zones and native biotic communities. The widespread invasion of saltcedar altered fire regimes, increased soil salinity, and reduced recruitment of native plants. The most significant impact of the saltcedar invasion is its high water consumption rate, which draws downs water tables, increases the sediment production, and dries up desert springs. Today, saltcedar is even considered as the third most frequently occurring riparian exotic plant in the western US and listed among the "World's Worst Invasive Alien Species". Mapping the spatial distribution of saltcedar and monitoring its spatio-temporal dynamics over time are therefore essential for conservation agencies to locate susceptible areas and develop cost-effective control strategies.

Diao's research will focus in:

- Evaluating the efficacy of high-resolution satellite imagery in classifying saltcedar by comparing its mapping result to AISA imagery.
- Monitoring spatio-temporal dynamics of saltcedar invasion from 2004 to 2014 with high-resolution satellite imagery.

The ASPRS Digital Globe Foundation Award consists of a grant of data valued up to $5,000 and a certificate inscribed with the name of the recipient.

The Award was established in 1991. In 2001 it became known as the Space Imaging Award for the Application of High Resolution Digital Satellite Imagery, in 2006 it became The GeoEye Award and in 2013 became the DigitalGlobe Foundation Award.

Purpose: To support remote sensing education and stimulate the development of applications of high-resolution digital satellite remote sensing data through the granting of DigitalGlobe imagery for applied research by undergraduate or graduate students.

Donor: The DigitalGlobe Foundation through the ASPRS Foundation

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William A. Fischer Memorial Scholarship
And the
Paul R. Wolf Memorial Scholarship

2015 Recipient: Benjamin Vander Jagt

Benjamin Vander Jagt is selected as the recipient of both the William A. Fischer Memorial Scholarship and the Paul R. Wolf Memorial Scholarship

Vander Jagt, currently a Ph.D. student in the Geodetic Science and Surveying Program at the Ohio State University, has been selected to receive the 2015 William A. Fischer Memorial Scholarship. Vander Jagt is being presented this award in recognition of his innovative academic accomplishments, impressive record of published research, dedication to teaching, and leadership in student organizations. The committee believes that Vander Jagt's research on mapping snow depth and extent using microwave and advance remote sensing systems will be of significant value in achieving much needed knowledge for water resources management. Vander Jagt's demonstration that snow depth can be retrieved using Lidar and advanced photogrammetry from Unmanned Aerial Vehicles (UAVs) exhibits the kind of innovation William Fischer would have wanted recognized and clearly holds significant promise as water managers grapple with the impacts of global climate change.

The committee congratulates Vander Jagt on his accomplishments and is confident that his current and future research efforts will continue to make important contributions to the global community.

Fischer Memorial Purpose: The William A. Fischer Scholarship facilitates graduate studies and career goals of a worthy student adjudged to address new and innovative uses of remote sensing data and techniques that relate to the natural, cultural, or agricultural resources of the Earth. It was established in 1984.

Donor: the ASPRS Foundation through individual and corporate contributions in memory of William A. Fischer.

Award: The William A. Fischer Memorial Scholarship consists of a $2,000 check and a hand-engrossed certificate.

Wolf Memorial Purpose: To encourage and commend college students who display exceptional interest, desire,

ability, and aptitude to enter the profession of teaching surveying, mapping, or photogrammetry.

Donor: the ASPRS Foundation from funds donated by the friends and colleagues of Paul R. Wolf. Recognized nationally and internationally, Paul was an outstanding educator and practitioner of surveying, mapping, and photogrammetry and a great friend of the Society. As author, teacher, and mentor, Paul made significant educational and academic contributions to these fields. The award was inaugurated in 2003.

Award: The award includes a grant of $4,000 and a hand-engrossed certificate

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International Educational Literature Award

2015 Recipient: University of Sierra Leone, Department of Geography

Represented by Jinnah Sammuel Momoh, PhD

The Department of Geography, University of Sierra Leone is the main provider for lecturing on Geoinformation, which includes GIS, GPS, Photogrammetry, and Remote Sensing for the disciplines of Geography, Biological Sciences, Geology, and Civil Engineering. The Department of Geography offers technology application curricula in forestry, agriculture, landscape, engineering transport studies, environmental studies, and water resource evaluation, planning, and management. The University Sierra Leone has a strong need for materials to update and increase library holdings for the Geosciences. The award materials will provide students with the opportunity to include current journal articles and books into course work; and, the materials will allow professors access to current technology advances for inclusion into class programs.

Purpose: The International Educational Literature Award (IELA) was first bestowed in 1990. Its goal is to improve the quantity and quality of literature in the recipient's library, particularly in the mapping sciences (i.e. photogrammetry, remote sensing, GIS, and related disciplines) by providing ASPRS educational materials and publications.

Donor: the ASPRS Foundation from funds donated by ASPRS members and participating sponsors through contributions to the ASPRS Foundation.

Award: The IELA includes $350 worth of books, manuals, or other literature published by ASPRS; a five-year subscription to *PE&RS*, proceedings of the Annual Conference and Fall technical meetings for five years; one free registration to the Society's Annual Conference at the time of receiving the award for a member of the institution to whom the award is being given; and a hand-engrossed certificate.

This award has been augmented by

- a generous grant from the Environmental Systems Research Institute (ESRI) of the complete ESRI Press Library collection
- Selected titles from the John Wiley and Sons, Publishers, catalog.

The Kenneth J. Osborn Memorial Scholarship
And the
Francis H. Moffitt Memorial Scholarship

2015 Recipient: Taylor J. Preece

Taylor J. Preece is selected as the recipient of both The Kenneth J. Osborn Memorial Scholarship and the Francis H. Moffitt Memorial Scholarship

Taylor Preece is pursuing a Bachelor of Science degree in Geomatics Engineering, with a minor in mathematics, from the California State University at Fresno. He plans to graduate in May of 2015. He is licensed in California as an LSIT, and plans to acquire his ASPRS photogrammetrist technologist intern certification. He is active in many Fresno State organizations including the Student Association of Geomatics Engineers. He is vice-president of the American Society for Photogrammetry and Remote Sensing student chapter, President of the Lambda Sigma land surveying honorary society, member of the California Land Surveyors Association student chapter, and a member of the Epsilon Eta chapter of Sigma Chi. He has also volunteered at various conferences, including: the 51st, 52nd, and 53rd annual Geomatics Engineering Conference at Fresno State, the 2013 CLSA/NALS conference in Reno, Nevada, the 2014 CLSA/NALS conference in San Diego, California, and the 2014 ASPRS UAS Symposium in Reno, Nevada. Currently, he is planning a GIS day at his campus to be hosted by the ASPRS student chapter. Upon graduation, Preece plans to return to his home town in the Imperial Valley of California, to work in the mapping and land surveying profession while pursuing his Professional Surveyor license; his faculty advisor is Riadh Munjy

Osborn Memorial Purpose: to encourage and commend college students who display exceptional interest, desire, ability, and aptitude to enter the profession of surveying, mapping, photogrammetry, or geospatial information and technology. In addition, the Award recognizes students who excel at an aspect of the profession that Ken demonstrated so very well, that of communications and collaboration.

Donor: The ASPRS Foundation from funds donated by the friends and colleagues of Kenneth J. Osborn. Recognized nationally and internationally, Ken was an outstanding practitioner of surveying, mapping, photogrammetry, and geospatial information and technology, and a great friend of the Society. As a professional cartographer with the U.S. Geological Survey, Ken made significant contributions to these fields. The award was first offered in 2005.

Award: The Award consists of a one-year membership in the Society (new or renewal), an engrossed certificate and a check in the amount of $2,000.

Moffitt Memorial Purpose: The award was first presented in 2008 with the purpose of encouraging upper-division, undergraduate-level and graduate-level college students to pursue a course of study in surveying and photogrammetry leading to a career in the geospatial mapping profession.

Donor: The ASPRS Foundation from funds donated to the Foundation from former students, associates, colleagues and friends.

Award: The award consists of a certificate and a check in the amount of $6,500 and a new or renewal membership in ASPRS.

Ta Liang Memorial Award

2015 Recipient: Matthew Cross

Cross is a PhD. student in Civil Engineering Systems at the University of Colorado, Denver specializing in remote sensing and geographic information systems. He earned MA (1988) and BS (1985) degrees from the University of Nebraska Lincoln in climatology and meteorology. Mr. Cross's current research focuses on biomass determination within tropical forests. He aims to integrate high spatial and radiometric resolution imagery with additional information—e.g., climate and topography—to different tree species across different scales and then combine this with high resolution Lidar data for species-specific biomass calculation. Accurate measurement of biomass is expected to facilitate a better understanding of the role forests have in the changing climate, particularly in estimating carbon storage and uptake. The Ta Liang travel grant will support field visits to Costa Rica or Mexico to collect reference data for model training and validation. Cross gained substantial professional experience before returning to academia to complete his graduate studies. In addition to excelling as a student and professional, Mr. Cross has also been involved in a range of extracurricular efforts benefiting the geospatial profession, his community, and students in K-8 education.

Purpose: To facilitate research-related travel by outstanding graduate students in remote sensing, including field investigations, agency visits, participation in conferences, or other travel which enhances or facilitates graduate research.

Donor: Individual and corporate contributions to the ASPRS Foundation in memory of Ta Liang.

Award: Established in memory of Ta Liang, a skilled civil engineer, an excellent teacher, and one of the world's foremost airphoto interpreters, the award consists of a $2,000 grant and a hand-engrossed certificate.

Z/I Imaging Scholarship

2015 Recipient: James Bialis

Bialis is currently a Master's student at Michigan Technological University working in the field of Integrated Geospatial Technology. His current research focuses on a variety of topics including crowd-sourced validation of supervised image object classification through machine learning methods utilizing an internet-based, crowd-sourced web application to validate results and the development of low cost UAV sensors and platforms with the integration of non-traditional sensors. Bialis has a background in telecommunications and IT and has a specific interest in wireless communications systems. He believes that as WiFi and cellular networks proliferate, detailed mapping of them in and outside of buildings becomes a powerful engineering tool. With the support of this scholarship, he hopes to begin a PhD program in Computer Science to not only further develop these projects, but also engage in a new human/computer Interface research project. By leveraging wearable computers like Google Glass, real time satellite, UAV data, and cloud computing, he hopes to develop an augmented reality system to visualize and aid in decision making.

Purpose: The Z/I Imaging Award, is designed to facilitate graduate-level studies and career goals adjudged to address new and innovative uses of signal processing, image processing techniques, and the application of photogrammetry to real-world techniques within the earth imaging industry.

Donor: Z/I Imaging though the ASPRS Foundation

Award: The Z/I Imaging Award consists of a $2,000 cash prize and a hand-engrossed certificate.

Boeing Award for Best Paper in Image Analysis and Interpretation

2015 Recipient:

George Ch. Miliaresis for "Daily Temperature Oscillation Enhancement of Multitemporal LST Imagery." *PE&RS*, 80 (5), 423-428.

Purpose: Established in 1965 as the Autometric Award, this grant recognizes development

and achievement in the field of photographic interpretation through special acknowledgment of superior publications on the various aspects of image analysis and interpretation.

Donor: Boeing S&IS Mission Systems through the ASPRS Foundation

Award: The Award includes an inscribed certificate and a cash award of $1,000.

The John I. Davidson President's Award for Practical Papers

2015 Recipients:

1st Place: Daniel M. Howard and Bruce K. Wylie for "Annual Crop Type Classification of the US Great Plains for 2000 to 2011," *PE&RS*, 80 (6), 537-549.

2nd Place: Anahita Khosravipour, Andrew K. Skidmore, Martin Isenburg, Tiejun Wang, and Yousif A. Hussin for "Generating Pit-free Canopy Height Models from Airborbe Lidar," *PE&RS*, 80 (9), 863-872.

3rd Place: Caiyun Zhang for "Combining Hyperspectral and Lidar Data for Vegetation Mapping in the Florida Everglades," *PE&RS,* 80 (8), 733-743.

Purpose: The John I. Davidson Award was established in 1979 to encourage and commend individuals who publish papers of practical or applied value in *Photogrammetric Engineering & Remote Sensing (PE&RS).*

Donor: The ASPRS Foundation

Award: The First Place award includes an engraved pewter tankard, a cash award of $500 and a hand-engrossed certificate; Second Place is a cash award of $300 and a hand-engrossed certificate; Third Place is a cash award of $200 and a hand-engrossed certificate.

ERDAS Award for Best Scientific Paper in Remote Sensing

2015 Recipients:

1st Place: Michael Marshall and Prasad Thenkabail for "Biomass Modeling of Four Leading World Crops Using Hyperspectral Narrowbands in Support of HyspIRI Mission." *PE&RS*, 80 (8), 757-772.

2nd Place: Zhizhong Kang, Fengman Jia and Liqiang Zhang for "A Robust Image Matching Method based on Optimized BaySAC." *PE&RS*, 80 (11), 1041-1052.

3rd Place: Inseong Jeong and James Bethel for "An Automatic Parameter Selection Procedure for Pushbroom Sensor Models on Imaging Satellites." *PE&RS*, 80 (2), 171-178.

Purpose: Established in 1991 as the ERDAS Award for Best Scientific Paper in Remote Sensing, it became the Leica Geosystems Award for Best Scientific Paper in Remote Sensing in 2002 and returned to ERDAS sponsorship in 2009. This award encourages and commends individuals who publish papers of scientific merit that advance our knowledge of remote sensing technology.
Donor: ERDAS through the ASPRS Foundation
Award: The ERDAS Award first prize is $500 and a hand-engrossed certificate; second prize is $300 and a hand-engrossed certificate; third prize is $200 and a hand-engrossed certificate.

The Esri Award for Best Scientific Paper in GIS

2015 Recipients:

1st Place: Zachary P. Sugg, Tobias Finke, David C. Goodrich, M. Susan Moran, and Stephen R. Yool for "Mapping Impervious Surfaces Using Object-oriented Classification in a Semiarid Urban Region," *PE&RS*, 80 (4), 343-352.

2nd Place: Katherine E. Williams and Sharolyn J. Anderson for "Geostatistical Methods for Predicting Soil Moisture Continuously in a Subalpine Basin," *PE&RS*, 80 (4), 333-341.

3rd Place: Bo Yu, Li Wang, Zheng Niu, and Muhammad Shakir for "An Effective Morphological Index in Automatic Recognition of Built-up Area Suitable for High Spatial Resolution Images as ALOS and SPOT Data," *PE&RS*, 80 (6), 529-536.

Purpose: Established in 1991, the fully-endowed ESRI Award honors individuals who publish papers of scientific merit that advance our knowledge about GIS technology.

Donor: Esri, Inc. through the ASPRS Foundation

Award: The Esri Award first prize is $1,000 and a hand-engrossed certificate; second prize is $600 and a hand-engrossed certificate; third prize is $400 and a hand-engrossed certificate.

The Talbert Abrams Award

2015 Recipients:

Grand Award: Aaron E. Maxwell, Timothy A. Warner, Michael P. Strager, and Mahesh Pal for "Combining RapidEye Satellite Imagery and Lidar for Mapping of Mining and Mine Reclamation," PE&RS, 80 (2), 179-189.

First Honorable Mention: Jacob L. Strunk, Hailemariam Temesgen, Hans-Erik Andersen, and Petteri Packalen for "Prediction of Forest Attributes with Field Plots, Landsat, and a Sample of Lidar Strips: A Case Study on the Kenai Peninsula, Alaska," PE&RS, 80 (2), 143-150.

Second Honorable Mention: Anahita Khosravipour, Andrew K. Skidmore, Martin Isenburg, Tiejun Wang, and Yousif A. Hussin for "Generating Pit-free Canopy Height Models from Airborne Lidar," PE&RS 80 (9), 863-872

Purpose: The Talbert Abrams Award was established in 1945 to encourage the authorship and recording of current, historical, engineering, and scientific developments in photogrammetry. The Award is determined from papers published in *Photogrammetric Engineering & Remote Sensing (PE&RS).*

Donor: The ASPRS Foundation

Award: The award consists of a check for $3,000 and an engraved plaque for the Grand Award, and an award certificate for the First and Second Honorable Mentions.

ASPRS Service Award

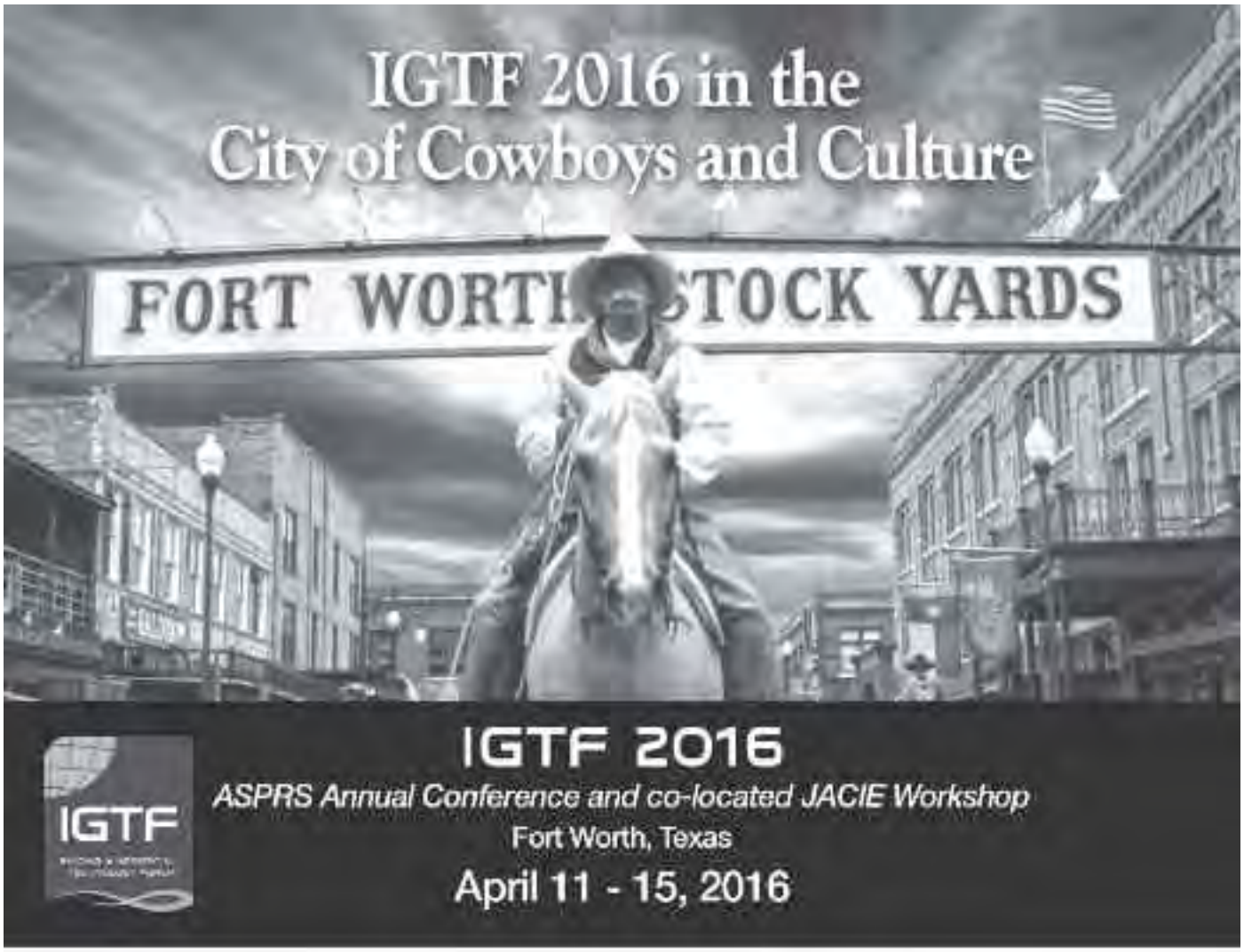
Ford Bartlett Award

2015 Recipient: Erik Brewster

Purpose: First awarded in 1968, the ASPRS Ford Bartlett Membership Award honors members for actively promoting membership in ASPRS.

Donor: the ASPRS Foundation. (This award was originally sponsored by the firm of Lockwood, Kessler, and Bartlett, Inc.)

Award: A member is eligible to receive the Award after sponsoring ten or more members in one year. Each recipient receives a hand-engrossed certificate and a one-year membership in the Society.



IGTF
Imaging & Geospatial Technology Forum

Future ASPRS Conferences

- **ASPRS UAS Mapping 2015 Reno**
  Reno, Nevada | Reno Ballroom | September 29 - October 1, 2015
- **IGTF 2016 - ASPRS Annual Conference and co-located JACIE Workshop**
  Fort Worth, Texas | Fort Worth Convention Center | April 11 – 15, 2016
- **IGTF 2017 & co-located JACIE Workshop**
  Baltimore, Maryland | Baltimore Marriott Waterfront Hotel | March 13 - 16, 2017
- **IGTF 2018 & co-located JACIE Workshop**
  Location - TBD | Dates - TBD
- **IGTF 2019 & co-located JACIE Workshop**
  Baltimore, Maryland | Baltimore Marriott Waterfront Hotel | April 15 - 19, 2019

The ASPRS Student Advisory Council (SAC) ...
...ensuring Student Member representation in ASPRS and more.

SAC is a group of students committed to serving all of the student members of ASPRS. Our goal is to ensure that ASPRS is a Society that both benefits from student involvement and creates opportunities for those students.

SAC is led by a Council of seven students who meet monthly to discuss issues pertaining to ASPRS Student Members. What do they do?

- **Organize special sessions** of interest to students at ASPRS Annual and fall conferences. http://www.asprs.org/Annual-Conferences/Program/
- **Create networking opportunities** during those conferences and bring together students looking for employment after graduation with potential employers in the industry.
- Inaugurate new programs within ASPRS.
- Design activities such as the **GeoLeague Competition** where students compete in teams using geospatial technology applications to solve a problem. http://www.asprs.org/Students/GeoLeague-Challenge-2014.html.

Promote student involvement in humanitarian projects such as crowdsourcing the manual interpretation of imagery in Somalia to identify shelters that are being used as homes by refugees. http://irevolution.net/tag/tomnod/.

All ASPRS Student Members are encouraged to become involved with SAC. Check out the SAC Social Networking sites and keep up with ongoing news.

Student Newsletter: http://asprssignature.blogspot.com/

Facebook page: https://www.facebook.com/pages/ASPRS-Student-Advisory-Council/117943608233122

LinkedIn Group: http://www.linkedin.com/groups?home=&gid=2487675&trk=anet_ug_hm

Email: asprs.chairsac@gmail.com

asprs STUDENT ADVISORY COUNCIL THE IMAGING & GEOSPATIAL INFORMATION SOCIETY

	LONGITUDE **PARTNER**	LONGITUDE **ACADEMY & COMMERCE**	LONGITUDE **UAS & PHOTOGRAM.**
Sessions for Wednesday, May 6th			
9:00 am – 10:30 am	**[A1] Plenary 1: Humanitarian Applications of Geospatial Information** *(Sponsor: ASPRS)*		
11:00 am – 12:30 pm LAT: IMPACT	**[1B]** NGA Session #1: Humanitarian Disaster Respons Case Study *(Sponsor: NGA)*	**[2B]** Education Outreach & Citizen Science *(Sponsor: EP&D)*	**[3B]** Geospatial Data Portal & Manual of RS Chapter 6 *(Sponsor: DPAC)*
12:30 pm – 1:30 pm - Complimentary Lunch for Attendees on Technology Floor			
1:30 pm – 3:00 pm LAT: APPLICATION	**[1C]** Remote Sensing of Surface Processes and Geological Hazards *(Sponsor: GRSG)*	**[2C]** A World of Important Applications (Poster-Based Talks) *(Sponsor: ASPRS)*	**[3C]** Emerging Commercial Markets: UAS for Mapping and Surveys: AUVSI Simulcast Session *(Sponsor: ASPRS, AUVSI)*
3:30 pm – 5:00 pm LAT: TRENDS	**[1D]** Advances in Automated Feature Extraction *(Sponsor: ISPRS, IAPR)*	**[2D]** Trending Commercial Applications *(Sponsor: ASPRS)*	**[3D]** UAS and the Rebirth of Photogrammetry *(Sponsor: PDAD)*
Sessions for Thursday, May 7th			
8:00 am – 9:30 am LAT: FOUNDATIONS	**[1E]** NGA Session #2: Academic Research Program *(Sponsor: NGA)*	**[2E]** Memorial Address & 26th Annual Awards Presentation *(Sponsor: ASPRS)*	**[3E]** Modern Approaches to "Old School" Photogrammtery *(Sponsor: PAD)*
10:00 am – 12:00 pm	**[F1] Plenary 2: Earth Observation: National Budget and International Capability** *(Sponsor: ASPRS, JACIE)*		
12 noon – 1:00 pm - Supplemented Boxed Lunch for Attendees on Technology Floor			
1:15 pm – 2:45 pm LAT: CAPABILITY	**[1G]** NGA Session #3 *(Sponsor: NGA)*	**[2G]** Advanced Capabilities (Poster-Based Talks) *(Sponsor: ASPRS)*	**[3G]** Non-Traditional Photogrammetric Applications *(Sponsor: SAC)*
3:30 pm – 5:00 pm LAT: FUTURE	**[1H]** Get Ready! The Earth is about to Move! Geometrical Datums from the Federal Government *(Sponsor: AAGS)*	**[2H]** Urban Landscape Remote Sensing *(Sponsor: RSAD)*	**[3H]** Clash between UAS Technology Advances and FAA Regulations (panel session) *(Sponsor: UASD)*

LONGITUDE **PARTNER**	LONGITUDE **ACADEMY & COMMERCE**	LONGITUDE **UAS & PHOTOGRAM.**	
Sessions for Wednesday, May 6th			
[A1] Plenary 1: Humanitarian Applications of Geospatial Information *(Sponsor: ASPRS)*			**9:00 am – 10:30 am**
[4B] Geological Resource Applications of Remote Sensing *(Sponsor: GRSG)*	**[5B]** Transportation: Engineering, Mapping and Surveys *(Sponsor: TRB)*	**[6B]** International Year of the Map 2015 *(Sponsor: CaGIS)*	**11:00 am – 12:30 pm LAT: IMPACT**
12:30 pm – 1:30 pm - Complimentary Lunch for Attendees on Technology Floor			
[4C] Applications of NASA Earth Observations: (hybrid panel session) *(Sponsor: NASA)*	**[5C]** Student Avisory Council and Young Professionals Council Summit *(Sponsor: SAC, YPC)*	**[6C]** Recent Advances in GIS *(Sponsor: GISD)*	**1:30 pm – 3:00 pm LAT: APPLICATION**
[4D] New Trends in Remote Sensing Systems and Platforms: A Panel Discussion *(Sponsor: PDAD, JACIE)*	**[5D]** Advanced LiDAR Technology *(Sponsor: LD)*	**[6D]** GIS Analysis, Management, and Mapping *(Sponsor: CaGIS)*	**3:30 pm – 5:00 pm LAT: TRENDS**
Sessions for Thursday, May 7th			
[4E] RS Data Fusion & Change Analysis: Application to Global Challenges *(Sponsor: RSAD)*	**[5E]** Employer Meet and Greet *(Sponsor: SAC)*	**[6E]** New Era for Geospatial Collaboration with ASPRS Standards *(Sponsor: ASPRS)*	**8:00 am – 9:30 am LAT: FOUNDATIONS**
[F1] Plenary 2: Earth Observation: National Budget and International Capability *(Sponsor: ASPRS, JACIE)*			**10:00 am – 12:00 pm**
12 noon – 1:00 pm - Supplemented Boxed Lunch for Attendees on Technology Floor			
[4G] New Remote Sensing Satellites - JACIE Session #8 (Open to Everybody) *(Sponsor: JACIE, ASPRS)*	**[5G]** 3D Elevation Program (3DEP) Products and Services *(Sponsor: LD, PDAD)*	**[6G]** Geospatial Workflow, Discovery, Modeling, and Data Fusion *(Sponsor: GISD)*	**1:15 pm – 2:45 pm LAT: CAPABILITY**
[4H] Ecological Remote Sensing *(Sponsor: RSAD)*	**[5H]** Emerging 3D Technologies *(Sponsor: LD)*	**[6H]** Report Card on the U.S. National Geospatial Infrastructure *(Sponsor: ASPRS)*	**3:30 pm – 5:00 pm LAT: FUTURE**

Sunday, May 3rd

3:00 pm to 6:00 pm	**IGTF & JACIE Registration Desk Open**	*Grand Ballroom Foyer*

Monday, May 4th

6:30 am to 5:00 pm	**IGTF & JACIE Registration Desk Open**	*Grand Ballroom Foyer*
7:45 am to 5:15 pm	**Workshop #1 – Lidar for Terrain and Vegetation Mapping**	*Meeting Room 10, 3rd Floor*
7:45 am to 5:15 pm	**Workshop #2 – Preparing for ASPRS Certification**	*Meeting Room 8, 3rd Floor*
7:45 am to 5:15 pm	**Workshop #3 – Hyperspectral and Extended MultispectralRemote Sensing: Phenomenology, Sensor Systems, and Data Processing**	*Meeting Room 9, 3rd Floor*
8:00 am - 5:00 pm	**Open for Ad Hoc Meetings**	*Grand Ballroom, Salon J*
8:00 am - 9:00 am	**Journal Policy Committee Meeting**	*Grand Ballroom, Salons G & H*
9:00 am - 10:00 am	**Publications Committee Meeting**	*Grand Ballroom, Salons G & H*
10:30 am - 11:30 am	**Electronic Communications Committee (ECC) Meeting**	*Grand Ballroom, Salons G & H*
11:30 am - 12:30 pm	**Data Preservation & Archive Committee (DPAC) Meeting**	*Grand Ballroom, Salons G & H*
11:30 am - 12:30 pm	**Education & Professional Development (E&PD) Meeting**	*Grand Ballroom, Salons G & H*
12:45 pm to 5:15 pm	**Workshop #4 – Current Status of Earth Observation Using Synthetic Aperture Radar (SAR) and SAR Data of Fine Resolution**	*Meeting Room 9, 3rd Floor*
1:30 pm - 2:30 pm	**Unmanned Autonomous Systems Division (UASD)**	*Grand Ballroom, Salons G & H*
2:30 pm - 3:30 pm	**Geographic Information Systems Division (GISD)**	*Grand Ballroom, Salons G & H*
2:30 pm - 3:30 pm	**MRS-4 Committee**	*Grand Ballroom, Salon I*
4:00 pm - 5:00 pm	**Standards Committee**	*Grand Ballroom, Salons G & H*
4:00 pm - 5:00 pm	**Evaluation for Certification**	*Grand Ballroom, Salon I*
5:30 pm - 6:30 pm	**Student Advisory Council (SAC)**	*Grand Ballroom, Salons G & H*

Sunday, May 3rd

Pre-Conference Program

IGTF & JACIE Registration Desk Open
3:00 pm to 6:00 pm
Location: Tampa Marriott Waterside Hotel, Grand Ballroom Foyer

Monday, May 4th

Pre-Conference Program

IGTF & JACIE Registration Desk Open
6:30 am to 5:00 pm
Location: Tampa Marriott Waterside Hotel, Grand Ballroom Foyer

Workshops

Workshop #1 - Lidar for Terrain and Vegetation Mapping
Qi Chen, University of Hawaii at Manoa
CEUs: 0.8
Level: Intermediate
Time: Full Day, 7:45 am - 5:15 pm*
Room: Meeting Room 10, 3rd Floor

Workshop #2 - Preparing for ASPRS Certification
Robert Burtch, Ferris State University
CEUs: 0.8
Level: Intermediate
Time: Full Day, 7:45 am - 5:15 pm*
Room: Meeting Room 8, 3rd Floor

Workshop #3 - Hyperspectral and Extended Multispectral Remote Sensing: Phenomenology, Sensor Systems, and Data Processing
William Farrand, Farr View Consulting
CEUs: 0.8
Level: Intermediate
Time: Half Day AM, 7:45 am – 12:15 pm
Room: Meeting Room 9, 3rd Floor

Workshop #4 – Current Status of Earth Observation Using Synthetic Aperture Radar (SAR) and SAR Data of Fine Resolution
Yong Wang, East Carolina University
CEUs: 0.4
Level: Intermediate
Time: Half Day PM, 12:45 pm - 5:15 pm
Room: Meeting Room 9, 3rd Floor

ASPRS Committee Meetings

Anyone interested in the work of an ASPRS Division or Committee is welcome to attend these meetings. There is no registration required for attendance at the Division and Committee meetings. Your participation is encouraged and welcome.

Journal Policy Committee
8:00 am - 9:00 am
Room: Grand Ballroom, Salons G & H

Publications Committee Meeting
9:00 am - 10:00 am
Room: Grand Ballroom, Salons G & H

Electronic Communications Committee (ECC) Meeting
10:30 am - 11:30 am
Room: Grand Ballroom, Salons G & H

Data Preservation & Archive Committee (DPAC) Meeting
11:30 am - 12:30 pm
Room: Grand Ballroom, Salons G & H

Education & Professional Development (E&PD) Meeting
11:30 am - 12:30 pm
Room: Grand Ballroom, Salons G & H

Unmanned Autonomous Systems Division (UASD)
1:30 pm - 2:30 pm
Room: Grand Ballroom, Salons G & H

Geographic Information Systems Division (GISD)
2:30 pm - 3:30 pm
Room: Grand Ballroom, Salons G & H

MRS-4 Committee
2:30 pm - 3:30 pm
Room: Grand Ballroom, Salon I

Standards Committee
4:00 pm - 5:00 pm
Room: Grand Ballroom, Salons G & H

Evaluation for Certification
4:00 pm - 5:00 pm
Room: Grand Ballroom, Salon I

Student Advisory Council (SAC)
5:30 pm - 6:30 pm
Room: Grand Ballroom, Salons G & H

Continuing Education Credits (CEU's)

ASPRS is pleased to announce that Continuing Education Units (CEUs) are awarded for the ASPRS workshops. This program is being offered in conjunction with George Mason University.

The Continuing Education Unit (CEU) is a nationally recognized unit of measurement for participation in non-credit continuing education programs. Adults who successfully complete George Mason University's approved programs will be awarded continuing education units. A permanent record of CEUs awarded will be maintained in the university database and will be easily accessible for certification and verification purposes.

The objective of the CEU is to:
- Provide a nationally established record of professional development learning activity
- Encourage adult students to utilize educational resources to meet their personal and educational needs
- Recognize individuals who continue their education and keep themselves current in their chosen professions
- Enable individuals to have an accurate source of their current CEU activity
- Provide a system to document continuing education experiences in meeting certification requirements.

George Mason University, Office of Continuing Professional Education is registered with the National Association of State Boards of Accountancy (NASBA), as a sponsor of continuing professional education on the National Registry of CPE Sponsors. State boards of accountancy have final authority on the acceptance of individual courses for CPE credit.

Tuesday, May 5th

6:30 am to 5:00 pm	**IGTF & JACIE Registration Desk Open**	*Grand Ballroom Foyer*
6:30 am to 6:30 pm	**IGTF & JACIE Registration Desk Open**	*Tampa Marriott Waterside Hotel, Grand Ballroom Foyer*
7:00 am to 8:30 am	**JACIE Workshop Breakfast** *JACIE Workshop Registrants Only – Tickets Required*	*Meeting Room 8, 9, 10, 3rd Floor*
7:30 am to 9:00 am	**Poster Set-up**	*Grand Ballroom Foyer*
7:45 am to 5:15 pm	**Workshop #5 – Introduction to Unmanned Aerial System (UAS) Operations**	*Meeting Room 12, 3rd Floor*
7:45 am to 5:15 pm	**Workshop #6 – Object-Based Image Analysis**	*Meeting Room 11, 3rd Floor*
7:45 am to 5:15 pm	**Workshop #8 – GPS-based Aerial Triangulation for Imaging Sensors Orientation**	*Meeting Room 4*
8:00 am to 5:00 pm	**Open Room for Ad Hoc Meetings**	*Grand Ballroom, Salon I*
8:00 am to 9:00 am	**Lidar Division**	*Grand Ballroom, Salons G & H*
8:00 am to 12 noon	**ASPRS Foundation Meeting**	*Greco Boardroom, 3rd Floor*
8:30 am to 8:45 am	**JACIE Workshop Welcome and Opening Remarks** *JACIE Workshop Registrants Only – Tickets Required*	*Meeting Room 8, 9, 10, 3rd Floor*
8:30 am to 12:15 pm	**Free Seminar - How to Publish and Review for a Top Journal**	*Florida Ballroom, Salon IV*
8:45 am to 9:45 am	**JACIE Session – The Benefits of JACIE** *JACIE Workshop Registrants Only – Tickets Required*	*Meeting Room 8, 9, 10, 3rd Floor*
9:00 am to 10:00 am	**Photogrammetric Applications Division (PAD)**	*Grand Ballroom, Salons G & H*
9:45 am to 10:15 am	**JACIE Workshop Break** *JACIE Workshop Registrants Only – Tickets Required*	*Meeting Room 8-10, 3rd Floor*
10:15 am to 12:00 pm	**JACIE Session – Agency Heads with Q & A** *JACIE Workshop Registrants Only – Tickets Required*	*Meeting Rooms 8-10, 3rd Floor*
10:30 am to 11:30 am	**Young Professionals Council (YPC)**	*Grand Ballroom, Salons G & H*
10:30 am - 11:30 am	**Photogrammetric Applications Division (PAD)** *Defense & Intelligence subcommittee*	*Grand Ballroom, Salon I*
11:30 am to 12:30 pm	**National Technical Planning Committee (NTPC)**	*Grand Ballroom, Salons G & H*

12:00 pm to 5:00 pm	**Speaker Ready Room**	*Greco Boardroom, 3rd Floor*
12:00 pm to 1:00 pm	**JACIE Workshop Lunch** - *Tickets Required*	*Florida Ballroom, Salons I – III, 2nd Floor*
12:30 pm to 1:30 pm	**Sustaining Members Council (SMC)**	*Grand Ballroom, Salons G & H*
12:45 pm to 5:15 pm	**Workshop #7 – Introduction to Shortwave Infrared (SWIR) Analysis Tools**	*Florida Ballroom, Salon IV*
1:00 pm to 2:45 pm	**JACIE Session #2**	*Meeting Rooms 8-10, 3rd Floor*
1:30 pm - 2:30 pm	**Remote Sensing Applications Division (RSAD)**	*Grand Ballroom, Salons G & H*
1:30 pm - 2:30 pm	**Awards & Scholarships**	*Grand Ballroom, Salon I*
2:30 pm - 3:30 pm	**Primary Data Acquisition Division (PDAD)**	*Grand Ballroom, Salons G & H*
2:30 pm - 3:30 pm	**Professional Practice Division (PPD)**	*Grand Ballroom, Salon I*
2:45 pm to 3:15 pm	**JACIE Workshop Break** *JACIE Workshop Registrants Only – Tickets Required*	*Meeting Room 8-10, 3rd Floor*
3:15 pm to 5:00 pm	**JACIE Session #3** *JACIE Workshop Registrants Only – Tickets Required*	*Meeting Rooms 8-10, 3rd Floor*
3:30 pm - 5:30 pm	**Division Directors & Committee Chairs**	*Grand Ballroom, Salons G & H*
5:45 pm to 9:00 pm	**Optional Transportation to Welcome Reception**	*Hotel Lobby Entry Doors*
6:00 pm to 9:00 pm	**Welcome Reception Social Event**	*The Florida Aquarium*

**Specific JACIE Workshop registration required to attend.*

IGTF & JACIE Registration Desk Open
6:30 am to 6:30 pm
Location: Tampa Marriott Waterside Hotel, Grand Ballroom Foyer

Poster Set-up
7:30 am to 9:00 am
Location: Grand Ballroom Foyer

All poster presenters should plan to arrive no earlier than 7:30 am to display their work and affix their poster to their assigned poster board. All poster boards are numbered and each registered poster presenter is given a specific number in their registration packets. PLEASE only affix your poster to your assigned poster board. All poster packaging must be removed from the poster area once posters are installed.

WORKSHOPS

Workshop #5 – Introduction to Unmanned Aerial System (UAS) Operations
Dave Prall, Unmanned Experts and Ed Freeborn, Unmanned Experts
CEUs: 0.8
Level: Intermediate
Time: Full Day, 7:45 am to 5:15 pm
Room: Meeting Room 12, 3rd Floor

Lunch is included with a paid registration for this workshop.

Workshop #6 – Object-Based Image Analysis
Jarlath O'Neil-Dunne, University of Vermont and Keith Pelletier, University of Minnesota
CEUs: 0.8
Level: Advanced
Time: Full Day, 7:45 am to 5:15 pm
Room: Meeting Room 11, 3rd Floor

Lunch is included with a paid registration for this workshop.

Workshop #8 – GPS-based Aerial Triangulation for Imaging Sensors Orientation
Qassim Abdullah, Woolpert, Inc. and Riadh Munjy, University of California, Fresno
CEUs: 0.8
Level: Intermediate
Time: Full Day, 7:45 am to 5:15 pm
Room: Meeting Room 4

Lunch is included with a paid registration for this workshop.

ASPRS COMMITTEE MEETINGS

Anyone interested in the work of an ASPRS Division or Committee is welcome to attend these meetings. There is no registration required for attendance at the Division and Committee meetings. Your participation is encouraged and welcome.

Open Room for Ad Hoc Meetings
8:00 am to 5:00 pm
Room: Grand Ballroom, Salon I
This room is open to anyone who needs a space for a meeting. Please use the sign-up sheet outside the room and block your time accordingly.

Lidar Division
8:00 am to 9:00 am
Room: Grand Ballroom, Salons G & H

ASPRS Foundation Meeting
8:00 am to 12 noon
Room: Greco Boardroom, 3rd Floor

Photogrammetric Applications Division (PAD)
9:00 am - 10:00 am
Room: Grand Ballroom, Salons G & H

Young Professionals Council (YPC)
10:30 am - 11:30 am
Room: Grand Ballroom, Salons G & H

Photogrammetric Applications Division (PAD)
Defense & Intelligence subcommittee
10:30 am - 11:30 am
Room: Grand Ballroom, Salon I

National Technical Planning Committee (NTPC)
11:30 am - 12:30 pm
Room: Grand Ballroom, Salons G & H

Sustaining Members Council (SMC)
12:30 pm - 1:30 pm
Room: Grand Ballroom, Salons G & H

Remote Sensing Applications Division (RSAD)
1:30 pm - 2:30 pm
Room: Grand Ballroom, Salons G & H

Awards & Scholarships
1:30 pm - 2:30 pm
Room: Grand Ballroom, Salon I

Primary Data Acquisition Division (PDAD)
2:30 pm - 3:30 pm
Room: Grand Ballroom, Salons G & H

Professional Practice Division (PPD)
2:30 pm - 3:30 pm
Room: Grand Ballroom, Salon I

Division Directors & Committee Chairs
3:30 pm - 5:30 pm
Room: Grand Ballroom, Salons G & H

Presenters Preparation Room
12 noon to 5:00 pm
Room: Greco Boardroom, 3rd Floor

This room is open for presenters to practice their presentation. The room is on a first-come, first-served basis and is equipped with a screen and LCD projector for presenter use. Please be respectful of fellow presenters and the use of this room.

FREE SEMINAR

How to Publish and Review for a Top Journal
Elaine van Ommen Kloeke, Elsevier Publishing
Time: 8:30 am – 12:15 pm
Room: Florida Ballroom, Salon IV

This seminar will provide insight and tips from a Journal Editor on how to structure a paper, write a cover letter and deal with awkward feedback from reviewers.

Writing for academic journals is highly competitive. Even if you overcome the first hurdle and generate a valuable idea or piece of research - how do you then sum it up in a way that will capture the interest of reviewers?

There's no simple formula for getting published - editors' expectations can vary both between and within subject areas. But there are some challenges that will confront all academic writers regardless of their discipline. How should you respond to reviewer feedback? Is there a correct way to structure a paper? And should you always bother revising and resubmitting? This free seminar will help to answer those and many other questions.

No printed workbook will be provided for this seminar. Materials will be available to registered attendees electronically.

Welcome Reception & Social Event

The Florida Aquarium
701 Channelside Drive, Tampa, Fl
Tuesday, May 5th, 6:00 pm until 9:00 pm

Come and Swim with the Fishes without Getting Wet!

Well, how about take a walk through an authentic Florida mangrove or view an underwater scene of the Gulf of Mexico, all without getting wet? The Florida Aquarium is the location for the IGTF 2015 Welcome Reception and is conveniently located in the heart of Channelside District, only a short half-mile walk from the conference host hotel and along a beautiful pedestrian friendly path – The Tampa Riverwalk.

Your evening begins with either a short walk to The Florida Aquarium or a motor coach will be available at the Hotel entrance for attendees. Buses will load at the Tampa Marriott Waterside Hotel main entrance and will run continuously throughout the evening. **Attendee entrance tickets will be required at the entrance to The Florida Aquarium, so don't forget your tickets! Tickets will NOT be available at the aquarium entrance doors.**

A live band, NautiKool, will welcome you into The Florida Aquarium and a whole new world!
Refreshments will be served throughout the evening and throughout the aquarium. Each ticket holder will receive one complimentary beverage. All bars will be on a cash basis for additional beverages.

Transportation: Walking is the easiest and the walk is short and very safe along The Tampa Riverwalk. Or complimentary motor coach service is available, loading at the Tampa Marriott Waterside Hotel lobby entrance. The first bus departs at 5:45 pm.

Food & Beverage: Heavy hors d'oeuvres and one complimentary beverage per guest, cash bar open all evening.

Come and experience the underwater world of Florida and the Gulf of Mexico!

The evening at The Florida Aquarium is included in the registration for those paying the Full and Spouse/Guest IGTF Registration fee. All other registration types, including children wishing to attend this event MUST purchase tickets in advanced at the Conference Registration Desk no later than 10:00 am on Monday, May 4th. Tickets will not be sold onsite at the Aquarium. Children over the age of 13 years must purchase an adult ticket.

Wednesday, May 6th

7:00 am to 5:45 pm	**IGTF & JACIE Registration Desk Open**	*Tampa Marriott Waterside Hotel, Grand Ballroom Foyer*
8:00 am to 5:00 pm	**Presenters Preparation Room Open**	*Greco Boardroom, 3rd Floor*
8:00 am to 9:00 am	**JACIE Workshop Breakfast** *JACIE Workshop Registrants Only – Tickets Required*	*Meeting Room 8-10, 3rd Floor*
9:00 am to 10:30 am	**Plenary Session #1** – *Open to JACIE and IGTF Registrants* ***Geospatial Big Data and Humanitarian Applications***	*Florida Ballroom, 2nd Floor*
10:30 am to 7:00 pm	**Technology Floor Open**	*Grand Ballroom, Salons A – F*
10:30 am to 11:00 am	**Attendee Refreshment Break**	*Technology Floor, Grand Ballroom, Salons A – F*
11:00 am to 12:30 pm	**IMPACT Sessions,** Time Block B	*Various, see descriptions*
11:00 am to 12:30 pm	**JACIE Workshop Session #4** *JACIE Workshop Registrants Only – Tickets Required*	*Meeting Room 8-10, 3rd Floor*
12:30 pm to 1:30 pm	**Exhibitors' Welcome Lunch**	*Technology Floor, Grand Ballroom, Salons A – F*
1:30 pm to 3:00 pm	**APPLICATION Sessions,** Time Block C	*Various, see descriptions*
1:30 pm to 3:00 pm	**JACIE Workshop Session #5 (B)** *JACIE Workshop Registrants Only – Tickets Required*	*Meeting Room 8-10, 3rd Floor*
3:00 pm to 3:30 pm	**Attendee Refreshment Break**	*Technology Floor, Grand Ballroom, Salons A – F*
3:00 pm to 3:30 pm	**JACIE Poster Session**	*Technology Floor, Grand Ballroom, Salons A – F*
3:30 pm to 5:00 pm	**TRENDS Sessions,** Time Block D	*Various, see descriptions*
3:30 pm to 5:00 pm	**JACIE Workshop Session #6 (C)** *JACIE Workshop Registrants Only – Tickets Required*	*Meeting Room 8-10, 3rd Floor*
5:30 pm to 7:00 pm	**Exhibitors' Reception**	*Technology Floor, Grand Ballroom, Salons A – F*
7:00 pm to 9:00 pm	**81st Installation of ASPRS Officers & Awards Dessert Reception**	*Florida Ballroom, 2nd Floor*

IGTF & JACIE Registration Desk Open
7:00 am to 5:45 pm
Location: Tampa Marriott Waterside Hotel, Grand Ballroom Foyer

Presenters Preparation Room
8:00 am to 5:00 pm
Location: Greco Boardroom, 3rd Floor

ASPRS/JACIE Joint Plenary Presentation - 1
9:00 am to 10:30 am
Location: Florida Ballroom, 2nd Floor

Welcome
Alan Mikuni, *National Technical Planning Committee Chair*

Moderator
Michael Hauck, *ASPRS Executive Vice President*

GEOSPATIAL BIG DATA AND HUMANITARIAN APPLICATIONS

Geospatial information is a paradigm for relating our knowledge to our surroundings. We exploit this relationship in providing disaster relief, resource management, and other humanitarian activities. And, this is the age of Big Data - a paradigm for finding hidden relationships in a complex world. Combining the two, Geospatial Big Data holds the promise for helping is to tackle some of the world's toughest problems.

Dr. Luke Barrington, *Director of New Products, DigitalGlobe*

Dr. Barrington is an entrepreneur and thought leader in machine learning, crowdsourcing, and computer engineering fields. At DigitalGlobe he leads the development of new products that serve online mapping portals, geospatial app developers and global development organizations.

Barrington was the founder and CTO of Tomnod, and Founder and CTO of Music Search, Inc. He received his Ph.D. from University of California, San Diego and B.Eng. from University College Dublin.

Barrington says, “Every day DigitalGlobe collects over 4,000,000 square kilometers of high resolution imagery, complete with super-spectral information. This creates immense opportunity not only to see the globe but to understand it. Geospatial Big Data (GBD) connects our daily take and entire archive to a collection of analytic tools, algorithms and workflows, all in a scalable and secure cloud-based environment.”
Listen to his TEDx talk (https://www.youtube.com/watch?v=sQh-_OTdICM).

Mr. Stuart Blundell, *GM & Director of Sales, Exelis Visual Information Solutions*
(Director, ASPRS Remote Sensing Applications Division)

Stuart Blundell is driven by creativity, innovation, and a strong desire to win. He is the General Manager and Director of Sales for the Commercial Software Segment within Exelis Visual Information Solutions. His segment's integrated solutions capture, intensify, compress, encrypt, transmit, combine, analyze, and deliver data so that customers can move beyond mere image acquisition to image interchange and true knowledge sharing.

Blundell was Vice President of Geospatial Products & Solutions for Overwatch Systems and COO of Visual Leaning Systems, Inc.. He received his M.S. from the University of Wyoming and B.S. from Montana Tech of the University of Montana.

Blundell says, "We're at the threshold of a new era in Earth science analytics. Everything about how we do our business is being challenged by the staggering growth of Earth imagery, radar, LiDAR and full-motion video data. What happens next with this massive amount of data will be nothing short of transformational. We have the opportunity to move beyond image classification and apply Earth science analytics to a wide range of critical needs in environmental and natural resource monitoring, global food production, security, urbanization and other fields of research."

Award Presentations
- Photogrammetric (Fairchild) Award
- LIDOS Estes Award

PE&RS HIGHLIGHT ARTICLES

Proposals Wanted

ASPRS is actively seeking Highlight Articles for publication in *PE&RS*

Highlight Articles are meant to extend the impact of *PE&RS* to an even broader range of readers. These articles are semi-technical or non-technical. Each article should address topics of broader interests with greater impact to the geospatial community, and accommodate the interests of readers with a diverse level of geospatial knowledge. Highlight Articles may: review recent or historical developments in technology, industry or academia; discuss new or unusual approaches to common problems; address topics of common concerns or interests.

ASPRS is interested in articles of varied topics but are most interested in articles on:

- Use of UAS for mapping purposes
- Humanitarian activities/relief efforts facilitated by imaging and geospatial technologies
- Sports applications of photogrammetry
- Microsatellite platforms
- Remote sensing projects by international teams
- Imaging and geospatial information programs/initiatives in K-12 education
- Machine vision and artificial intelligence applied to imagery
- Remote sensing applications in the following industries; beer, wine, truffles
- Intelligent transportation systems facilitated by photogrammetry, remote sensing, imaging, and geospatial technologies
- Cybersecurity related to geospatial information
- Privacy issues related to geospatial information (must be balanced and thoughtful presentation)

Please note: Highlight Articles are NOT peer-reviewed articles and should not contain lengthy lists of references or complex equations. They should contain high quality photos and graphics.

For more information, contact: Rae Kelley, Assistant Director-Publications at rkelley@asprs.org.

Technology Floor Open
10:30 am to 7:00 pm
Location: Grand Ballroom, Salons A – F

Take some time to visit with the fantastic Exhibitors in attendance this year. Many activities are planned for the 2015 Technology Floor, so plan your schedule and don't miss out!

All Conference Beverage Break
10:30 am to 11:00 am
Location: Technology Floor, Grand Ballroom, Salons A – F

Take a break! Come to the Technology Floor for a beverage, visit with our fantastic Exhibitors and network with colleagues. All conference attendees are welcome, complimentary beverages provided inside the hall.

IMPACT Sessions, Time Block B
11:00 am to 12:30 pm

The Conference planning group does its best to assure all speakers attend the conference; however, occasionally there are situations that arise where a listed speaker does not attend. Session Chairs should not skip ahead if a scheduled speaker is not present. Please use this open time for a question and answer period in the session.

IMPACT Sessions – Time block "B"
11:00 am - 12:30 pm

1B – PARTNER TRACK
NGA Session #1: Humanitarian Disaster Respons Case Study
Session Sponsored by NGA
Moderator: John Desmarais (Civil Air Patrol Director of Operations)
Room: Florida Ballroom

This is a joint presentation by leaders in the Civil Air Patrol (CAP), the National Geospatial Intelligence Agency (NGA) , and the Federal Emergency Management Agency (FEMA) highlighting how they work together, followed by a question and answer period with the audience. The team of both on site and remote presenters will highlight the existing and developing capabilities for inexpensively collecting useful imagery though CAP, how NGA processes that imagery to build tools and products that FEMA leadership and responders at the federal, state and local level then use to help communities and citizens impacted by disasters.

Panelists:
- Civil Air Patrol Operations Directorate Representative
- National Geospatial Intelligence Agency Integrated Working Group for Readiness, Response, and Recovery Representative
- Federal Emergency Management Agency Office of Response and Recovery Representative

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2B – ACADEMIC & COMMERCIAL TRACK
Education Outreach & Citizen Science
Session Sponsored by E&PD
Moderator: Catherine Lockwood (CNL World)
Room: Meeting Rooms 5 & 6

This session highlights the use of Citizen Science for geospatial and remote sensing education and outreach with an emphasis on facilitation, integration, and applications. Citizen Science is the application of the scientific method for developing, collecting, accumulating, analyzing, and sharing scientific data by all and any citizen of a particular body or organization. Usually this is accomplished by "citizens" outside of a formally structured setting through crowd sourcing mechanisms.

2B[1]
ArcGIS Online and Google Earth Engine - Cloud Computational Environment to Facilitate Remote Sensing/GIS Integration
Demetrio Zourarakis (Kentucky Division of Geographic Information)

2B[2]
Citizen Science in the Geospatial Sciences and Remote Sensing Arenas
Catherine Lockwood (CNL World)

2B[3]
The Evolution of Volunteer Science in the U.S. GEOLOGICAL SURVEY National Geospatial Program
Lawrence Handley (U.S. Geological Survey)

2B[4]
Remote Sensing and GIS for Web Based Digital Humanities' Historic North Georgia Spaces and Places
Jitendra Sharma (University of North Georgia)

2B[5]
Colombia Ecological Forecasting
Caren Remillard (Wise County / DEVELOP National Program)
Coauthor(s): Amin, Mohamed, Braun, Erick, Chen, Ning, Essig, Hillary, Hawman, Peter, Hu, Tunan

2B[6]
A Common Language for Mapping: the Glossary of Mapping Sciences
Melissa J. Tolene Rura (UMNC)
Coauthor(s): Alverez, David, Lenczowski, Roberta, Pope, Paul

3B – UAS & PHOTOGRAMMETRIC TRACK
Geospatial Data Portal & Manual of Remote Sensing Chapter 6
Session Sponsored by DPAC
Moderator: Jeff Young (LizardTech)
Room: Meeting Room 12, 3rd Floor

Overview of ASPRS DPAC's new portal catalog connecting users and producers of aerial photography. Many institutions possessing aerial photography go undiscovered resulting in RS assets not being utilized. This initiative seeks to provide the discovery mechanism for the perceived millions of frames of aerial photography that exist in private companies, universities, and NGOs. Supplementing the portal examination will be a status update of chapter 6 from the Manual of Remote Sensing v4. Archiving and Access Systems is the chapter focus and is being compiled by over 40 contributors, many being ASPRS members.

3B[1]
ASPRS DPAC Aerial Photography Portal
Jeff Young (LizardTech)

3B[2]
Portal Background
John Faundeen (U.S. Geological Survey)
Coauthor(s): Young, Jeff; Day, David; Teng, Bill; Pope, Bob

3B[3]
Portal Development Process
David Day (Keystone Aerial Surveys)

3B[4]
Portal Target Providers
Bill Teng (National Aeronautics and Space Administration)

3B[5]
Adding New Aerial Records
Bob Pope (Waterstone Environmental)

3B[6]
Access Systems for Remote Sensing (MRSv.4 Chapter6)
George Percivall (Open Geospatial Consortiam (OGC))

3B[7]
Archiving Systems for Remote Sensing (MRS v.4 Chapter 6)
John Faundeen (U.S. Geological Survey)

4B – REMOTE SENSING TRACK
Geological Resource Applications of Remote Sensing
Session Sponsored by GRSG
Moderator: Lori Wickert
Room: Grand Ballroom, Salons I & J

Remote sensing provides a critical tool for the geological resource industry supporting baseline geological mapping during resource exploration and across the operational lifecycle of a project. This session presents current, state of the art approaches and applications of remote sensing to geological mapping and resource studies with a specific focus on utilization of spectral data.

4B[1]
Mineral Composition Modeling from WorldView-3 Hi-Res Satellite Imagery - Case History using 16-band Multispectral Data Set - Ayacucho Region, Central Peru
Sandy Perry

4B[2]
New Airborne Thermal Imaging System for Mapping and Monitoring Pipelines
Stephen Achel

4B[3]
Remote Predictive Mapping (RPM): A review of methods for producing bedrock, surficial and mineral propsectivity maps of the Canadian Arctic
Jeff Harris

4B[4]
Spatial statistics based preprocessing for endmember extraction and spectral unmixing
Chen Shi (Department of Geography, University at Buffalo, The State University of New York)
Coauthor(s): Wang, Le

4B[5]
Spectral Analysis of Sillimanite Mineralization
Reda Amer (Professor of Practice)
Coauthor(s): El Dosoky, Hatem

4B[6]
Geological mapping using airborne thermal hyperspectral data in Antarctica
Martin Black

5B – LIDAR TRACK
Transportation: Engineering, Mapping and Surveys
Session Sponsored by TRB
Moderator: Rachel Lewis (Ohio Department of Transportation)
Room: Grand Ballroom, Salons G & H

5B[1]
Lessons Learned with the Ohio DOT Using a Drone
Rachel Lewis (Ohio Department of Transportation)

5B[2]
Technologies and Requirments to Make the Necessary Deliverables for Transportation, Designs, and Construction
Curtis Clabaugh (Wyoming Department of Transportation)

6B – GIS & CARTOGRAPHY TRACK
International Year of the Map 2015
Session Sponosred by Cartography and Geographic Information Society (CaGIS)
Moderator: E. Lynn Usery (U.S. Geological Survey)
Room: Meeting Room 11, 3rd Floor

The International Map Year is a worldwide celebration of maps and their unique role in our world. It is organized by the International Cartographic Association (ICA) and supported by the United Nations (UN). This IGTF session is dedicated to mapping and the International Map Year.

6B[1]
Positioning The National Map to meet current and future needs
David Brostuen (U.S. Geological Survey/National Geospatial Technical Operations Center)

6B[2]
Mining and Mapping Tweets in Spatial, Temporal and Human Dimensions
Jie Shan (Purdue University)

6B[3]
Computing U.S. Population Mean using Spherical Residuals
David Lasko (National Geospatial-Intelligence Agency)

Exhibitors' Welcome Lunch
12:30 pm to 1:30 pm
Room: Technology Floor, Grand Ballroom, Salons A – F
NEW for 2015! The Exhibitors would like to welcome all registered attendees for JACIE Workshop and IGTF to the Technology Floor for a lite reception style lunch. Food and beverages will be available throughout the Technology Floor in a reception style environment. Mingle with friends, view presentations from Exhibitors and grab a quick bite to eat on the Technology Floor.

All registered attendees for the IGTF 2015 and JACIE Workshop are invited to attend this event.

APPLICATION Sessions, Time Block C
1:30 pm to 3:00 pm

1C - PARTNER TRACK
Remote Sensing of Surface Processes and Geological Hazards
Session Sponosred by
Moderator: Christian E. Haselwimmer (Chevron)
Room: Meeting Room 11, 3rd Floor

Satellite, airborne, and UAS remote sensing provide synoptic data at a range of spatial scales enabling mapping of geology and geomorphology. This supports fundamental research on surface processes and neotectonics as well as providing crucial data to assess potential hazards to human populations and infrastructure. This session will present state of the art methods and applications of remote sensing to the mapping and monitoring of surface processes and geological hazards utilizing a variety of sensors, platforms, and approaches.

1C[1]
Multiple Pleistocene Lake Shorelines and the Neotectonics of the Turpan-Hami Basin, Xinjiang, China
John Berry

1C[2]
Landscape Pattern and Change by Integration of Remote Sensing and Stonewall Feature Identification
Rebecca Trueman (University of Rhode Island)
Coauthor(s): Wang, Yeqiao

1C[3]
Derivation of 3D Point Cloud Using UAV-Based Digital Imaging System for Detecting and Identifying Landslide Scars
Abdulla Al-Rawabdeh (Student)
Coauthor(s): Ayman Habib, Naser El-Sheimy

1C[4]
Multi-Instrument Remote Sensing of Frozen Debris Lobes in the Brooks Range of Alaska
Scott Arko

1C[5]
Land deformation detection in a heavily vegetated terrain environment by InSAR time-series
Abduwasit Ghulam (Saint Louis University)
Coauthor(s): Grzovic, Mark, Maimaitijiang, Maitiniyazi

1C[6]
Coupling drone based survey with a landscape evolution model to generate change predictions on an active river channel
George Heritage (Technical Director)
Coauthor(s): Neil Entwistle

2C - ACADEMIC & COMMERCIAL TRACK

A World of Important Applications (Poster-Based Talks)

Session Sponosred by ASPRS

Moderator: A. Stewart Walker (BAE Systems)

Room: Meeting Rooms 5 & 6

The world is full of applications for imaging and geospatial information. This session brings together a sampling of high impact applications, which range from transportation to resoruce assesment, from land use monitoring to environmental sensing, from agriculture to mining, and from urban planning to coastal studies. Attendees will have dedicated discussion time with the presenters, and presenters will have one-on-one time with prospective customers, funding agencies, and employers.

2C[GISD01]

Introduction to the U.S. Geological Survey Standards Database Explorer

Archuleta, Christy-Ann (U.S. Geological Survey)

Coauthor(s): Fishburn, Kristin, McNinch, Kevin, Walter, Jennifer, Liu, Linda

2C[GISD03]

Distance Bitmask an Alternative Approach to Nearest Neighbor Distance

Polishchuk, Eugene (DigitalGlobe)

Coauthor(s): Smith, Ryan, Campbell, William N

2C[GRS04]

Detecting and delimiting geomorphological and ecological features across a diverse riverine environment from drone based imagery.

Heritage, George (AECOM)

Coauthor(s): Neil Entwistle

2C[IAPR05]

Object-based change detection for identifying sediment sources and sinks

Pelletier, Keith (University of Minnesota)

Coauthor(s): Knight, Joseph F.

2C[IAPR06]

Traffic Sign Detection and Positioning from Google Street View Streamlines

Tsai, Victor (National Chung Hsing University/Professor)

2C[IAPR07]

Performance evaluation of keypoint extractors for vision-based car localization

Yoon, Boram (Dept. of Geoinformatics, The University of Seoul, Korea)

Coauthor(s): Hojun, Kim, Kyoungah, Choi, Impyeong, Lee

2C[LD08]

A novel angular filtering based LiDAR point cloud classification

Acharjee, Partha (University of Texas at Arlington)

Coauthor(s): Toscano, George, Devarajan, Venkat;

2C[LD09]

Cloud-Based LiDAR Visualization and Exploitation

Collins, Patrick (Exelis Inc.)

2C[LDE4]

Modeling above-ground tree biomass using alternative nation-wide allometric methods and airborne lidar

Chen, Qi (University of Hawaii at Manoa)

2C[LD11]

Generation of wall-to-wall canopy height maps using heterogeneous lidar datasets over a large region

Gopalakrishnan, Ranjith (Virginia Polytechnic Institute and State University)

Coauthor(s): Thomas, Valerie, Coulston, John, Wynne, Randolph

2C[LD13]

Supporting Feature Extraction Performance Validation by Simulated Point Cloud

Grzegorz, Jozkow (The Ohio State University)

Coauthor(s): Koppanyi, Zoltan, Toth, Charles

2C[LD14]

Geometric Evaluation of Accuracy from Mobile Mapping Surveys

Supunyachotsakul, Chisaphat (Purdue University)

Coauthor(s): Peterson, Scott, Bethel, James, Johnson, Steven

2C[LDH4]

An adaptive ground-filtering technique for noisy highaltitude laser profiling data

Ranjith Gopalakrishnan (Dept. of Forest Resources and Environmental Conservation)

Coauthor(s): Gopalakrishnan, Ranjith; Ghannam, Sherin; Abbott, A. Lynn; Wynne, Randolph; Thomas, Valerie

2C[PAD15]

A Robust Line Feature Matching Method in a Wide-Baseline View

Al Shahri, Mohammed (Sultan Qaboos University)

Coauthor(s): Yilmaz, Alper

2C[PAD16]

Text Segments Recognition in Road Sign Images Using IRBP Method

Kim, Eunji (Korea Institute of Civil Engineering and Building Technology)

2C[PAD17]

Combining lidar and stereo imagery for measuring forest structure prior to disturbance

Filippelli, Steven (Colorado State University)

Coauthor(s): Lefsky, Michael, Ghosh, Anirudda

2C[PAD18]

Generation of imagery of the Earth in different seasons and time of the day based on multispectral satellite images

Fryskowska, Anna (Military University of Technology)

Coauthor(s): Krzywda, Wojciech, Wozniak, Jaroslaw

2C[PAD19]

Managing Large Blocks of Aerial Images

Gruber, Michael (Microsoft UltraCam Business Unit)

Coauthor(s): Schachinger Bernhard, Tomasi Rafaello

2C[PAD20]
Long term stability analysis for a multi-camera photogrammetric system
Habib, Ayman (Purdue University)
Coauthor(s): Habib, Ayman, Mazaheri, Mehdi, Melia, Alexandra

2C[PAD21]
Potential of UAS imagery for the automatic extraction of power lines
Jozkow, Grzegorz (The Ohio State University)
Coauthor(s): Vander Jagt, Ben, Toth, Charles

2C[PAD22]
Registration of Historical Images using Time-Invariant Linear and Surface Features
Nagarajan, Sudhagar (Florida Atlantic University)

2C[PAD23]
Extracting Road Direction Information from Road Sign Imagery Taken by Mobile Mapping System
Youn, Junhee (Korea Institute of Civil Engineering and Building Technology)
Coauthor(s): Kim, Gi Hong, Chong, Kyusoo

2C[PDAD16]
PolSAR Speckle Filtering Techniques and Their Effects On classification
Arab, Saeed (University of Mississippi)
Coauthor(s): Amini, Jalal, Maghsoudi, Yaser, Arab, Saeed

2C[PDAD17]
An Accuracy Analysis of Large Resolution Images Captured with the Nikon D810 Digital Camera System
Day, R. David (Keystone Aerial Surveys, Inc.)
Coauthor(s): Day, R. David, Weaver, Wesley

2C[PDAD18]
Optimizing Hardware for Distributed Imagery Processing: A Case Study
Day, R. David (Keystone Aerial Surveys, Inc.)

2C[PDAD19]
Geometric Accuracy Test of the Newest Large Format Digital Aerial Survey Cameras
Kruck, Erwin (Kruck & Co. GbR)
Coauthor(s): Melykuti, Balazs

2C[PDAD20]
A modern scanner for historic aerial photography
Lefsky, Michael (Colorado State University)
Coauthor(s): Appareti, Karl, Bailey, Patrick, Diel, Tyler

2C[PDAD22]
Radiometric Calibration - Consumer Grade to Large Format Aerial Cameras
Pagnutti, Mary (Innovative Imaging and Research)
Coauthor(s): Ryan, Robert, Holekamp, Kara, Brown, Richard

2C[PDAD24]
Improving image results with a high base to height (b/h) ratio
Tilley, Jay (Visual Intelligence)

2C[RSAD25]
Performance Evaluation of Pan Sharpening Methods on GPU with Gaktark-2 Images
AÃ§Ä±kgÃ¶z, ibrahim serdar (TUBITAK UZAY Space Technologies Research Institute)
Coauthor(s): Teke, Mustafa

2C[RSAD26]
Opportunities of using error pattern maps in OBIA
Abkar, Ali (Lund University)
Coauthor(s): Pilesja, Petter

2C[RSAD27]
Estimating Rainfall using Neural Network Algorithm and Satellite Data for Agricultural Applications
Albayrak, Arif (ADNET/NASA)
Coauthor(s): William Teng

2C[RSAD28]
Change Detection Analysis of Wetlands in Lower Mississippi River Delta
Amer, Reda (Professor of Practice)
Coauthor(s): Muscietta, Annelise, Kolker, Alexander

2C[RSAD29]
Estimates of Land Use Changes in Rural Southwestern Bangladesh Using Landsat Data
Benneyworth, Laura (Vanderbilt University)

2C[RSAD30]
Development of a Remote Sensing System for Rapid Post-Hazard Assessment of Transportation Infrastructure
Coulter, Lloyd (San Diego State University)
Coauthor(s): Lippitt, Christopher D., Stow, Douglas, Walker, Stewart, Lan, Hubiao, McCreight, Richard

2C[RSAD31]
Exploiting Landsat 7 ETM+ Temporal Composite Data and Threshold-Based Classification to Map Land Cover and Land Use in a Cloud-Prone Region of Africa
Coulter, Lloyd (San Diego State University)
Coauthor(s): Stow, Douglas, Weeks, John, Ibanez, Nicholas, Tsai, Yu Hsin

2C[RSAD32]
Performance evaluation of different noise correction techniques on MODIS derived salt marsh phenology of Georgia
Ghosh, Shuvankar
Coauthor(s): Mishra, Deepak

2C[RSAD33]
Multisensor data fusion and spatial statistics to track forest changes
Ghulam, Abduwasit (Saint Louis University)
Coauthor(s): Ghulam, Oghlan, Maimaitijiang, Maitiniyazi, Freeman, Karen, Porton, Ingrid, Maimaitiyiming, Matthew

2C[RSAD34]
Spectral identification of biological soil crusts
Herrmann, Ittai (Jacob Blaustein Institutes for Desert Research, Ben-Gurion University of the Negev)
Coauthor(s): Rozenstein, Offer, Panov, Natalya, Goldberg, Alexander, Karnieli, Arnon, Zaady Eli;

2C[RSAD35]
Calculating forest surface roughness parameters for evapotranspiration modeling using Lidar
Houser, Cameron (Virginia Tech)

2C[RSAD36]
Comparisons of Close-Range Hyperspectral and Multispectral Images on Vegetation and NDVI
Hung, Ming-Chih (Northwest Missouri State University)
Coauthor(s): Wu, Yi-Hwa

2C[RSAD37]
Impact of Separating Boundary from Interior Field Pixels on Cropland Classification and Accuracy Assessment
Hyman, Michael (USDA-NASS)

2C[RSAD38]
Estimating Ground Level PM2.5 Concentration in the Pearl River Delta Region of China using Landsat 8 and Ground Measurements
Li, Yuenan (GeoSTARS Lab, University of Waterloo)
Coauthor(s): Wang, Jianjun, Li, Jonathan.

2C[RSAD39]
Early detection of plant responses to water stress using field spectroscopy
Maimaitiyiming, Matthew (Saint Louis University)
Coauthor(s): Ghulam, Abduwasit, Bozzolo, Arianna, Maimaitijing, Maitiniyazi, Wilkins, Joseph

2C[RSAD881]
Land Surface Temperature Changes by Land Cover Classification of Inlay Lake Area, Myanmar
Mar Yee, Khin (Pukyong National University, Republic of Korea)
Coauthor(s): Shin, Dong Yoon; Park, Jinwoo; Jeong, Ho Hyun; Choi, Chul Uong

2C[RSAD40]
Partnerships for High Resolution Coastal Land Cover Development
McCombs, John (The Baldwin Group at NOAA Office for Coastal Management)
Coauthor(s): Herold, Nate

2C[RSAD41]
Enhancing discovery, search, and access of NASA hydrological data by leveraging GEOSS
Teng, William (NASA Goddard Space Flight Center (ADNET Systems, Inc.))
Coauthor(s): Maidment, David, Rodell, Matthew, Strub, Richard, Arctur, David, Ames, Daniel, Rui, Hualan, Vollmer, Bruce, Seiler, Edward

2C[RSAD42]
Exploring the possibility of using MODIS image data for PM2.5 monitoring
Yang, Zhiming (North Carolina Central University)
Coauthor(s): Williams, Harris

2C[RSAD882]
Spectral Analysis of Soil Moisture Content
Michael Pate (Murray State University)
Coauthor(s): Cetin, Haluk

SPECIAL SIMULCAST SESSION
1:00 pm until 2:30 pm

3C - UAS & PHOTOGRAMMETRIC TRACK
Emerging Commercial Markets: UAS for Mapping and Surveys: AUVSI Simulcast Session
Sponsored by ASPRS and AUVSI
Moderator: Pierre le Roux (Quantum Spatial)
Room: Florida Ballroom

Simulcast session with the AUVSI conference in Atlanta, Georgia. AUVSI has 4 manufatures arranged for a panel session. ASPRS will have 3-4 Users on a panel. They will give presentations, then ASPRS panel will present and Q&A will be taken via Text and Tweet technology from AUVSI.

Panelists & Open Discussion with:
In Atlanta:
- Mathew Hutchinson (Woolpert)
- David Yoel (American Aerospace Advisors, Inc.)
- Baptiste Tripard (SenseFly)
- Don Weigel (Airware)

In Tampa: Panelists TBD

4C - REMOTE SENSING TRACK
Applications of NASA Earth Observations: (hybrid panel session)
Session Sponosred by NASA
Moderator: Kenton Ross (NASA / DEVELOP National Program)
Coauthor(s): Madden, Marguerite, Childs-Gleason, Lauren, Favors, James, Bender, Michael, Allsbrook, Karen, Rogers, Lindsay, Ruiz, Michael, Brumbaugh, Elizabeth, Miller, Tiffani
Room: Grand Ballroom, Salons I & J

This special session focuses on the application of data from NASA's Earth observing satellites and airborne missions to real-world environmental and policy concerns. It includes projects that apply remote sensing data to decision making processes, specifically those projects conducted by NASA's Applied Sciences' DEVELOP National Program. DEVELOP addresses environmental management and public policy issues through interdisciplinary research projects that apply the lens of NASA Earth observations to community concerns around the globe.

Panelists:
- DEVELOP Overview - Kenton Ross (NASA)
- UGA Colombia Eco – Caren Remillard (UGA Colombia Eco)
- ARC Sierra Nevada Eco – Andrew Nguyen (ARC Sierra Nevada Eco)
- WC Appalachia Energy – Jordan Bates (WC Appalachia Energy)
- SSC Mississippi Water – Benjamin Beasley (SSC Mississippi Water)
- LaRC Northwest US Agriculture – Matt Smith (LaRC Northwest US Agriculture)

5C - LIDAR TRACK
Student Avisory Council and Young Professionals Council Summit
Session Sponosred by SAC and YPC
Moderator: James Bialas (Michigan Technological University)
Coauthor(s): Vander Jagt, Ben
Room: Meeting Room 12, 3rd Floor

Welcoming all Students and Young Professionals to join in discussions about the issues that affect them. Topics to include recruitment and retention of new members from these ranks, relative importance of organization resources to younger members, as well as how ASPRS can help these members at the early stages of their careers. Interested ASPRS members are encouraged to attend to discuss the future of our organization.

The Young Professionals Council's (YPC) purpose is to promote professional development of young professionals through ASPRS networking, mentoring and certification. ASPRS members join together to express their interest in connecting with young professionals in a meaningful way, through networking and possible mentoring.

The Student Advisory Council (SAC) exists to give students an opportunity to voice their opinions and discuss the ways ASPRS can best serve students. SAC members also work to provide educational, employment and other career development opportunities to student members.

6C - GIS & CARTOGRAPHY TRACK
Recent Advances in GIS
Session Sponsored by GISD
Moderator: Stuart Blundell (Exelis)
Room: Grand Ballroom, Salons G & H

Global 30 meter Vehical Mobility Modeling Integrating Soil Conditions
Douglas Way (MDA Information Systems, LLC)

Geographical Information Systems and Mobile Phone Technologies for Improved Drought Monitoring
Getachew Berhan Demisse (Climate science Center)

A multi geophysical sensor approach to identify archaeological features using binary thresholds and Boolean sets
Jacob Turner (The University of North Carolina at Greensboro)

All Conference Beverage Break
3:00 pm to 3:30 pm
Location: Technology Floor, Grand Ballroom, Salons A – F
Take a break! Come to the Technology Floor for a beverage, visit with our fantastic Exhibitors and network with colleagues. All conference attendees are welcome, complimentary beverages provided inside the hall.

TRENDS Sessions, Time Block D
3:30 pm to 5:00 pm

1D - PARTNER TRACK
Advances in Automated Feature Extraction
Session Sponsored by ISPRS and IAPR
Moderator: Jie Shan (Purdue University)
Room: Meeting Room 11, 3rd Floor

Feature extraction has been playing a central role in the digital era of geospatial science and technology. Over the past decades many studies and developments focused on automated detection, modeling and reconstruction of a variety of natural and man-made features, including terrain, trees, crops, roads, buildings, vehicles and many others. The data sources vary from imaging to laser scanning, with both aboard varying platforms or even from hand held devices. Professionals involved in the subsequent data processing and mining are of truly multidisciplinary backgrounds, which include, among others, computing science, data science, geoscience, remote sensing, and photogrammetry. The objective of this session is to provide a forum to a broader community of mixed disciplines to report, showcase and discuss their most recent achievements in theory, technique and practice of automated feature extraction within their areas of expertise.

A complete spatial understanding using Geo Intelligent concept
Ophir Almog (Technion - Israel Institute of Technology)
Coauthor(s): Steinmetz, Dror

Segmentation-Based Classification of LiDAR Point Cloud
Jie Chang (Esri)
Coauthor(s): Qiu, Fang

Building Detection using EO, Lidar, and GEOBIA
Paul Pope (Los Alamos National Laboratory)
Coauthor(s): Prasad, Lakshman

Developing a Shadow Correction Methodology Using a Very High Resolution Hyperspectral Imagery
Jay Egenhoff (University of Northern Iowa)
Coauthor(s): Bingqing Liang

Systematic evaluation of machine learning and image segmentation methods in evaluating earthquake damage
James Bialas (Michigan Technological University)
Coauthor(s): Oommen, Thomas;Rebbapragada, Umaa

A Nonparametric Mixture Model for Full-Waveform LiDAR Data Decomposition
Jie Shan (Purdue University)
Coauthor(s): Ural, Serkan; Anderson, John; Shan, Jie

An automated multi-scale integration method to map individual tree crowns for an uneven-aged deciduous-dominated forest using high spatial resolution infrared color aerial images
Jioan Yang (Department of Geography, Univerisity of Toronto)
Coauthor(s): Yuhong, He; John, Caspersen; Trevor, Jones

Mapping Forest Leaf Area Index Using Spectral and Spatial Information Derived from WorldView-2 Imagery in a Mixed Natural Forest Area in Florida, USA
Ruiliang Pu (University of South Florida)
Coauthor(s): Cheng, Jun

Automatic Change Detection in Multitemporal X- and P-band SAR Imagery Using the Difference Between the Digital Elevation Models
Rafael Rosa (Bradar Industria S/A)
Coauthor(s): Fernandes, David; Nogueira Jr., Joao;

Automated recognition of cables and circuit breakers in electrical substations from 3D LiDAR point clouds
Mostafa Arastounia (University of Calgary)
Coauthor(s): Lichti, Derek

2D - ACADEMIC & COMMERCIAL TRACK
Trending Commercial Applications
Session Sponsored by ASPRS
Moderator: Sheldon Piepenburg (ASPRS)
Room: Meeting Room 12, 3rd Floor

Film to Digital: Simple workflows, best practices, and future planning that will save you money and put you on a path for growth
Phil Kern (Visual Intelligence)

Meeting tomorrow's imaging requirements today -- the next best thing to predicting the future
Armando Guevara (Visual Intelligence)

Hyperspectral Imagery Advancing Precision Agriculture
Nate Taylor (Advanced Reconnaissance)

A New Human-Computer Synergetic System for Fast and Reliable Feature Extraction from High Resolution Images
Younian Wang (Handleray LLC)
Coauthor(s): Hu, Xiangyun; Li, Xiaokai

Deimos-2 Becomes Operational: Very-High Resolution Imagery with a Premium Service
Fabrizio Pirondini (DEIMOS Imaging S.L.U.)
Coauthor(s): Lopez, Julio-cesar

Deimos-1 and DMC-2: Large Coverages and High-Frequency Monitoring for Precision Agriculture Applications
Pirondini, Fabrizio (DEIMOS Imaging S.L.U.)
Coauthor(s): Lopez, Julio-cesar

3D - UAS & PHOTOGRAMMETRIC TRACK
UAS and the Rebirth of Photogrammetry
Session Sponsored by PDAD
Moderator: Pierre le Roux (Quantum Spatial)
Room: Florida Ballroom

Development of a smart device-based telemetry and photograping system for photogrametric UAV system of non-visible area
Jinwoo Park (Pukyong Nat'l Univ)
Coauthor(s): Minseok KIM; Khine Mar Yee; Chuluong CHOI

2D and 3D Mapping of a Littoral Zone with UAS and SfM Photogrammetery
Michael Starek (Texas A&M University-Corpus Christi)
Coauthor(s): Starek, Michael

Target-based and Feature-based Calibration of Low-cost Digital Cameras with Large Field-of-View
Ayman Habib (Lyles School of Civil Engineering, Purdue University)
Coauthor(s): Habib, Ayman

Performance analysis of GPS/MEMS IMU-based georeferencing of UAS platforms
Grzegorz Jozkow (The Ohio State University)
Coauthor(s): Huai, Jianzhu; Toth, Charles

Image Quality Targets and Analysis for Satellites to Small UAV Sensors
Robert Ryan (Innovative Imaging and Research)
Coauthor(s): Pagnutti, Mary; Holekamp, Kara; Brown, Richard

4D - REMOTE SENSING TRACK

New Trends in Remote Sensing Systems and Platforms: A Panel Discussion

Session Sponsored by PDAD and JACIE

Moderator: Raad Saleh (EROS Center, U.S. Geological Survey)
Coauthor(s): Stensaas, Gregory
Room: Grand Ballroom, Salons I & J

Overview of new and exciting remote technologies and delivery platforms. The session will address the upcoming Sentinel 2 satellite to be launched in May/June 2015. This satellite offers 13 spectral bands, 10 m ground resolution, and a 5 day full Earth coverage at equator. With these specs, Sentinel 2 will provide very high value image data for many applications potentially complementing already existing data from Landsat. Other new satellites and their specs will also be discussed. The other technology that will be discussed is LiDAR, data management, and cross-validation of precision. The panel will also address Unmanned Aircraft System (UAS) technology as a cost-effective platform technology for acquiring remotely sensed data from optical and thermal sensors, SAR, hyperspectral and LiDAR.

5D - LIDAR TRACK

Advanced LiDAR Technology

Session Sponsored by the Lidar Division

Moderator: Mike Zoltek (Pictometry)
Room: Grand Ballroom, Salons G & H

An Adaptive Down-sampling Strategy for Efficient Point Cloud Segmentation
Ayman Habib (Purdue University)

Fusion of Lidar and Landsat for national biomass mapping
Zhuoting Wu (U.S. Geological Survey)
Coauthor(s): Stoker, Jason; Middleton, Barry; Vogel, John; Dye, Dennis;

New Approach for Urban Buildings Characterization Using Lidar Data
Ayman Habib (Purdue University)

U.S. Geological Survey NGP Lidar Base Specification Update
H. Karl Heidemann (U.S. Geological Survey /EROS)

Research and Development in Support of 3DEP
Samantha Arundel (U.S. Geological Survey)
Coauthor(s): Yamomoto, Kristina; Phillips, Lori

Water surface elevation calculation using LiDAR data
George Toscano (University of Texas at Arlington)
Coauthor(s): Acharjee, Partha; Devarajan, Venkat

Precise 3D LiDAR Topo Mapping in Practice
Mohamed MR Mostafa (Navmatica, Chief Technology Officer)
Coauthor(s): Huynh, Vi; Bayoud, Fadi; Krause, Uwe; Wilcox, David

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6D - GIS & CARTOGRAPHY TRACK

GIS Analysis, Management, and Mapping

Session Sponsored by the Cartography and Geographic Information Society (CaGIS)

Moderator: E. Lynn Usery (U.S. Geological Survey)
Room: Meeting Rooms 5 & 6

This session includes presentations on different basic GIS applications in several geographical areas.

Using GIS and spatial statistics for analysing health care facilities in Jeddah city, Saudi Arabia
Abdulkader Murad (King Abdulaziz University)

Synergies of Remote Sensing with Social Science Tools for Participatory Management of Natural Resources
Abu Syed (Bangladesh Centre for Advanced Studies (BCAS))

A Geospatial Technology Approach to Malaria Epidemiology in Federal Capital Territory; Abuja; Nigeria
Olakunle Oladosu (African Regional Centre for Space Science and Technology Education in English (ARCSSTE-E))
Coauthor(s): Abdul-Rahman, Adegbite; Oladosu, Olakunle.

HOOTENANNY: Web Enabled Geospatial Vesctor Data Conflation and Map Generation
Drew Bower (National Geospatial Intelligence Agency (NGA))
Coauthor(s): Governski, Joseph; Surratt, Jason; Bower, Drew; Sorenson, Matthew

Exhibitors' Reception

5:30 pm to 7:00 pm
Location: Technology Floor, Grand Ballroom, Salons A – F

A highlight of the IGTF 2015 and all ASPRS Annual Conferences is the gathering of Exhibitors and Attendees the night the show officially opens. Join us as ASPRS says "Thank You" to our exhibitors and attendees at the Exhibitors' Reception.

All the extraordinary displays of the latest innovations in imaging and geospatial technology remain the star attraction of the IGTF 2015 Technology Floor.

Join-in for this fun way to say "Thank You" to all of our supporting exhibitors! The Exhibitor Reception is also a terrific way for exhibitors to connect with each other, "shop" the show floor themselves and do business with all the wonderful attendees. This is a fantastic networking opportunity.

Light hors d'oeuvres will be served and cash bars made available throughout the Floor. And one complimentary beverage, for those with tickets.

Dessert Reception

7:00 pm to 9:00 pm
Location: Florida Ballroom

- Honoring the 81st Installation of ASPRS Officers & Awards
- Michael Baker International 75th Anniversary and ASPRS UAS Division 1st year Presentation

NEW for 2015! Join the ASPRS Officers to celebrate our 2015 Slate and various award presentations. A. Stewart Walker will welcome Lynn Usery as the 2015 – 2016 President of ASPRS and new ASPRS Directors and Vice-President will be sworn in.

Dessert and coffee will be served for all registered attendees. No tickets are required to attend. However, all attendees must be registered to attend either the JACIE Workshop or the IGTF 2015.

Awards Presentations:

- 2014 Presidents' Report (Walker)
- Presidential Citations
- Retiring Members of ASPRS Board of Directors
- Tellers Report (Hothem)
- Installation of Directors, Vice-President and President
- Birdseye Award
- President's Key, Pin and Photo Plaque

Michael Baker International celebrates their 75th Anniversary and the ASPRS Unmanned Aerial Systems Division celebrates their 1st year as an ASPRS Division! This is a true cause for celebration, so join us as we say Congratulations!

Thursday, May 7th

7:00 am to 5:00 pm	**IGTF & JACIE Registration Desk Open**	*Tampa Marriott Waterside Hotel, Grand Ballroom Foyer*
8:00 am to 5:00 pm	**Presenters Preparation Room Open**	*Greco Boardroom, 3rd Floor*
8:00 am to 8:30 am	**JACIE Workshop Breakfast** *JACIE Workshop Registrants Only – Tickets Required*	*Meeting Room 8-10, 3rd Floor*
8:30 am to 10:00 am	**FOUNDATIONS Sessions,** Time Block E	*Various rooms, see descriptions*
8:30 am to 10:00 am	**JACIE Workshop Session #7 (D)** *JACIE Workshop Registrants Only – Tickets Required*	*Meeting Room 8-10, 3rd Floor*
10:00 am to 3:30 pm	**Technology Floor Open**	*Grand Ballroom, Salons A – F*
10:00 am to 10:30 am	**All Attendee Refreshment Break**	*Technology Floor, Grand Ballroom, Salons A – F*
10:30 am to 12:00 noon	**Plenary Session #2** – *Open to JACIE and IGTF Registrants* ***Earth Observation: National Plan and International Capability***	*Florida Ballroom, 2nd Floor*
12:00 pm to 1:00 pm	**Lunch on Technology Floor**	*Technology Floor, Grand Ballroom, Salons A – F*
1:00 pm to 2:45 pm	**JACIE Session #8** – *Open to IGTF and JACIE Registrants*	*Meeting Room 8- 10, 3rd Floor*
1:15 pm to 2:45 pm	**CAPABILITY Sessions,** Time Block G	*Various rooms, see descriptions*
2:45 pm to 3:30 pm	**Attendee Refreshment Break**	*Technology Floor, Grand Ballroom, Salons A – F*
3:30 pm	**Technology Floor Closed**	
3:30 pm to 5:00 pm	**FUTURE Sessions,** Time Block H	*Various rooms, see descriptions*
3:30 pm to 5:00 pm	**JACIE Workshop Session #9 (F)** *JACIE Workshop Registrants Only – Tickets Required*	*Meeting Room 8-10, 3rd Floor*

IGTF & JACIE Registration Desk Open
7:00 am to 5:00 pm
Location: Tampa Marriott Waterside Hotel, Grand Ballroom Foyer

Presenters Preparation Room
8:00 am to 5:00 pm
Location: Greco Boardroom, 3rd Floor

FOUNDATIONS Sessions, Time Block E
8:00 am to 9:30 am

1E – PARTNER TRACK
NGA Session #2: Academic Research Program
Session Sponsored by NGA
Moderator: Dennis Walker (NGA)
Room: Meeting Room 12, 3rd Floor

2E
Memorial Address & 26th Annual Awards Presentation
Session Sponsored by ASPRS
Room: Grand Ballroom, Salons G & H

The ASPRS Memorial Address and 26th Annual Awards Presentations have been combined for 2015 for an overall celebration of ASPRS Members. This session has been scheduled during the regular conference Technical Sessions to allow for the maximum number of people to attend this prestigious Awards Presentation. Please make time in your schedule to attend this wonderful session honoring a long-time ASPRS Member and all the fantastic awardees of ASPRS Scholarships and Awards. This is sure to be a wonderful celebration!

In Memoriam - A Year in Review
The Memorial Address

Presentation of Awards
(see a full list of awards and awardees in the awards program at the beginning of this book.)

3E – UAS & PHOTOGRAMMETRIC TRACK
Modern Approaches to "Old School" Photogrammtery
Session Sponsored by PAD
Moderator: Scott Perkins (SAM, Inc.)
Room: Meeting Rooms 5 & 6

3E[1]
Aerial Triangulation Accuracy of Light Weight UAS Imagery
Riadh Munjy (California State University, Fresno)
Coauthor(s): Taylor Preece

3E[2]
Automated, target-free close-range photogrammetry: A panacea for 3D measurement ills?
Clive Fraser (CRC for Spatial Information)

3E[3]
GPU-Accelerated 3D Point Clouds Generation from Stereo Images
Rad Gaidadjiev (BAE SYSTEMS)
Coauthor(s): Gaidadjiev, Rad; Walker, Stewart

3E[4]
Robust estimation of a multi-camera system motion parameters Using inter-camera mounting parameters
Ayman Habib (Professor)

3E[5]
An Improved Empirical Line Method of Radiometric Calibration for Unmanned Aircraft Systems-based Remote Sensing
Wang, Chuyuan (Arizona State University)
Coauthor(s): Myint, Soe, Price, Kevin, Wang, Huan

4E – REMOTE SENSING TRACK
Remote Sensing Data Fusion & Change Analysis: Application to Global Challenges
Session Sponsored by RSAD
Moderator: Stuart Blundell (Exelis)
Room: Grand Ballroom, Salons I & J

4E[1]
Multi-Temporal Remote Sensing of Mass Graves in Temperate Environments
Emily Norton (Bournemouth University)
Coauthor(s): Ford, Andrew; Cheetham, Paul; Gerdau-Radonic, Karina

4E[2]
Global Food Security-Support Data Product at 30m (GFSAD30)
Prasad Thenkabail (U. S. Geological Survey)
Coauthor(s): Teluguntla, Pardhasaradhi; Xiong, Jun; Gumma, Murali; Ozdogan, Mutlu; Congalton, Russell, Tilton, James; Sankey Temuulen; Massey, Richard; Phalke, Aparna; and Yadav, Kamini

4E[3]
Analysis of Crop Phenology Using Time-Series MODIS Data
Jie Ren (Ph.D Candidate)
Coauthor(s): Campbell, James B.; Shao, Yang

4E[4]

Application of INSAR time series techniques for deformation monitoring of large-scale landslides in mountainous areas of Western China

Tengteng Qu (Tongji University)
Coauthor(s): Ping, Lu; Hong, Wan

5E

Employer Meet and Greet

Session Sponsored by SAC
Moderator: James Bialas (Michigan Technological University)
Room: Meeting Room 11, 3rd Floor

Students, get your resume or curriculum vitae up to date! Employers, bring your job descriptions! This is an opportunity for students and potential employers to discuss future opportunities for both. You don't need to be looking for a job or offering one to attend. The Meet and Greet offers an excellent opportunity for students to learn about professional careers and organizations as well as providing established professionals an opportunity to meet their future colleagues. There will be an opportunity at the beginning for short 5 minute presentations by potential employers and time afterwards for networking.

6E – GIS & CARTOGRAPHY TRACK

New Era for Geospatial Collaboration with ASPRS Standards

Session Sponsored by ASPRS
Moderator: Qassim Abdullah (Woolpert, Inc.)
Room: Florida Ballroom

The geospatial community is witnessing a new era of collaboration in understanding, managing, and evaluating the quality of geospatial data, whether derived from orthoimagery or Lidar. ASPRS spearheaded the effort to introduce new accuracy standards that are more suitable for today's geospatial data -- the kind derived from digital sensors and more modern processes. During their development, ASPRS coordinated efforts with the U.S. Geological Survey and USACE to insure consistency and harmony among each organization's respective standards, guidelines, and manuals. Thanks to agreement among agencies on the main accuracy measures, it is easier for users to understand and compare product specifications that use the ASPRS, U.S. Geological Survey, and USACE methodologies.

The session will introduce the new "ASPRS Positional Accuracy Standards for Digital Geospatial Data" which was approved in November, 2014. Speakers will also discuss the U.S. Geological Survey Lidar Base Specification V1.2, and the New USACE EM 1110-1-1000, Photogrammetric and Lidar Mapping Manual, and will relate them to the new ASPRS standards. The audience will have a chance for live questions and answers.

6E[1]

The New ASPRS Positional Accuracy Standards for Digital Geospatial Data

Qassim Abdullah (Woolpert, Inc.)

6E[2]

U.S. Geological Survey NGP Lidar Base Specification Update

H. Karl Heidemann (U.S. Geological Survey /EROS)

6E[3]

USACE EM 1110-1-1000, Photogrammetric and Lidar Mapping Manual

David Maune (Dewberry Consultants LLC)

Technology Floor Open
10:00 am to 3:30 pm
Location: Grand Ballroom, Salons A – F

Take some time to visit with the fantastic Exhibitors in attendance this year. Many activities are planned for the 2015 Technology Floor, so plan your schedule and don't miss out!

All Conference Beverage Break
10:00 am to 10:30 am
Location: Technology Floor, Grand Ballroom, Salons A – F

Take a break! Come to the Technology Floor for a beverage, visit with our fantastic Exhibitors and network with colleagues. All conference attendees are welcome, complimentary beverages provided inside the hall.

JACIE/ASPRS Joint Plenary Presentation - 2
10:30 am to 12:00 noon
Location: Florida Ballroom, 2nd Floor

Award Presentations
- Outstanding Technical Achievement Award
- Outstanding Service Awards

State of the Society Address
Michael Hauck, ASPRS Executive Vice President

Presidential Address
E. Lynn Usery, ASPRS 2015 - 2016 President

EARTH OBSERVATION: NATIONAL PLAN AND INTERNATIONAL CAPABILITY

This is an exciting time for earth observation. For the first time, the U.S. has developed a long-term, cross-agency, observation-dependent systems approach to civil earth observation that integrates observations from space, sky, and ground. Meanwhile, other countries and new commercial entrants from around the globe are placing into orbit unprecedented capability for observing the earth. Back-to-back keynote presentations will explore these exciting developments in the U.S. and abroad.

National Civil Earth Observation Plans and International Capability

Timothy Stryker, *Director of the U.S. Group on Earth Observations (USGEO) Program, supporting the National Science and Technology Council (NSTC) under the White House Office of Science and Technology Policy*

Timothy Stryker is Director of the U.S. Group on Earth Observations (USGEO) Program, which supports the cabinet-level National Science and Technology Council (NSTC) under the White House Office of Science and Technology Policy. Working with the USGEO Subcommittee of the NSTC's Committee on Environment, Natural Resources, and Sustainability, the Program supports coordination of civil Earth observation activities, including systems assessments and data management initiatives, among multiple Federal agencies and their international partners.

Stryker's previous positions include Chief of Policy, Plans, and Analysis for the Land Remote Sensing Program of the U.S. Geological Survey; Executive Officer of the international Committee on Earth Observation Satellites; and, Deputy Director of the Office of Policy at the National Reconnaissance Office. He has also served in assignments at the National Oceanic and Atmospheric Administration, the U.S. Department of Commerce, the Office of Management and Budget, the Federal Communications Commission, and the U.S. Information Agency.

A former Presidential Management Fellow, Mr. Stryker earned his Master's Degree in Foreign Service from Georgetown University and his Bachelor's Degree in History from the University of Michigan.

Promises and Problems: The Worldwide Growth in Remote Sensing Capabilities

Jon Christopherson, *SGT, Inc., U.S. Geological Survey EROS Data Center*

Jon Christopherson is a Principal System Engineer with for Stinger Ghaffarian Technologies (SGT), Inc. at the USGS Earth Resources Observation and Science (EROS) Center near Sioux Falls, SD.

Mr. Christopherson has worked with electro-optical sensors for all of his professional career, including building and operating ground-based, airborne, and orbiting sensors for DoD, DARPA, and NASA before coming to the EROS Center. He uses these experiences as well as his degrees in Engineering and Space Studies as he investigates and evaluates new technologies and new data sources for the USGS Remote Sensing Technologies Program.

Christopherson's presentation will describe some of the many new ventures in space-borne remote sensing under development today and what some of the implications of these may be to our community.

Exhibitors' Welcome Lunch 
12:00 pm to 1:00 pm
Room: Technology Floor, Grand Ballroom, Salons A – F

A reduced cost boxed lunch will be available for purchase on the Technology Floor for all attendees. Mingle with friends, view presentations from Exhibitors and grab a quick bite to eat on the Technology Floor.

All registered attendees for the IGTF 2015 and JACIE Workshop are invited to attend this event. JACIE Workshop attendees have tickets for a complimentary lunch.

CAPABILITY Sessions, Time Block G
1:15 pm to 2:45 pm

1G - PARTNER TRACK
NGA Session #3
Session Sponsored by NGA
Moderator: Dennis Walker (NGA)
Room: Meeting Room 12, 3rd Floor

2G - ACADEMIC & COMMERCIAL TRACK
Advanced Capabilities (Poster-Based Talks)
Session Sponsored by ASPRS
Moderator: Michael Hauck (ASPRS)
Room: Meeting Rooms 5 & 6

Geospatial capabilities are advancing very rapidly. This session collects at one time and place a sampling of the best and newest capabilties in Lidar, remote sensing, photgrammetry, machine learning, and pattern recognition. Attendees will have dedicated discussion time with the presenters, and presenters will have one-on-one time with prospective customers, funding agencies, and employers.

2G[E&PD50]
Project Management: The Work Breakdown Structure
Crawford, Robert (Intermap Technologies, Inc.)

2G[GISD51]
Bypass road for Ranchi using Remote Sensing & GIS
Chelliah, Chelliah S (BIT)

2G[GISD52]
Coastal Inundation Mapping: Results from Static and Dynamic Models of Storm Surge along Florida's Northeast and Central Coast
Dees, Brandon (Jones Edmunds Associates / St Johns River Water Management District)
Coauthor(s): Dees, Brandon; Carter, Ed

2G[GISD53]
Use of geospatial technologies to understand spatial ecology and conservation of sea turtles in a human-altered habitat
Fujisaki, Ikuko (University of Florida)
Coauthor(s): Kristen Hart, Autumn Sartain, Meg Lamont

2G[GISD54]
Oil Spil Detection via Hyperspectral Images using MAPREDUCE on NVIDIA Graphics Processing Units
Ramirez, Andres (Texas A&M University- Corpus Christi)
Coauthor(s): Rahnemoonfar, Maryam

2G[GRSG55]
Geological mapping using airborne thermal hyperspectral data in Antarctica
Black, Martin (British Antarctic Survey)
Coauthor(s): Riley, Teal R.; Ferrier, Graham; Fleming, Andrew; Fretwell, Peter;

2G[GRSG56]
On the feasibility of detecting Rare Earth Element (REE) deposits using remote sensing
Black, Martin (British Antarctic Survey)
Coauthor(s): Black, Martin; Riley, Teal R.; Gibson, Sally A.; Ferrier, Graham; Wall, Frances; Broom-Fendley, Sam;

2G[GRSG57]
Measuring 3-Dimensional Deformation of Landslides Using Multiple Aperture Interferometry
Grzovic, Mark (Saint Louis University)
Coauthor(s): Ghulam, Abduwasit

2G[IAPR58]
Automation of image classification for the locating of Cabbage Palm within aerial imagery.
Elder, Amor (Southwest Florida Water Management District)
Coauthor(s): Karlin, Alvan

2G[IAPR59]
An approach to the transformation of point clouds into historical building information modeling models. Case of Study: Quincy Smelter in Ripley, Michigan
Garcia Fernandez, Jorge (University of Valladolid, Spain - Michigan Technological University, USA)
Coauthor(s): Ahn, Yushin; Martin, Greg

2G[IAPR60]
Application of LiDAR data on archaeological site discovery
Niu, Xutong (Troy University)
Coauthor(s): Jason Mann

1APR61

Object-oriented Classification of Wetland Vegetation in the Kissimmee River Floodplain

Spencer, Lawrence (South Florida Water Management District)

2G[1APR62]

Urban Impervious Surface Extraction with Texture Features Using Fully Polarimetric SAR Imagery

Tan, Weikai (GeoSTARS Lab, Department of Geography & Environmental Management, University of Waterloo)

Coauthor(s): Lu, Jun; Li, Jonathan

2G[LD63]

A study on efficient method for renewal of a national DEM using various survey results

Chang, Seok-won (National Geographic Information Institute of the Republic of Korea)

Coauthor(s): Seok-won, Chang; Seung-weon, Shin

2G[LD64]

Modeling aboveground tree biomass using alternative nation-wide allometric methods and airborne lidar

Chen, Qi (University of Hawaii at Manoa)

2G[LD65]

Tree Species Mapping at the University of Northern Iowa Campus using Very High Resolution Hyperspectral and LiDAR Data

Masrur, Arif (University of Northern Iowa)

Coauthor(s): Liang, Bingqing

2G[LF66]

Automated traffic sign extraction using mobile laser scanning data

Zhou, Menglan (University of Waterloo)

Coauthor(s): Li, Jonathan;

2G[PAD67]

Gradation Image Processing for Text Recognition in Road Signs Using Image Division and Merging

Chong, Kyusoo (Korea Institute of Civil Engineering and Building Technology)

2G[PAD68]

Seaborne photogrammetry for the geomorphology of rapidly eroding coastal cliffs

Ford, Andrew (Bournemouth University)

Coauthor(s): Papworth, Heather

2G[PAD69]

Application of Remote Sensing and GIS Techniques to Assess Land Use and Land Cover Change in Dhaka City, Banglasesh

Morshed, Md Niaz (Texas State University)

Coauthor(s): Yorke, Charles; Zhang, Robin Q.; Cetin, Haluk.

2G[PAD70]

Assessing archive airphotos combined with modern photogrammtery for reconstructing archaeological earthworks

Papworth, Heather (Bournemouth University)

Coauthor(s): Ford, Andrew; Welham, Kate; Thackray, David

2G[RSAD71]

Estimating Rainfall using Neural Network Algorithm and Satellite Data for Agricultural Applications

Albayrak, Arif (ADNET/NASA)

Coauthor(s): William Teng

2G[RSAD72]

Soil Moisture Estimation in Vegetated Areas Using Optical and Microwave Remote Sensing

Arab, Saeed (The University of Mississippi)

Coauthor(s): Easson, Greg; Hossain, A .K. M. Azad;

2G[RSAD73]

Multi-Instrument Remote Sensing of Frozen Debris Lobes in the Brooks Range of Alaska

Arko, Scott (University of Alaska/Alaska Satellite Facility)

Coauthor(s): Guritz, Richard

2G[RSAD74]

Radiometric Terrain Corrected SAR Data at the Alaska Satellite Facility DAAC

Arko, Scott (University of Alaska/Alaska Satellite Facility)

Coauthor(s): Logan, Thomas;Hogenson, Kirk

2G[RSAD75]

Lucky Imaging for Reconnaissance

Baptista, Brian (ORISE/ORAU Visting Scientist at NGA)

2G[RSAD76]

NASA Earth Observation Detection of Burned and Blighted Areas for Creation of an Unhealthy Forest Index to Prioritize Forest Harvest for Biofuel Production

Bates, Jordan (Wise County / DEVELOP National Program)

Coauthor(s): Rajappan, Rajkishan; Tate, Zachary; Swamianthan, Rohini; Dusenge, Dieudonne; Foxx, Andrew; Venard, Asongayi; Huff, Jessica

2G[RSAD77]

Assessing the influence of forest disease on wildfire burn severity using multi-sensor remote sensing

Chen, Gang (University of North Carolina at Charlotte)

Coauthor(s): Meentemeyer, Ross

2G[RSAD78]

Hyperspectral Remote Sensing for Monitoring Species-Specific Drought Impacts in Southern California

Coates, Austin (University of Utah)

Coauthor(s): Dennison, Philip; Roberts, Dar

2G[RSAD79]

UNC Greensboro: Remote Sensing Investigations of Historic Sites

Curry, Stacy (University of North Carolina Greensboro)

Coauthor(s): Stine, Roy; Stine, Linda; Turner, Jacob; Gallaway, Doug; Lukas, Ari

2G[RSAD80]

Fresh Biomass Estimation in Heterogeneous Grassland Using Hyperspectral Measurements and Multivariate Statistical Analysis

Darvishzadeh, Roshanak (University of Twente)

Coauthor(s): Skidmore, Andrew; Mirzaie, Mojgan; Atzberger, Clement; Schlerf, Martin

2G[RSAD81]
Using Remote Sensing to Evaluate Wetland Recovery in the Northern Tampa Bay Area Following Reduction in Groundwater Withdrawals
Elder, Amor (University of South Florida)
Coauthor(s): Pu, Ruiliang

2G[RSAD82]
Land use/land cover change assessment of Dane County, Wisconsin: Contemporary trend and future projections
Fabian, Eric (University of Wisconsin-Eau Claire)
Coauthor(s): Wilson, Cyril

2G[RSAD83]
Estimating wetland vegetation abundance from Landsat-8 OLI imagery: A comparison between LSMA and multinomial logit modeling methods
Gong, Zhaoning (USF)
Coauthor(s): Zhang min, Pu Ruiliang, Zhao Wenji

2G[RSAD84]
Leaf area index vertical distribution based on photosynthetically active radiation model in summer maize
Huang, Wenjiang (Institute of Remote Sensing and Digital Earth; Chinese Academy of Sciences)
Coauthor(s): Wang; Tao;Luo; Juhua;Xie; Qiaoyun

2G[RSAD85]
Coastal water quality estimation from Geostationary Ocean Color Imager (GOCI) satellite data over South Korea
Im, Jungho (Ulsan National Institute of Science and Technology)
Coauthor(s): Ha, Sunghyun; Jang, Eunna; Choi, Jongkuk

2G[RSAD86]
Interpretation of aerial photography for observing historic urban tree cover change
Johnston, Andrew (Smithsonian Institution)

2G[RSAD87]
Mapping Within-Pixel Bark-Beetle Mortality in Western Coniferous Forests
Long, John (Montana State University)
Coauthor(s): Lawrence, Rick

2G[RSAD88]
Validation of DEM data derived from World View 3 stereo imagery for low elevation Majuro Atoll, Marshall Islands
Lunetta, Ross (USEPA)
Coauthor(s): Donna S. Davis and Mark H. Stege

2G[RSAD89]
A universal classification tree model for mapping aquatic vegetation in shallow Lakes
Luo, Juhua (Nanjing Institute of Geography and Limnology, Chinese Academy of Sciences)
Coauthor(s): Fei, Li; Xuguang, Tang; Wenjiang, Huang

2G[RSAD90]
A custom approach to assessing the accuracy of the 2010 NOAA Coastal Change Analysis Program land cover and land cover change products
McCombs, John (The Baldwin Group at NOAA Office for Coastal Management)
Coauthor(s): Herold, Nate

2G[RSAD91]
Marine Spatial Planning of Desired Outcomes between Negotiating Maritime States: International Engagement Opportunities for United States and Cuban Policymakers
Morelli, Thomas (Sea Land & Air Technologies & Systems, Inc.)
Coauthor(s): Niesen, Bradley

2G[RSAD92]
Improving space knowledge in Africa: the ARCSSTE-E
Oladosu, Olakunle (African Regional Centre for Space Science and Technology Education – English)
Coauthor(s): Etim, Offiong

2G[RSAD93]
A disparity between erosional hazard and accretion of the Sundarbans with its adjacent east coast, Bangladesh: a remote sensing and gis approach
Pahlowan, Ershad Ud Dowlah (Department of Geological Sciences, Jahangirnagar University)

2G[RSAD94]
The effect of land-cover patterns on surface temperature in urban areas
Rhee, Jinyoung (APEC Climate Center)
Coauthor(s): Park, Seonyoung; Lu, Zhenyu

2G[RSAD95]
Satellite radar interferometry for high-precision detection of ground deformation at Aquistore carbon dioxide storage site
Samsonov, Sergey (Canada Centre for Mapping and Earth Observation, Natural Resources Canada)
Coauthor(s): White, Don

2G[RSAD96]
Agricultural biophysical parameters and the Tasseled Cap Transformation for RapidEye data
Schanert, Maurice (BlackBridge)
Coauthor(s): Zillmann, Erik; Weichelt, Horst; Eitel, Jan U.H.; Magney, Troy;

2G[RSAD97]
Remote sensing Irish forest disturbance with optical and SAR sensors
Serbin, Guy (Teagasc)
Coauthor(s): Balaji, Preethi Malur; Green, Stuart; Cawkwell, Fiona

2G[RSAD98]
Quantifying the urban heat island effect in the coast regions of south Florida based on Landsat
Su, Hongbo (Florida Atlantic University)
Coauthor(s): Liu, Kai; Wang, Weimin

2G[RSAD99]
Monitoring seasonal ecosystem water use efficiency of cropland by exclusive use of MODIS EVI data
xuguang, tang (Nanjing Institute of Geography and Limnology, Chinese Academy of Sciences)
Coauthor(s): Li, Hengpeng; Luo, Juhua;

2G[TRB100]
Automatic Classification of Road features Using Iterative RANSAC method
Sairam, Nivedita (Florida Atlantic University)
Coauthor(s): Nagarajan, Sudhagar

3G - UAS & PHOTOGRAMMETRIC TRACK

Non-Traditional Photogrammetric Applications

Session Sponsored by SAC

Moderator: Ben Vander Jagt (The Ohio State University)
Room: Grand Ballroom, Salons I & J

Photogrammetric principles are utilized in many different applications outside of traditional aerial surveys. This Student Advisory Council (SAC) organized session will focus on the use of photogrammetry in non-traditional areas such as navigation, industrial measurement, and 3D modeling. In addition to formal presentations, time will be allotted for an open discussion with audience members.

3G[1]

Photogrammetric Approach to Aerial Thermal Survey

Qassim Abdullah (Woolpert, Inc.)
Coauthor(s): McDavid, Raven;McKenzi, Brandon;David, Darin

3G[2]

Automated stereo-photogrammetric DEM generation over Greenland Ice Sheets by SETSM

Myoung-Jong Noh (The Ohio State Univercity/Byrd Polar & Climate Research Center)
Coauthor(s): Howat, Ian M; Porter, Claire C; Morin, Paul J; Herried, Bradley

3G[3]

Relative and absolute accuracies of smart-phone photogrammetry for surface modeling applications

Ben Vander Jagt (The Ohio State University)

3G[4]

Photogrammetrically Enhanced Plane Sweep for Point Cloud Densification with UAV Imagery

Megan Miller (Purdue University)

3G[5]

Close-Range Photogrammetry and 3D Modeling of the MTU Husky Statue

Jeremiah Harrington (Michigan Tech)
Coauthor(s): Bialas, James; Champion, Zachary; Chiabrando, Filiberto; Levin, Eugene

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4G - REMOTE SENSING TRACK

New Remote Sensing Satellites - JACIE Session #8 (Open to All Attendees)

Session Sponsored by JACIE and ASPRS

Moderator: Jon Christopherson (U.S. Geological Survey)
Room: Florida Ballroom

4G[1]

Geometric and Radiometric Calibration Topics Relevant to Skybox Imaging (15.032)

Byron Smiley (SkyBox)

4G[2]

PanGeo Alliance: The calibration of a multi-mission constellation (15.034)

Jorge Gill (Deimos)

4G[3]

WorldView-3 Geometric Calibration and Accuracy Update for DigitalGlobe Systems (15.033)

Chris Comp (Digital Globe)

4G[4]

WorldView-3 (15.003)

Paul Bresnahan (NGA)

4G[5]

Team SST-US's VSWIR Imager Concept for Sustained Land Imaging (15.008)

Becky Cudzilo (SurreySat)

5G – LIDAR TRACK

3D Elevation Program (3DEP) Products and Services

Session Sponsored by LD, PDAD

Moderator: Eric Constance (U.S. Geological Survey)
Room: Meeting Room 11, 3rd Floor

In preparation for the 3D Elevation Program (3DEP), the U.S. Geological Survey has invested substantially in modernizing its elevation data quality assurance, data processing, and data management capabilities as well as its delivery processes and systems. Elevation products and services have also been expanded and are being made available through multiple platforms.

5G[1]

3DEP Quality Assurance Processes

Leslie Lansbery (U.S. Geological Survey)

5G[2]

3DEP Products and Access

Lori Phillips (U.S. Geological Survey)
Coauthor(s): Arundel, Samantha; Adkins, Karen; Brown, Richard

5G[3]

3DEP Product Generation and Data Management System

Kristina Yamamoto (U.S. Geological Survey)
Coauthor(s): Arundel, Samantha; Phillips, Lori

6G - GIS & CARTOGRAPHY TRACK
Geospatial Workflow, Discovery, Modeling, and Data Fusion
Session Sponsored by GISD
Moderator: David Alvarez, CMS, GISP (ASPRS GIS Divison Director)
Room: Grand Ballroom, Salons G & H

6G[1]
The Integrated Geoprocessing, Workflows, and Provenance Cycle
Jason Tullis (University of Arkansas)
Coauthor(s): Shi, Xuan; Cothren, Jackson

6G[2]
Identifying significant drivers for the trade off and synergy between carbon sequestration and water yield ecosystem services at the watershed/eco-region level in southeastern United States
Ajaz Ahmed, Mukhtar Ahmed (Research Assistant)
Coauthor(s): Ajaz Ahmed, Mukhtar Ahmed

6G[3]
Geospatial Time Series Model for Wetland Hydroperiod Analysis: Evaluation of Environmental Hydrologic Criteria in Response to Changing Conditions
Sandra Fox (St Johns River Water Management District)

6G[4]
Attention Driven Aproach for Geospatial Data Update and Fusion
Eugene Levin (Michigan Technological University)
Coauthor(s): Zarnowski; Alexander; McCarty; Jessica; Pastel; Robert

All Conference Beverage Break
2:45 pm to 3:30 pm
Location: Technology Floor, Grand Ballroom, Salons A – F

Take a break! Come to the Technology Floor for a beverage and a break and take this last time on the Technology Floor to mingle with Exhibitors and make connections. All registered attendees are welcome, complimentary beverages provided inside the hall.

FUTURE Sessions, Time Block H
3:30 pm to 5:00 pm

1H - PARTNER TRACK
Get Ready! The Earth is about to Move! Do You Know that New Horizontal and Vertical Datums are Coming?
Session Sponsored by AAGS
Moderator: Ronnie Taylor (American Association for Geodetic Surveying)
Room: Meeting Rooms 5 & 6

The National Geodetic Survey (NGS), the oldest scientific agency in the federal government, is responsible for the National Spatial Reference System (NSRS). You may not know them by that name, but you likely are familiar with what is in the NSRS -- latitude, longitude, elevation, gravity, shoreline, and other positioning standards. The NSRS exists so that all federal civilian maps are consistent with one another.

The question could be, do you know which realization of the North American Datum 1983 (NAD 83) you are working in? Representatives from The America Association for Geodetic Surveying (AAGS) will discuss with you the different realizations of NAD 83 and how moving from NAD 83 to the new Geometric Datum 2022 could affect you. Also discussion on how moving from the NORTH American Vertical Datum of 1988 (NAVD 88) to the new Geopotential Datum 2022 will affect you.

AAGS exist to promote a better understanding of geodesy as a science, create a better appreciation of the value of geodetic surveys, foster the adoption of uniform standards and procedures, and Promote educational programs in geodesy, geodetic surveying, and related fields.

Geometrical Datums from the Federal Government
Ronnie Taylor (American Association for Geodetic Surveying)

2H - ACADEMIC & COMMERCIAL TRACK
Urban Landscape Remote Sensing
Session Sponsored by RSAD
Moderator: John McCombs (NOAA Costal Services Center)
Room: Meeting Room 11, 3rd Floor

2H[1]
Applying ASTER-derived Thermal Characterizations of Urban Land Covers for Urban "Hot Spot" Mapping and Evaluation
James Lein (Ohio University)

2H[2]
Urban Tree Canopy Detection using Obkect-Based Image Analysis for Very High Resolution Satellite Images
Imdad Rizvi (Terna Engineering College, University of Mumbai)
Coauthor(s): Yadav, Sarika

2H[3]
An Extended Framework to Evaluate Building Detection Algorithms Using High Spatial Resolution Images
Iman Khosravi (University of Tehran)

2H[4]
A Tool for the Automated Detection of Damaged Transportation Infrastructure
Jarlath O'Neil-Dunne (University of Vermont)

3H - UAS & PHOTOGRAMMETRIC TRACK
Clash between UAS Technology Advances and FAA Regulations
Session Sponsored by UASD
Moderator: Qassim Abdullah (Woolpert, Inc.)
Room: Grand Ballroom, Salons I & J

The Unmanned aerial System (UAS) gained considerable technology advances and attention in the last decade or so. Unfortunately, rules and regulations needed to manage its operations are lacking especially here in the US. Users often time are confused about such rules and regulations which may lead them to the wrong decision for investing in this technology. Technology advances is crucial to the integration of the UAS into the National Air Space (NAS) as FAA policy makers are looking for ways and means to replace the See-and-avoid method that is utilized or required for the manned aircraft operation with a Sense-and-avoid capability that can be built into the UAS.

The session will present latest sophistications that were achieved in designing and manufacturing various UAS and its role in convincing regulators to accept the operation of the UAS in the NAS. The session will also provide a simple interpretation of the current FAA rules and regulations in regard to the UAS operation and the FAA road map for integrating the UAS into NAS.

3H[1]
What Does Two FAA Grants of Exemption Mean for Our UAS Operations
Qassim Abdulah (Woolpert, Inc.)

3H[2]
A Cooperative and Distributed Infrastructure in support of UAS-based Geomatics
Pierre le Roux (Quantum Spatial)

3H[3]
Considerations for the Safe Integration of Drones in the National Airspace.
Mike Tully (Aerial Services, Inc.)

3H[4]
Designing a metric payload for UAS in the line-of-sight regulatory environment
John Perry (Altavian)

3H[5]
FAA Road Map for UAS Regulations
TBD

4H - REMOTE SENSING TRACK
Ecological Remote Sensing
Session Sponsored by RSAD
Moderator: Stuart Blundell (Exelis)
Room: Meeting Room 12, 3rd Floor

4H[1]
Sierra Nevada Ecological Forecasting: Implementing a Web-Based Decision Support System to Spatially and Statistically Analyze Ecological Conditions of the Sierra Nevada
Andrew Nguyen (SSAI / DEVELOP National Program)
Coauthor(s): Brooks, Amber; Kislik, Emily; Baney, Oliwia; Nguyen, Andrew; Schmidt, Cindy; Ramirez, Carlos

4H[2]
An evaluation of future climate projections and policy-based land use/land cover for water quality in the Lower Chippewa River watershed, Wisconsin
Cyril Wilson (University of Wisconsin-Eau Claire)

4H[3]
Object-based analysis and change detection of Minnesota's wetlands over 100 years
Yan Wang (University of Minnesota Twin Cities)
Coauthor(s): Knight, Joe; Pelletier, Keith; Rampi, Lian;Klassen, James

4H[4]
Assessing the impacts of future land use/land cover and climate changes on surface water quality in Middle Cedar Watershed, Iowa
Bingqing Liang (University of Northern Iowa)
Coauthor(s): DeGroote, John; Clayton, Maureen; Hong, Xin;

5H - LIDAR TRACK

Emerging 3D Technologies

Session Sponsored by the Lidar Division

Moderator: Karl Heidemann (U.S. Geological Survey)
Room: Grand Ballroom, Salons G & H

New, emerging 3D technologies using novel configurations are rapidly being adopted. As these new technologies advance, so does the utility for the information they are recording. This session will focus on examples of how these emerging systems and techniques are being used and evaluated.

5H[1]

Single Photon Lidar

Marcos Sirota (Sigma Space Corporation)

Multi-wavelength LiDAR data: Potentials of the New Technology in Land Cover classification

Ahmed Shaker (Ryerson University)
Coauthor(s): Yan, Wai-Yeung; LaROCQUE; Paul; El-Ashmawy, Nagwa; Morsy, Salem

5H[2]

Innovations - Changing the way LiDAR is Used

James Young (Merrick & Company)

An adaptive ground-filtering technique for noisy high-altitude laser profiling data

Ranjith Gopalakrishnan (Dept. of Forest Resources and Environmental Conservation)
Coauthor(s): Gopalakrishnan, Ranjith; Ghannam, Sherin; Abbott, A. Lynn; Wynne, Randolph; Thomas, Valerie

5H[3]

Assessing the quality of Lidar system calibration and data acquisition through point-to-plane metrics: An ASPRS- U.S. Geological Survey effort

Aparajithan Sampath (SGT Contracted to U.S. Geological Survey 's EROS data center)
Coauthor(s): Stensaas, Greg; Heidemann, H. Karl; Stoker, Jason

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6H - GIS & CARTOGRAPHY TRACK

Report Card on the U.S. National Geospatial Infrastructure

Session Sponsored by ASPRS

Moderator: Stephen DeGloria (Cornell University)
Room: Florida Ballroom

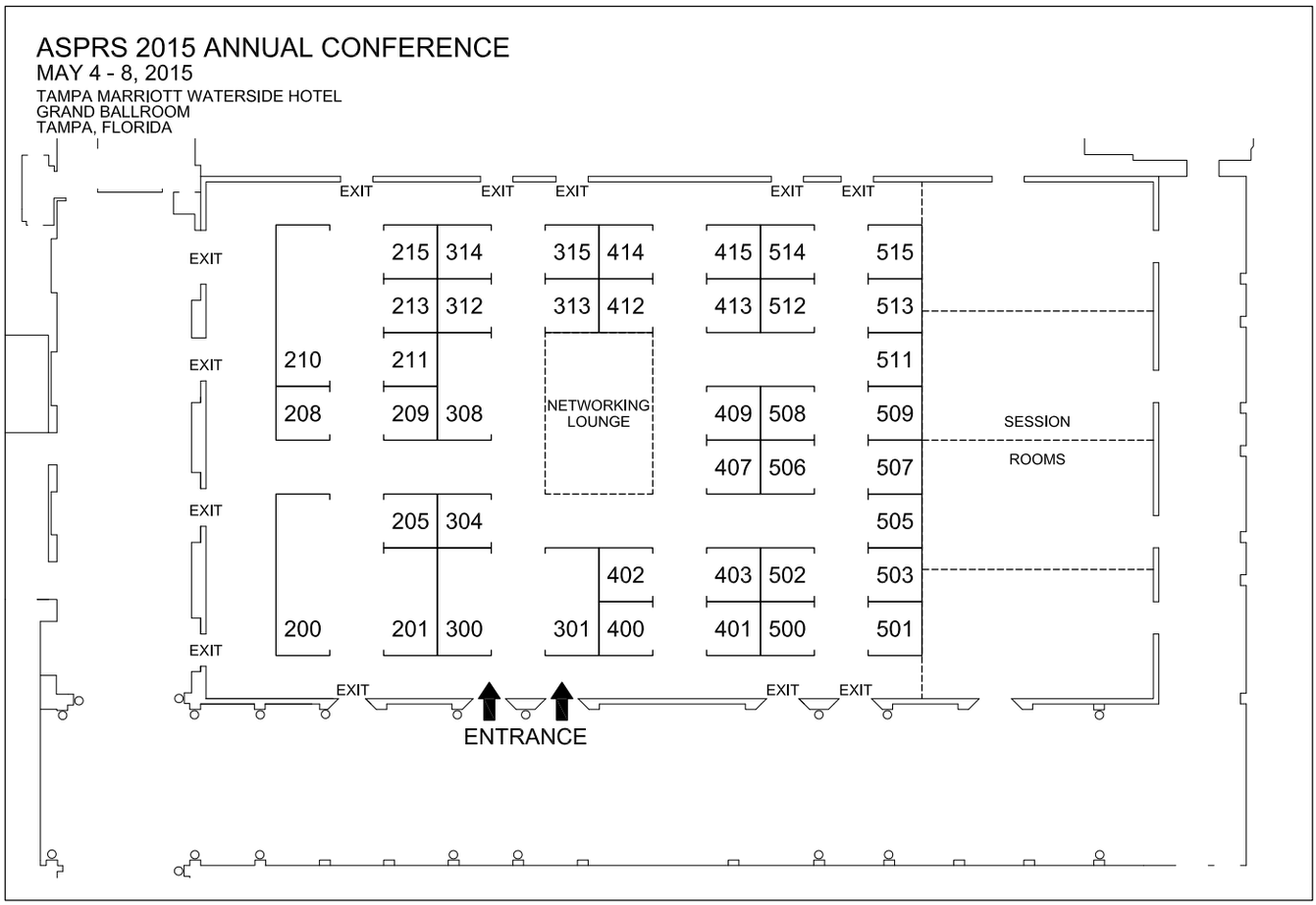
Recently COGO released its Report Card on the U.S. National Geospatial Infrastructure (NSDI), The U.S. Government Accountability Office (GAO) released a report on Geospatial Data, and Senators Hatch and Warner introduced the National Geospatial Data Act Senate Bill 740 (S740). All address the condition and performance of the nation's geospatial "infrastructure" which includes surveyed, mapped and remotely-sensed information. This town hall is intended to engage the stakeholder community to ensure that America has the highest quality geospatial infrastructure. The session will begin with an overview of the COGO Report Card and GAO Report to Congress. After this, there will be a moderated discussion with perspectives from government, industry, and academia.

Friday, May 8th

8:00 am to 12:00 noon **ASPRS Board Meeting** *Grand Ballroom, Salons G & H*

ASPRS Board Meeting
Anyone interested in the work of the ASPRS Board of Directors is welcome to attend this meeting. There is no registration required for attendance. Your participation is encouraged and welcome.

Technology Floor
Location: Grand Ballroom, Salons A – F



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304	Cardinal Systems, LLC
101	Certainty 3D
300	DAT/EM Systems International
400	Elecnor Deimos Imaging
209	Dynamic Aviation Group
301	Exelis
412	GeoCue Group
508	Geological Remote Sensing Group (GRSG)
409	IGI / SOMAG AG / GIP
312	Keystone Aerial Surveys, Inc.
208	Lead'Air Inc.
200	Leica Geosystems Hexagon Geospatial
314	LizardTech
500	Michael Baker International
308	Microsoft/Vexcel Imaging GmbH
212	National Geospatial-Intelligence Agency (NGA)
512	NovAtel Inc
403	National Reconnaissance Office (NRO)
513	Optech
210	Publications – Take One
413	Riegl USA Inc
402	Sigma Space
502	SI Imaging Services (SIIS)
507	SimActive
407	Spectral Evolution
313	T&F
201	Trimble
401	Visual Intelligence
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Applanix **201**
Canada
www.applanix.com

Applanix, a wholly owned subsidiary of Trimble, develops sells and supports advanced products and scalable solutions for the geospatial industry that maximize productivity through Mobile Mapping and Positioning. Whether it be precise measurements to support seafloor mapping, geo-coding of a LIDAR point cloud, real-time guidance of robotic vehicles, or a complete airborne mapping solution for directly georeferenced orthophotos, Applanix has what you need. Established in 1991, Applanix supports its customers around the world anywhere, at any time.

For more information, contact: **Nadya Sayenko** at nsayenko@applanix.com

ASD Inc a PANalytical Company **205**

ASPRS **211**
United States
www.asprs.org

Bookstore Sale! Stop by the ASPRS Bookstore to preview a copy. We will have a limited number to sell on-site. ASPRS staff members will be available to answer questions about Certifications, Membership, Awards and Scholorships and more.

For more information, contact: **Jesse Winch** at jwinch@asprs.org

Cardinal Systems, LLC **304**
United States
www.cardinalsystems.net

Cardinal added to its VrAirTrig application: VrAutoTiePoint—automatic generation of tie points in blocks of imagery and VrBundle—adjusting difficult geometries including UAV, oblique, high oblique, close range, coincident cameras, without GPS or other camera positions. Also see VrDSM— Point Cloud Generation from Imagery. VrDSM output is compatible with the existing VrOne, VrTwo and VrLiDAR products. Other modules are VrLiDAR for displaying and editing point data in 2D and true three-dimensional stereo, VrOne, VrTwo, VrVolumes, VrOrtho and VrMosaic. Please visit Booth 304.

For more information, contact: **Jane S. Smith** at jane@cardinalsystems.net

Certainty 3D **101**
United States
www.certainty3d.com

Certainty 3D is a software company focused on the productive, high performance processing of LiDAR data. C3D's primary product, TopoDOT, is a comprehensive solution successfully advertising the challenges of processing LiDAR data across the spectrum of data management, quality assessment and extraction of features, topographies and 3D models.

For more information, contact: **Ted Knaak** at ted.knaak@certainty3d.com

DAT/EM Systems International **300**
www.datem.com

DAT/EM Systems International® develops software for the photogrammetric, engineering and GIS industries. DAT/EM enables efficient extraction of 3D vector features from stereo imagery and point clouds. Products include the Summit Evolution™ photogrammetric workstation, LandScape™ point cloud viewing and editing toolkit, and complementary components Capture™, MapEditor™, Ortho+Mosaic™, Airfield3D™ and Contour Creator™. New to the DAT/EM Photogrammetric Suite is Summit UAS™, a set of tools to critically analyze UAS data by viewing, editing and defining features.

For more information, contact: sales@datem.com

Dynamic Aviation
United States
www.dynamicaviation.com

Dynamic Aviation specializes in providing turbine powered aircraft and aviation infrastructure to organizations with exacting data needs, but lacking aviation resources. We offer versatile, multi-engine airborne platforms into which existing and emerging technologies can be installed to acquire data of all types. Our aircraft can be deployed to obtain LiDAR and multi/hyperspectral data. They may be used for aerial photography, geophysical survey, and air sampling; as well as for airborne and maritime surveillance.

For more information, contact: **Steve Scates** at sscates@dynamicaviation.com

Elecnor Deimos Imaging **302**
Spain
www.deimos-imaging.com

DEIMOS Imaging is a private Spanish company, part of the aerospace group Deimos and owned by the industrial group Elecnor. The company owns and operates DEIMOS-1, the first Spanish Earth Observation satellite. DEIMOS-1, launched in 2009, is among the world leading sources of high resolution data. On June 19th, 2014 the company launched its second satellite, DEIMOS-2, which is a very-high resolution, agile satellite capable of providing 75-cm pan-sharpened imagery, with a 12km-wide swath. The DEIMOS-2 camera delivers multispectral imagery in 5 bands: Panchromatic, G, R, B and NIR.

For more information, contact: **Julio López** at comercial@deimos-imaging.com

Exelis **301**
United States
www.exelisvis.com

Exelis provides software solutions to help scientists, geographers, and GIS specialists solve problems using remotely sensed data both on the desktop and in the cloud. Our advanced ENVI suite of products can extract important information from any type of geospatial imagery, regardless of whether it is panchromatic, multispectral, hyperspectral, LiDAR, SAR, or FMV. Visit Exelis booth #301 to see how ENVI enables you to get more information about the world around you and make more informed decisions.

GeoCue Group **412**
USA
www.GeoCue.com

GeoCue Group Inc. provides software, training and consulting services for image, point cloud and LIDAR data processing and management. We represent Pix4D, Terrasolid and Agisoft in North America. Our LP360 product line is a Windows standalone or ArcGIS extension for point cloud exploitation. Our AirGon division provides complete solutions for local area metric mapping using small Unmanned Aerial Systems (sUAS). We provide bootstrap systems and training for new entries into the business.

For more information, contact: info@geocue.com

Geological Remote Sensing Group (GRSG) **508**
USA
http://www.grsg.org.uk

The Geological Remote Sensing Group (GRSG) is a special interest group of the Geological Society of London (GeolSoc) and the Remote Sensing and Photogrammetry Society (RSPSoc). The GRSG is an association of enthusiasts keen on the geological aspects of remote sensing. The current membership includes geologists and remote sensing experts employed within industry, academia and government agencies, as well as graduate students.

For more information, contact: **Christian Haselwimmer** at northamerica@grsg.org.uk

GIP - Providing Smart Geospatial Solutions
Germany
www.igi-systems.com

The World of BINGO is presented by GIP Aalen from Germany. BINGO is technically the most powerful program for bundle adjustment. It includes full camera calibration, oblique and combined adjustment, close range and many more.

For more information, contact us at info@igi-systems.com

IGI
Germany
www.igi-systems.com

IGI is one of the world's leading geospatial companies and conducts business worldwide. The success of IGI is driven by their people and their commitment to get results the right way — by operating responsibly, executing with excellence, applying innovative technologies and capturing new opportunities for the best possible accuracy. The purpose of IGI is to provide smart geospatial solutions.

For more information, contact us at info@igi-systems.com

Keystone Aerial Surveys, Inc. . . **312**
United States
www.kasurveys.com

Keystone Aerial Surveys, Inc. (KAS) specializes in providing quality aerial survey data acquisition. We have the equipment, the skills, the experience and the locations that position us to provide you with the assurance of getting your project flown to your specifications and on time. That is our focus and mission. We do this by having a fleet of 20 aircraft specially modified and certified for aerial surveys. We have 4 strategic locations throughout the country, in PA, TX, AZ and CA. Our flight crews and support personnel our able to take your project from planning through final delivery of your data.

For more information, contact: **Mary Hurley** at mhurley@kasurveys.com

Lead'Air Inc. **208**
US
www.trackair.com

Lead'Air Inc., located in Kissimmee, Florida is the developer and international distributor of the TRACK'AIR™ line of products and software for aerial survey and photography. At ASPRS, they will be showcasing their ground-breaking MIDAS, high-resolution digital oblique systems, and their new technology STX, stabilized sensor mounts. Lead'Air is unparalleled in their in-house engineering and manufacturing capacity, allowing highly customized solutions to customers' specific needs, and fast turn-around on new product development for the aerial survey and acquisition industry.

For more information, contact: **Shirley Meyers**

Leica Geosystems Hexagon Geospatial **200**
United States
www.hexagon.com

Hexagon Geospatial helps you make sense of our dynamically changing world. As a leading global provider of geospatial software, our portfolio helps organizations holistically understand change and use this information to make business-critical decisions. With close to 200 years of experience pioneering solutions to measure the world, Leica Geosystems products and services are trusted by professionals worldwide to help them capture, analyze, and present spatial information. Leica Geosystems is best known for its broad array of products that capture accurately, model quickly, analyze easily, and visualize and present spatial information.

LizardTech **314**
United States
lizardtech.com

Since 1992, LizardTech® has delivered state-of-the-art software products for managing and distributing massive, high-resolution geospatial data such as aerial and satellite imagery and LiDAR data. LizardTech pioneered the MrSID® technology, a powerful wavelet-based image encoder, viewer, and file format and now has offices in Seattle, Denver, London and Tokyo. LizardTech is a business name of Celartem Technology Inc.

For more information, contact: **Jeff Young** at jyoung@lizardtech.com

Michael Baker International . . **402**
United States
www.mbakerintl.com

MBI's Geospatial Information Technology (GIT) organization is a recognized leader in the delivery of geospatial technology solutions. We possess a wealth of proven experience and our resources include more than 300 GIS, survey, mapping and Information Technology professionals across North America. Baker has assisted hundreds of government agencies and public/private industry clients in implementing complex enterprise GIS solutions, including: Consulting, Database Development, Application Design & Development, Data Acquisition & Processing, Aerial and Mobile LiDAR, Surveying & Mapping, Systems Integration, Asset Management, Data Access & Visualization, and Staffing Support.

For more information, contact: **Robert Hanson** at rhanson@mbakerintl.com

Microsoft/Vexcel Imaging GmbH **308**
Austria
www.iFlyUltraCam.com

Established through Microsoft's 2006 acquisition of Vexcel Imaging, Microsoft's UltraCam business unit is a leading provider of digital aerial cameras. Its family of award-winning UltraCam sensor systems includes the UltraCam Osprey, UltraCam Eagle, UltraCam Falcon and UltraCam Hawk. Rounding out the UltraCam offerings is the fully integrated UltraMap workflow software system, with features that include high-density 3D point cloud creation, highly accurate and detailed digital surface model (DSM) generation, and ortho mosaicing capabilities based on an automatically generated DSM or traditional DSM.

For more information, contact: **Jerry Skaw** at mpsinfo@microsoft.com

National Geospatial-Intelligence Agency **212**
United States
www.nga.mil

NovAtel Inc **512**
Canada
www.novatel.com

Long-time supplier of high-precision GNSS positioning and attitude determination technology for mobile mapping and positioning applications. NovAtel GNSS receivers, antennas and SPAN® GNSS/INS products offer exceptional performance and are designed to integrate easily with camera, LIDAR, flight management and other systems. GrafNav™ from our Waypoint® products group, is the industry's preferred GNSS data post-processing software. Inertial Explorer® extends this functionality with tightly coupled GNSS/INS processing. Visit Booth 512 to learn more.

For more information, contact: **Allan MacAulay** at 647-342-7507

National Reconnisance Organization **404**
United States
www.nro.gov

Optech **513**
Canada
www.optech.com

Optech is dedicated to providing the world's most advanced lidar and camera 3D survey instruments, empowering mapping professionals with high-accuracy and productivity-enhancing mapping solutions that provide workflow automation software for precise results in the most demanding engineering, transportation, planning, and environmental applications. Optech has recently introduced game changing advances in airborne lidar technology with the multi-spectral Optech Titan, the terrain optimizing Galaxy with PulseTRAKTM, and the lighter and more efficient CZMIL Nova lidar bathymeter.

For more information, contact: **Brenda Burroughs** at Brenda.Burroughs@optech.com

Riegl USA Inc **413**
United States
www.rieglusa.com

RIEGL USA delivers cutting edge technology in airborne, mobile, terrestrial, and the newest unmanned LiDAR scanning solutions.

From purchase, to system integration, as well as training and support, RIEGL USA stands out as a leader in the industry.

RIEGL USA: Building Systems, Delivering Performance.

Sigma Space **303**
USA
ww.sigmaspace.com

Sigma Space has developed the latest in LiDAR technology with our Single Photon LiDAR (SPL) delivering rapid, high-resolution 3D mapping. With our proprietary timing electronics allowing for range measurements every 26 centimeters, SPL provides, in a single instrument, timely and affordable 3D mapping measuring foliage penetration and wide area bathymetry and topography.

For more information, contact: **Katie Fitzsimmons** at katie.fitzsimmons@sigmaspace.com

SI Imaging Services **502**
Republic of Korea
www.si-imaging.com

SI Imaging Services (SIIS) was founded in April 2014 as a subsidiary of Satrec Initiative (SI) with the mission of "Fair Access to Space". SIIS, which is specialized company in satellite imaging services, is exclusive distributor of KOMPSAT-2 (1.0 m optical), KOMPSAT-3 (0.7 m optical), and KOMPSAT-5 (1.0 m SAR) satellites imagery and also distributes DubaiSat-2 (1.0 m optical) imagery worldwide. SIIS has established the global business network with more than 60 resellers and partners. In the capability of providing both optical and radar imagery as well as the collaborative business with worldwide network, SIIS offers better and fair imaging services to customers.

For more information, contact: Kyoungjin Jung at sales@si-imaging.com

SimActive **507**
Canada
www.simactive.com

SOMAG AG
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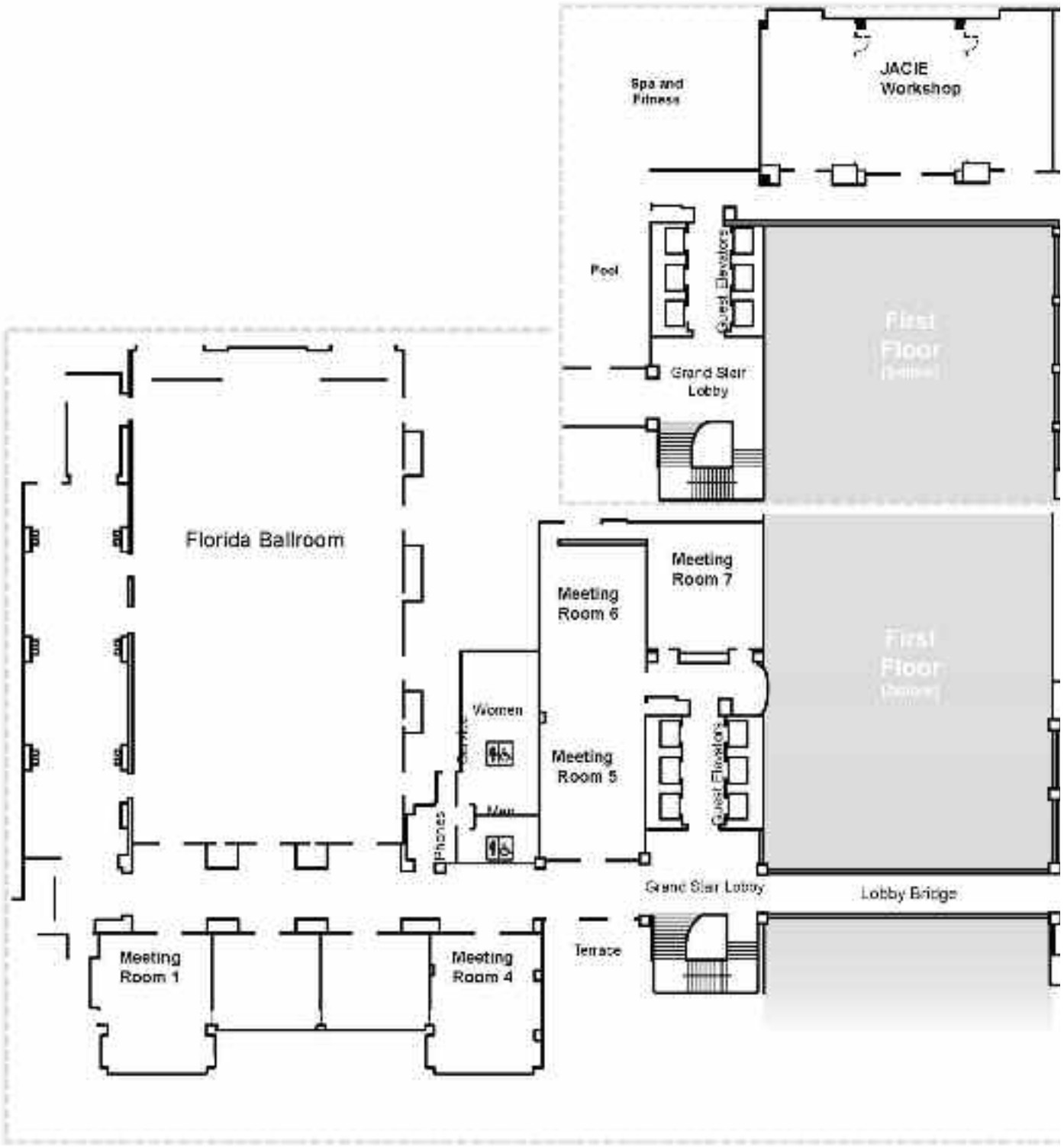

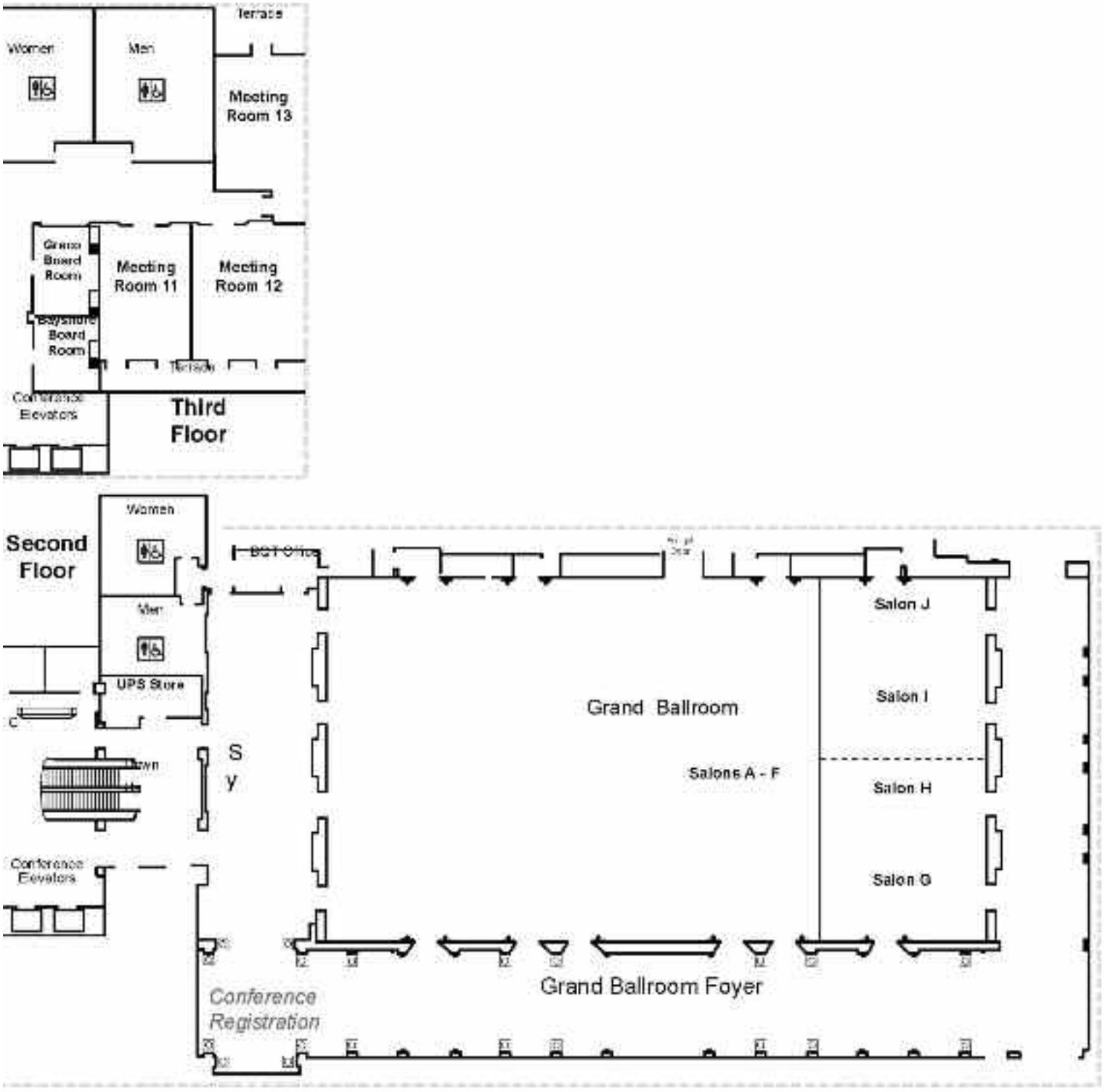
Terrace
Women
Men
Meeting Room 13
Meeting Room 11
Meeting Room 12
Third Floor
Second Floor
Women
Men
UPS Store
Grand Ballroom
Salons A - F
Salon J
Salon I
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GRSG Geological Remote Sensing Group

The Geological Remote Sensing Group North American Committee (GRSG NA)

The GRSG (UK) is the parent organisation, and is a special interest group of the Geological Society and the Remote Sensing and Photogrammetry society (UK)

In December 2011, the GRSG officially established a North American Committee (NAC) to discuss and
promote remote sensing and GIS applications in industry and academia.
The primary goals of the NAC are to:
1) Promote the use of remote sensing technologies and discuss new avenues of research and industrial applications.
2) Build the membership of the GRSG in North America (students and full members).
3) Report back to the GRSG committee (UK) by way of quarterly updates.

For more information on the GRSG and how to join see www.grsg.org.uk or email northamerica@grsg.org.uk

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- ✔ Crime Mapping/ Modelling
- ✔ Data Capture/Collection
- ✔ DEM- Digital Elevation Model
- ✔ DGPS - Differential GPS
- ✔ Digital City Models
- ✔ Digital Mapping
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- ✔ Disaster Management/ Monitoring
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