



# THE IMAGING & GEOSPATIAL INFORMATION SOCIETY

## ~The Rocky Mountain Compiler~

**Issue 2**

**Summer 2014**

**Issued Quarterly**

*Newsletter of the Rocky Mountain Region of ASPRS, serving Montana, Wyoming, Colorado, and New Mexico*

### President's Message

This year (2014) is moving ahead with great speed. It is hard to believe that the summer season is almost gone. The ASPRS Rocky Mountain Region is gearing up for a busy fall season. This year we have the GeCo in the Rockies Conference September 22<sup>nd</sup> – 26<sup>th</sup> in Grand Junction, Colorado and [Pecora 19 in association with ISPRS](#) in Denver November 17<sup>th</sup> - 20<sup>th</sup>. I hope to see some RMR members at one of these conferences. In addition, the RMR will be holding our annual student scholarship program in the fall.

RMR representatives recently attended a great UAV demonstration in Loveland, Colorado followed up with a great lunch get together with other ASPRS members. Another import event this summer for the RMR was winning the National ASPRS Region of the Month (March 2014) award, due to the efforts of **Chris Lippitt**, faculty advisor at the University of New Mexico in Albuquerque, with help from RMR Vice President **Harold Cline**.

As always, all are welcome to join our meetings held once per month by teleconference. For information about getting involved, contact any one of the Rocky Mountain Region Board members listed at our award-winning website: <http://www.asprs-rmr.org>

**Dr. Michael Tuffly, CMS-RS**  
ASPRS-RMR President

### National Director's Report: Case for a Qualitative Geospatial Revolution

ASPRS is currently requesting feedback from the membership and outside organizations on the final draft of the proposed ASPRS Positional Accuracy Standards for Digital Geospatial Data (see [http://www.asprs.org/a/society/divisions/pad/Accuracy/ASPRS\\_Positional\\_Accuracy\\_Standards\\_for\\_Digital\\_Geospatial\\_Data\\_Draft\\_Rev5\\_V1.pdf](http://www.asprs.org/a/society/divisions/pad/Accuracy/ASPRS_Positional_Accuracy_Standards_for_Digital_Geospatial_Data_Draft_Rev5_V1.pdf)).

**Comments should be e-mailed by Sept. 15, 2014** to the Map Accuracy Standards Working Group at this email address: [AccuracyStandard@asprs.org](mailto:AccuracyStandard@asprs.org).

[Historic Perspective on Soil Allocation, Measurement and Geospatial Data Quality](#)

On the eve of The Imaging and Geospatial Information Society -- ASPRS adopting new

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positional accuracy guidelines, I feel some discussions of quality are in order. To understand quality is to understand error. Let's leave room for professional judgment, interpretation and critical examination of data gathered. Mapping professionals, and for that matter, national governments, have been concerned with spatial quality measures for centuries, if not millennia. Interestingly, Herodotus (c. 484 to c. 425 B.C.), the noted Greek historian and geographer, documented a very early, if not the first, division of "soil" and tax assessment in the form of a rent paid year by year. Lots were divided into squares and values were adjusted if flooding or significant erosion occurred. The Egyptian King Sesostrius, who ruled almost 2000 years before Christ, is credited by Herodotus with instituting this land tenure system, a systematic use of land measurement and the first application of geometry (surveying) for subdividing "soil" (land). In the case of the United States, our founding planters and surveyors like George Washington and Thomas Jefferson were keen on accurate land surveys for both political and personal reasons. Both lived full lives and enjoyed comfortable living conditions on relatively expansive estates as the result of their personal achievements and economic status tied in no small part to their successful land management. Both, however, dealt with geospatial error and the need for a standard framework for measuring the earth and resulting economically motivated land transactions. In Washington's case, in 1791 he called upon Congress to establish a scientific basis for measures and weights (see Linklater, 2002). Jefferson was very much a measures and weights reformer, so much so that he became a metric advocate and supported the "Latitude of Paris" in 1791.

#### Ever-present Error

Even with all the recent advances in Geospatial Information science, surveying and engineering, error remains ever present, particularly macro-geospatial errors related to land settlement in flood-prone areas, earthquake zones, exposure of the built environment to extreme meteorological and climatic occurrences; wasteful use and inefficient distribution of water; environmental contamination, and generally our inability to inhabit safe geographies. Colorado is a great example of what can happen in any given season, such as the recent forest fires and flooding events. Preston James also characterizes the persistence of error in geographic research (James, 1966) which undoubtedly introduces error and bias into research conclusions. James does offer a set of conditions where avoidable errors in geographic research can occur:

1. Inexact use of words
2. Uncritical use of statistical data
3. Failure to indicate the reliability of data
4. Failure to distinguish among different kinds of spatial distributions

The history of geospatial error and error reduction over time lends itself to many worthy research topics. Immanuel Kant (1724 – 1804), a regular lecturer on Physical Geography who lived in the same time period as Washington and Jefferson, wrote extensively about the "universal principle of right and the linked notion of "What is Truth." Kant wrote of the cognitive faculties of understanding, judgment and reason. In his *Critique of Judgment*, Kant further described judgment as a middle term between understanding and reason (Kant, 1790). Perhaps with all of our technological advances to measure and monitor the earth we have lost touch with applying judgment through achieving understanding of the world around us and reasoning accurate models to describe the current state and what might happen in the future ... sea level changes, droughts, slope failures, high volume precipitation events ... and on and on.

#### A Quality Model for the Qualitative Geospatial Revolution

Early in my career, under an EPA Research contract assignment, I was directed to follow a laboratory oriented QA methodology (see Young and others, 1985). After some intellectual struggle, I adopted the following Quality Model. The Model has survived the test of time and remains quite relevant today. I will review the *ASPRS Positional Accuracy Standards for Digital Geospatial Data Draft Rev5 V1* with this quality framework in mind:

- Precision – Agreement between data sets, methods and/or technologies ...

*[This is an excerpt. The complete text of this article can be read at [www.asprs-rmr.org/rmnewsletters](http://www.asprs-rmr.org/rmnewsletters)]*

Remember that according to the Romans, one foot equals 16 fingers, so why are we all so confused? (Linklater, 2002). Indeed, it is time for a Qualitative Geospatial Revolution. As always, I welcome your questions and comments.

**Jeffrey M. Young, National Director, ASPRS-RMR**  
303-815-2254 (cell), [jyoung@lizardtech.com](mailto:jyoung@lizardtech.com)

## GeCo in the Rockies Conference

**“GIS: Bridging the Divide 2014”**  
**September 22-26**  
**Two Rivers Convention Center**  
**Grand Junction, CO**



Join us September 22nd through 26th for an exciting combined joint annual GIS / GeCo in the Rockies Conference, including:

- Workshops & Training
- Presentations on a wide range of themes and topic areas
- Technology Panel and GeCo-X Forum
- Keynote speech by Chris Sheldrick, founder of what3words
- Networking with colleagues from throughout the Rocky Mountain region
- Social events with geography quiz and prizes
- Vendor Exhibitions
- Student and Career Breakfast

As always, 2014 GeCo in the Rockies features an exciting, content-rich schedule.

### Track themes:

- Mobile GIS
- GIS on the Web
- GIS Education
- In the Weeds: Tech Tips and Tough Concepts Explained
- Government GIS
- Public Safety GIS
- On the Cutting Edge: Innovations in GIS
- Process Improvement
- Conservation GIS
- ASPRS: RS, Photogrammetry, GPS, GIS
- URISA: GIS in Public and Private Organizations

### Pre-Conference Workshops:

#### Two-Day Training Showcases:

- Programming ArcGIS 10.1 with Python
- Using Model Builder
- CAD to GIS using Autodesk AutoCAD Map 3D

#### One-Day Training Showcases:

- Trimble TerraSync / Pathfinder Office refresher workshop for existing users
- Esri ArcGIS Online for Organizations

## Rocky Mountain Compiler

- Geodetic and Photogrammetric Concepts
  - Compressed Data Workflow in a GIS Environment
  - Applied Spatial Statistics using R and ArcGIS
- Half-Day Training Showcases:*
- GIS Project Management
  - Introduction to LIDAR processing using LP360
  - Mesa County VRS – Trimble TerraFlex – ArcGIS for Mobile – GeoJot+
  - Latest advancements in Mapping Hardware and Software

### Exhibit Hall Vendors:

The conference will feature a full slate of outstanding exhibitors and sponsors that will display their latest tools and applications, including:

- AeroGraphics
- American Sentinel University
- Blue Marble Geographics
- CAD-1
- Canon Solutions America
- Cityworks
- Colorado Mesa University
- CompassTools
- Cyclomedia
- Economic Development Lethbridge
- ESRI
- Frontier Precision
- Hexagon Geospatial
- Infogroup
- Kucera International
- Latitude Graphics
- LizardTech
- North Line GIS
- QCoherent
- Quantum Spatial
- United Reprographic Supply
- University of Denver
- Valtus Imagery Services

### Post-Conference Events:

A number of events are scheduled or recommended for the final day of the Conference, Friday September 26th, including an organized tour of the Dinosaur Museum and Quarry, as well as local suggestions for activities ranging from rafting, biking, hiking and shuttle tours.

Although Abstracts are no longer being accepted at this time, registration is still ongoing. Please visit the conference website for full information on the program, schedule, registration and all other details: <http://www.gecointherockies.org/>

GeCo in the Rockies 2014 is a great value and the only conference of its kind! **PLEASE REGISTER TODAY AND JOIN US IN GRAND JUNCTION IN SEPTEMBER! DON'T MISS IT!!**

## Phenology Research and Observations of Southwest Ecosystems (PROSE) Call for Papers!

Please join us October 17, 2014 for the 7th Annual "Phenology Research and Observations of Southwest Ecosystems (PROSE)" Symposium in Tucson, Arizona.

**Dr. Stephen Jackson**, Director of the Southwest Climate Science Center, will deliver the keynote address: "Translational Climate Science: Challenges and Opportunities."

For more information go to: <https://www.usanpn.org/prose2014>

We look forward to seeing you there!

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## 2014-15 ASPRS Rocky Mtn. Region Scholarship Program Announced

In its continuing efforts to support and build awareness for the Remote Sensing and GIS / Geospatial sciences, the Rocky Mountain Region of ASPRS is proud to announce its academic scholarships for 2014-2015. The ASPRS-RMR offers scholarships to deserving undergraduate and graduate students every year. There will be at least one scholarship awarded (assuming sufficient applications are received) in the range of at least \$500 to \$1,000 each, depending on level of study (Bachelor's, Master's or Ph.D.). The scholarships are intended for students throughout the Rocky Mountain Region (Montana, Wyoming, Colorado and New Mexico) who demonstrate excellence while pursuing careers in the fields of Photogrammetry, Remote Sensing, and Geographic Information Systems (GIS) or related disciplines. Both undergraduate and graduate students of any third-level educational institution within the four-state region who are pursuing careers in these disciplines are encouraged to apply.

**Download the application from the "Newsletters" page at <http://www.asprs-rmr.org>**

Student membership in ASPRS is not required to apply, but if selected, membership is required at time of scholarship award. Awards will be presented at the ASPRS-RMR Annual Dinner Meeting in January or February 2015. The Rocky Mtn. Region has consistently offered thousands of dollars in annual scholarships every year. Preference will be given to those studies that apply sound scientific principles to

practical applications in the geospatial sciences (photogrammetry, remote sensing, Geographic Information Systems, etc.). Awards at both the undergraduate and the graduate levels are based on academic merit; that is, the application form does not request any personal financial data. If you have questions, please contact Vice President Harold Cline at (720) 879-2891 or [harold.cline@tomra.com](mailto:harold.cline@tomra.com)  
**Applications should be submitted by the December 5, 2014 deadline.**

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## Rise of the Drones: Not Your Ordinary Tech Tour sUAS/UAV Symposium in Loveland, July 17, 2014

Unmanned aircraft, aka drones, have been in use for military reconnaissance and special operations around the world for many years, but only more recently have they been used for civilian applications such as crime scene assessments, precision agriculture, communications, climate monitoring, city planning, facility security, law enforcement, environmental monitoring, wildfire detection, surveying and mapping, pipeline leak detection, search and rescue operations, real estate marketing, oil spill monitoring, movie filming, and sports broadcasting. Several ASPRS members and colleagues were lucky enough to join a large group of law enforcement and emergency response personnel on July 17<sup>th</sup> for a symposium on the use of small Unmanned Aircraft Systems (sUAS) and Robotics for public safety. A small company called Unmanned Experts organized this event at the Budweiser Events Center (formerly The Ranch) in Loveland.

The presentations were lively and interesting with good supporting visuals, including video. Originally developed for military and special operations uses, the Unmanned Aircraft Systems (UAS) and Unmanned Aerial Vehicle (UAV) industries are growing rapidly for civilian applications, especially for disaster response and law enforcement. One useful application involves documenting traffic accidents after they occur, especially those involving fatalities that require rigorous documentation. Extendable ladders on fire trucks have been used to collect aerial photos of the scene, but moving a truck to get a different camera angle can be slow and difficult. UAS allows for quick data gathering from a variety of angles and altitudes while minimizing road closure times. Search and Rescue (SAR) is another good use of this technology, especially in rough terrain or hazardous environments such as fires or chemical spills.



*Dave Prall of Unmanned Experts flies DJI's Spread Wings S800*

UAVs come in two basic airframe designs, fixed-wing aircraft like the Falcon (Falcon Unmanned), Predator (General Atomics), or Raven (AeroVironment, Inc.). These are easy to operate, more stable, best for mapping, and allow for longer flight times (40 minutes or more). Infrared cameras can be mounted for detecting humans, animals, or wildfire hotspots. LiDAR cameras/sensors can be mounted for mapping applications. The other airframe design is the multi-rotor or helicopter-style, vertical takeoff and landing (VTOL) craft. These are more complex to operate, have limited flight times (10-20 minutes), but operate well in confined spaces. Examples of these include the Aeryon Scout (Aeryon Labs, Inc.), Airframe Bot (Aeronavics), Draganflyer (Draganfly Innovations, Inc.), AirRobot (GmbH & Co. KG), MultiRotor (Service-Drone.com), Phantom (DJI Innovations), Spread Wings S800 (DJI), and SkyJib (Aerial Robotics).

Image resolution is dependent on altitude, typically 20-50 meters (66-164 ft.). At a height of 20-m.(66 ft.), you can easily see an object as small as a handgun, cell phone, or ink pen on the ground. Cameras range from a small GoPro for video to larger, professional grade DSLR for stills, or full-scale movie cameras that require a larger airframe to support the added weight. Camera stabilizers

allow for smooth video results. Video can be broadcast via Internet or downloaded to a ground station. All copters have Inertial Measurement Units (IMUs) onboard to help pilot the craft (quicker to collect data than a total survey station) as well as to facilitate image registration later. Images can be mosaicked together (e.g., 90 images at 40 m. (66 ft.) or 65/80 images at 20 m. (66 ft.)) using PhotoModeler or other close-range photogrammetric software. 3D measurements can be extracted to construct scale models or drape over aerial images. An example video was shown using this methodology for crime scene investigation and reconstruction.

Four VTOL UAVs were on display on a table in the presentation area, where we could get a good look at them and pick them up to compare sizes and weights. All were relatively light for their size. Additional models were on display in the vendor area, including a couple of fixed-wing models. Representatives from Falcon Unmanned, Road Narrows Robotics, Rocketship Systems, Scion UAS, and Service-Drone USA were in the vendor area before and after the presentations to answer our questions.

The two co-founders of Road Narrows Robotics presented an overview of the developing field of robotics, from robotic arms to full-scale robots, all composed of sensors, actuators, and processors. Research continues at universities and research labs, small companies and among hobbyists. Terrestrial robotics can be a valuable component to UAS in hazardous areas. Recent developments include improved battery technology (longer lasting and lighter weight), imbedded cameras to capture images or video, and autonomous robotics.



Flying drones is allowed (or possible) in many other countries but not legal in the US, where it is limited to military, research centers, law enforcement, and hobbyists. Accidents have occurred with drones crashing into crowds and injuring people, and the FAA is struggling to regulate this rapidly growing industry in an effort to protect public safety. New regulations are expected in 2015. Unmanned Experts shared their experience with helping public agencies apply to the FAA for a Certificate of Authorization (COA), which is a license to operate sUAS for a specific purpose in a specific area or jurisdiction. COAs can be issued to qualifying public agencies such as police departments. Hobbyists are allowed to fly, but cannot do it for commercial purposes. Operational altitudes are below 400 ft./122 m. (within Class G airspace, which is below 1,200 ft./366 m.), although most flying is done below 150 ft. (46 m.), and must be >5 miles (8 km.) from any airport. Standard operating procedures are a mandatory part of the COA application; they must cover training, communications, and emergency procedures. A private pilot's license is required for night operations. Hobbyists can join the Academy of Model Aeronautics (AMA) and buy operator's insurance through that organization. Regulation will likely evolve as the industry grows further.

In the meantime, six research centers have been designated by the FAA (as directed by Congress) at selected universities across the country, in Alaska, Nevada, New York, North Dakota, Texas, and Virginia. [All six sites are now operational.](#)

Within the ASPRS Rocky Mtn. Region, New Mexico State University hosts the first [Unmanned Aircraft Systems Flight Test Center](#) (UAS FTC) which supports the integration of unmanned systems into the National Airspace System. The UAS FTC collects data during unmanned flights in public (non-restricted) airspace to assist the FAA in the development of standards and regulations for UAS operators. Located in Las Cruces, New Mexico, the UAS FTC specializes in unmanned systems flight testing and provides the capability to test several classes of UAS in a common area. The UAS FTC operates under an FAA Certificate of Authorization (CoA) that permits UAS flights in over 15,000 square miles of coordinated airspace in southwestern New Mexico. The airspace, which extends from the surface to 18,000 feet mean sea level, features a very low volume of aviation traffic and overlays mostly undeveloped government-owned land. UAS operators can access the airspace from several airports located within the lateral boundaries of the operating area, including Las Cruces (LRU),

Lordsburg (SLB), Grant County (SVC), and Socorro (ONM).

The most exciting part of the day was the live flight demonstration of the largest VTOL UAS on display, the DJI Spreading Wings S800, in the arena. Now I know why they call them drones; the sound this one emitted can best be described as a loud, constant drone. On take-off, it rose up from the upper level of the arena, flew gracefully around the central airspace for a while, looking like a small UFO with its little green lights, then returned to its launching place and landed flawlessly. It takes a high degree of skill to operate these aircraft. A story was shared of one licensed pilot who tried his hand at it, but after spending \$10,000 and a year of his time, he gave up.

Unmanned Experts offers consulting services for the use of UAS for a variety of applications. Representatives of Unmanned Experts are scattered across the US with one based in the Denver area. **Dave Prall**, Law Enforcement Aviation Manager, can be reached at [d.prall@unmannedexperts.com](mailto:d.prall@unmannedexperts.com) or 720-550-9222. Check out their website at [www.unmannedexperts.com](http://www.unmannedexperts.com) for more information.

A subset of our group gathered after the symposium for lunch at Café Athens, a Greek restaurant in a nearby shopping center. We discussed the huge potential of this exciting new industry over gyros, dolmades, souvlaki, and salad.

**Sheila Pelczarski, Communications Coordinator**

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## CO Front Range Air Quality Study

### Summer 2014

The Northern Front Range has been violating federal air quality standards for ozone since 2004; it was designated a Federal Non-Attainment Area in 2007. The state then adopted tougher regulations on emissions of ozone precursors for various sources, including cars and oil-and-gas operations. Fast forward to this summer: NOAA teamed up with NSF, NCAR, CU-Boulder's CIRES and INSTAAR, NASA, EPA, and the CO Dept. of Public Health and Environment (CDPHE) to conduct the Front Range Air Pollution & Photochemistry Experiment or FRAPPE. The FRAPPE air sampling flights up and down the Northern Front Range from Fort Collins to Chatfield State Park are closely synchronized with NASA's DISCOVER-AQ program, which involves flying in recurring spirals over air monitoring sites. Mobile labs and weather balloons support the aerial efforts by monitoring methane, non-methane

hydrocarbons, and other ozone precursors. Isotopes of these gases are being used to identify the source, mainly motor vehicles, agriculture, and oil-and-gas extraction. The multi-perspective sampling will provide the most comprehensive characterization of air quality ever conducted in this region. Data collection for the air quality study is going on from July 16 until August 16, 2014.



I got a chance to get up close and personal with some of the specialized aircraft and equipment being used in these studies at the Research Aircraft Open House on Saturday, August 2nd at the Rocky Mountain Metro Airport in Broomfield, CO. The weather was perfect – so perfect that the two smaller NASA planes shown on the open house flier, the P-3B and the King Air, were out flying and collecting data. But the largest plane, the NSF/NCAR C-130, was there on display outside and a much smaller NCAR jet was on display inside the hangar building. While research scientists and staff of NCAR circulated to answer questions, people waited in long lines to get inside the NASA jet as well as the cockpit and rear cargo bay of the Lockheed C-130Q Hercules, a four-engine, heavy-lift utility aircraft built in 1984 and originally used by the US Navy. Now NCAR has the C-130 filled to the brim with research instruments and power supply. It requires two pilots, a flight engineer, and can accommodate up to 16 scientists. In addition to standard thermodynamic, microphysics and radiation sensors, the C-130 has a roomy fuselage payload area (414 sq-ft), many versatile inlets and optical ports, and can carry a variety of chemistry, cloud physics, air motion, and remote sensing (RADAR and LiDAR) instruments and sensors within the fuselage and in wing pods. I was curious about the wing pod sensors and how they work. **Frank Flocke**, one of three principal investigators of the FRAPPE study, explained how laser beams detect size, shape, and density of air particles as they travel an inch or two between small ports in the sensors; these data are then recorded.

## Rocky Mountain Compiler



The C-130 is quite large (98 feet long with a wingspan of 133 feet) and with four engines is quite loud when flying as low as 300 feet (or as high as 26,000 feet). I had already seen and heard it fly overhead before Saturday. If you live near the flight paths of these aircraft, you might see and hear them out there until August 16th (possibly until the 20th). The C-130 has a white nose and dark blue body with a distinctive large snowflake on its tail – you can't miss it if you are outside and it is flying low! The smaller planes are white and tend to fly higher, but you just might see them also, if you're lucky.

Addendum: The following day I was out riding my bike and saw the smaller planes three times! More information, including photos, diagrams, and videos can be found at:  
<http://www2.acd.ucar.edu/frappe>  
<http://www.eol.ucar.edu/frappe/eo>  
<http://discover-aq.larc.nasa.gov>

**Sheila Pelczarski, Communications Coordinator**

## AAG 2014 Joint Annual Meeting

You are cordially invited to join us in Albuquerque, New Mexico for the first-ever joint meeting of the Southwest and Great Plains - Rocky Mountain Divisions of the Association of American Geographers. Geographers from the two regions are collaborating to structure a vibrant program that welcomes scholars from the 40<sup>th</sup> parallel to the Rio Grande and the Mississippi River to the Rockies to share research and develop new collaborations.

Please see the [conference website](#) for meeting details, including:

- Preliminary meeting agenda
- Field trip details
- Online registration and payment
- Abstract guidelines, template, and online submission system
- Lodging options

Sponsorship opportunities exist for those interested.

## ASPRS Rio Grande Chapter Update

The Rio Grande Chapter of the American Society for Photogrammetry and Remote Sensing installed its new board of directors at its annual spring meeting at the University of New Mexico on April 5, 2014.



The 2014-2105 Board members are:

President: **Michaela Buenemann** (New Mexico State University), Vice President: **Christopher Lippitt** (University of New Mexico), Secretary: **Robert Dzur** (Bohannon Huston), Treasurer: **Brian Knehans** (Bohannon Huston), Chapter Director/Webmaster: **Nathan Kempf** (Wilson & Company), Chapter Director/Communications Director: **Jake Darlington** (Wilson & Company), Chapter Director: **Dan Paulsen** (Wilson & Company), Chapter Director: **Steven Sesnie** (U.S. Fish & Wildlife Service), Chapter Director: **Caitlin Lippitt** (University of New Mexico), Student Chapter Director: **Zachary Taraschi** (New Mexico State University), and Past President: **Joe Zebrowski** (New Mexico Highlands University).

The annual spring meeting of the ASPRS Rio Grande Chapter was hosted by the University of New Mexico Department of Geography and Environmental Studies on April 5th. Six engaging presentations covering a range of topics relevant to the New Mexico remote sensing and GIS community were given. Presenters represented researchers, faculty, and students from US Fish and Wildlife, UNM Biology, UNM Geography and Environmental Studies, and NMHU. As outgoing chapter president, **Joe Zebrowski** of New Mexico Highlands University moderated the sessions after a brief introduction on the status of the chapter. The 27+ attendees represented a wide swath of the geospatial community, with representatives from a range of disciplines drawing from academia (UNM, NMHU), government (USFS, USFW), and commercial entities (Blue Skies Consulting, Bohannon Huston, Wilson and Co.). After a group lunch, UNM doctoral student **Su Zhang** gave a brief demonstration of his balloon and unmanned aerial system (UAS) mapping hardware and software systems.

## PE&RS Seeking Articles

ASPRS is actively seeking Highlight Articles for publication in its PE&RS journal. 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

Highlight Articles cannot be vendor-specific articles and product names are not mentioned in the body of the article but are allowed in the author credit line at the end of the article.

Please note: these are NOT to be peer-reviewed articles and therefore are not to contain lengthy lists of references or complex equations. High quality photos and graphics are encouraged.

For more information, contact:

Rae Kelley, Assistant Director-Publications at [rkelly@asprs.org](mailto:rkelly@asprs.org)

## ASPRS Establishes the First UAS Mapping Calibration Test Course

**Bethesda, Maryland, August 18, 2014** – The first mapping calibration test course for Unmanned Aircraft Systems (UAS) will be established by ASPRS at the Reno Stead airport, an FAA-designated UAS test site. The course will include ground surveyed targets of varying height, radiometric targets, undulating surfaces, “surprise” targets, and simulated flight restricted areas. The first UAS flights of the test course will be conducted in conjunction with the **UAS MAPPING 2014 RENO** symposium on **October 21-22, 2014** in **Reno, Nevada**.

The UAS Mapping 2014 RENO symposium is focused on “Change is in the Air” with a mission to acquaint attendees with new technologies, demonstrate survey, mapping, and remote sensing capabilities of UAS data, and provide a forum for UAS collaboration among government, private sector and academia. The full program is available online and includes representatives from such well-known companies as Google, 3D Robotics, Skyward, Trimble, Leica, GeoCue, Pix4D, Silent Falcon, Multirotor Service-Drone, Altavian, senseFly, Velodyne, Optech, Phase One, and Aerovironment, among many others. The symposium is being organized by the ASPRS Northern California Region.

To find out more about the test course and symposium, UAS MAPPING 2014 RENO, visit <http://uasreno.org>. To learn more about ASPRS, visit <http://www.asprs.org>.

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## Welcome New Members!

Beth Davis  
 Zachary DiCicco  
 Ryan Grebe  
 Michael Grossman  
 Benjamin Hudson  
 Willard Hunter  
 Andrew Loerch  
 Toby Terpstra  
 Kyle Thomas  
 Sam Thompson

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## Chapter News Welcome

We would like to hear from all parts of the Rocky Mountain Region: Montana, Wyoming, New Mexico, Colorado – what is going on in your area??? If you have news to share, please send it to us. If you would like to be a regular contributor to this newsletter or the website, we would welcome your participation. Get in touch with us and we will add you to our active network for teleconference meetings and website and newsletter submission.

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## Upcoming ASPRS Webinars

Registration and Additional Information can be found on the [ASPRS website](#).

**Extended Multispectral Satellite Remote Sensing in the VNIR and SWIR** – October 3 (4 hours total)

**Advanced Extended Multispectral Satellite Remote Sensing in the VNIR and SWIR** – October 2 & 3 (8 hours total)

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## Upcoming Events

**GeCo in the Rockies Conference**, September 22 – 26, Grand Junction, CO

**Unmanned Aerial Systems (UAS) MAPPING 2014 RENO Symposium**, October 21-22, 2014, Reno, NV

**Pecora 19: "Sustaining Land Imaging: UAS to Satellites"** in conjunction with **The Joint Symposium of ISPRS Technical Commission I & IAG Commission 4**, November 17-20, 2014, Denver, CO

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