GIS-Pro and CalGIS 2018 GIS Super-Event
By: Steve Steinberg, PSW Region Director

The GIS-Pro & CalGIS 2018 GIS super event is being held, October 9-12 in Palm Springs, California, in conjunction with URISA International, the four California URISA Chapters, and the California Geographic Information Association.

With the strongest submission of workshops and presentations in recent years, the program (now available online at https://gisprocalgis2018.sched.com/) is one of the most comprehensive and robust available. From management best practices, to examples of GIS applications by seasoned professionals, to inspiring young professionals, the program offers scores of opportunities to learn and interact around almost any application of GIS that you can imagine.

Tracks in this year’s program include: GIS Leadership & Management, Data Driven Communities, GIS for Natural Resources, GIS for NextGen 9-1-1 and Emergency Response, GIS Supporting Health and Human Services, Inspiring the Future of GIS, and Geospatial Technology Innovations. Jack Dangermond, Esri’s co-founder and President, will give the opening keynote address during what will be an unforgettable geospatial event. The closing keynote from Greg Hanks, Deputy Chief of Geography Division, US Census Bureau will address the forthcoming 2020 Census which all US-based GIS Professionals should be aware of and many of you are probably already working on.

GIS-Pro & CalGIS also offers pre-conference workshops (included with registration) on topics ranging from asset management, open source GIS, addressing, the National Hydrography Dataset, health applications, and the integration of UAS data into your current GIS workflows. These comprehensive workshops are taught by industry leaders and are a must for any attendee. They will also earn you valuable GISP points towards certification.

Inside This Issue
GIS-Pro and CalGIS 2018 Super-Event 1
Announcing the Newest ASPRS Student Chapter 1
The Future of UAS Airspace Authorizations—Update 2
Review of April ASPRS PSW Technical Meeting 3
* Emilie Perkins—Measuring Ecological Integrity 4
* Nicholas Arentz Jr.—Hybrid Aerial & LIDAR 4
* Anne Hillyer—Strengthening Diversity 5
* Jana Müllerová—UAS vs. Satellites for Invasives 6
Event Funding Support Requests 7
Student Chapter Benefits 8
Your Pacific Southwest Region Council 9
Join The Regional Council’s Monthly Teleconference 9
Upcoming Events of Interest 9

Announcing the Newest ASPRS Student Chapter

The Pacific Southwest Region of ASPRS is proud to announce the official chartering of the Student Chapter at the University of Hawaii at Manoa. The Chapter provides a focus for ASPRS activities on the UH Manoa campus for students, faculty, and ASPRS members in Hawaii. If you’re interested in learning more about upcoming student chapter activities, please contact Chapter President Katie Taladay at taladay@hawaii.edu or Faculty Advisor Dr. Qi Chen at qichen@hawaii.edu, for further information.
The Future of sUAS Airspace Authorizations — Update

By: Pete Coulter, PSW Region Director

Until recently, the process to request authorization to fly small unmanned aircraft systems (sUAS) within controlled airspace (e.g., adjacent to airports) was to file either an airspace authorization request or an airspace waiver request with the Federal Aviation Administration (FAA). Airspace authorizations are generally appropriate for specific operations within a single air traffic control (ATC) jurisdiction and for time periods up to six months. Airspace waivers may be issued when applicants can demonstrate that their sUAS operations can be safely performed in controlled airspace without having to seek prior ATC authorization, and are good for two years.

The Low Altitude Authorization and Notification Capability (LAANC) is an industry developed application that is designed to provide automated and near real-time notification of approval for sUAS operators to fly in controlled airspace. The system is being introduced by region within the U.S., and most of the county is now able to utilize it and obtain real-time authorization notifications. The entire county will be using LAANC by September 13, 2018. The graphic to the right illustrates the six saves of LAANC introduction, and associated timing.

The LAANC system is part of the Federal Aviation Administration’s UAS Data Exchange, which is a collaboration between government and private industry facilitating sharing of airspace data. Companies that have already completed the technical steps required to enter into agreement with the FAA and provide LAANC services include: AirMap, Harris Corporation, Project Wing, Rockwell Collins, Skyward, and Thales Group. Using apps developed by these companies, UAS pilots may submit an electronic airspace authorization request for a specific location and flight altitude, and receive authorization within minutes, provided that the planned flight altitude is below the maximum altitude for that zone of the FAA’s UAS Facility Map.

For more information, visit https://www.faa.gov/uas/programs_partnerships/uas_data_exchange/.
Emilie Perkins — Measuring ecological integrity in San Diego County using high resolution imagery and LiDAR

By: Pete Coulter, PSW Region Director

At the April 2018 ASPRS Technical Meeting at San Diego State University, Emilie Perkins presented on the process of mapping ecological integrity (EI) using light detection and ranging (LiDAR) data and high resolution imagery. San Diego vegetation communities have been impacted by large-area burns in 2003 and 2007, prolonged drought, nitrogen deposition, and other disturbances. These impacts have resulted in tree die-back in oak woodlands, and shrublands transitioning to subshrubs and/or grassland. The San Diego Management and Monitoring Program (SDMMP) established by the San Diego Association of Governments (SANDAG) has the mission to “coordinate science-based biological management and monitoring of lands in San Diego that have been conserved through various conservation planning and mitigation efforts.” This program strives to understand the effects of various disturbances on San Diego vegetation communities. However, existing vegetation maps (circa 1995 and 2012) don’t indicate if areas were burned, or the level of invasive species present. Further other maps for the region have different classification systems and are hard to use in a comprehensive manner.

In order to understand the effects of past disturbances on vegetation community health, Emilie seeks to develop an EI measure for chaparral, coastal sage scrub, and oak woodland communities. Ecological integrity is the ability of an ecosystem to support and maintain a community of organisms that has species composition, diversity and functional organization comparable to those of natural habitats within a region. It was noted that EI varies by vegetation community. For oak woodlands, the EI measure that Emilie is using is based upon the percent of dead trees and percent of live trees within areas of interest. LiDAR data and object-based image-segmentation techniques were utilized to delineate tree crown boundaries, and NDVI values were summarized per tree canopy and utilized to determine which tree crowns were alive and which were dead. However, this project is a work in progress, and at the time of the presentation, live vs. dead threshold values were not yet determined.

Development of the shrublands EI measure is also in progress, and Emilie plans to use estimates of percent grass and percent shrub cover as part of the EI measure. Further, high resolution imagery is being exploited to differentiate bare soil from vegetation, and vegetation height values derived from the LiDAR data are being used to categorize vegetation as herb (0-0.5m height), shrub (0.5-2 m height), and trees (>2 m). Ecological Integrity maps will eventually be used to create a field sampling design to take place in 2019. More information about the SDMMP may be found at https://sdmmp.com/index.php.

Source: https://sdmmp.com/index.php
Nicholas Arentz, Jr.—Successes and Challenges of Acquiring Hybrid Aerial Data on Large AOI’s in Southern California—“Personed” Aerial Vehicles

By: Pete Coulter, PSW Region Director

At the SDSU Meeting, Nick Arentz, Jr. discussed large area capture of Nadir and oblique-viewing imagery at 5 cm ground sampling distance (GSD) with coincident airborne LiDAR using “personed” aerial platforms. Nick is formerly with Skyview Aerial Photo, Inc., and he started the presentation by discussing his family’s background operating and growing an aerial photography company in southern California, including the photo lab that was operated out of the garage in the early days. Skyview was acquired in 2017 by Geomni (a Verisk Analytics business), who provides aerial imagery, remote sensing technology and geospatial data and services to a range of industries (e.g., government, engineering, industrial/commercial, and construction). Nick is a hub general manager with Geomni and oversees flight operations and customer service. His territory spans from San Louis Obispo to the Mexican border (north/south) and from the Colorado River to the Pacific Ocean (east/west). The fleet of aircraft he operates includes a Tecnam P2006T, turbocharged Bonanza B36TC, and turbocharged Cessna 206.

While aerial photography used to be largely collected and utilized for topographic mapping, imagery collected by advanced sensors now enables a wide range of services. For example, nadir and oblique imagery with 5 cm GSD are being utilized for analysis of structures and roofs, including quality reports as part of the final deliverable products. Nick talked about the Leica CityMapper sensor that Geomni uses for large area, mass image acquisitions. The systems includes five cameras (one nadir and four oblique views) as well as LiDAR. The nadir-viewing sensor captures four bands of imagery (visible and near-infrared). Geomni also operates a Lead’Air MIDAS 5-camera system. Geomni’s focus is to create, populate and maintain the leading 3D data warehouse asset, as measured by coverage, resolution, accuracy, timeliness, ease-of-use, and best-value. In order for customers to access this wealth of imagery, Geomni created a product called Geomni Viewer, which provides high resolution nadir & oblique imagery, measurement tools, property information, data export, and a range of views/scales of image products in an online viewer interface. Geomni president Jeffrey C. Taylor has further expressed in interviews that “What differentiates Geomni’s solutions are the deep commitment to constantly source fresh imagery on an unprecedented scale, investing in superior technology, our technical capability, and the proprietary data available within the Verisk enterprise.”

Source: https://www.geomni.net/en-us/industries/mapping-professionals/
Anne Hillyer — Strengthening Diversity in the Geospatial Community

By: Pete Coulter, PSW Region Director

Anne Hillyer presented on the topic of strengthening diversity in the geospatial field. Anne is a photogrammetrist and GIS professional. She has been in the field for 20 years. For this presentation, she provided a range of examples regarding inequity in the geospatial field. Presented here is a listing of several of the examples Anne provided. While approximately 35 percent of the United States population is non-white (hispanic, black, asian, or other) according to the US Census bureau (2011), only 10% of geospatial workers are characterized as belonging to these non-white groups. Anne noted that 80% of surveyors, cartographers, and photogrammetrists are men, while only 20% are women. Since 1990, the percent of women in engineering has remained basically unchanged, while the percent of women in computer science has declined from 32% to 25%. In addition, the median earnings for science, technology, engineering, and math (STEM) graduates is only $75,100 for women, compared to $91,000 for men. Showing a histogram of women’s representation by federal employment grade level (GS-scale), Anne pointed out that higher proportions of women are at the lower end of the pay scale, and fewer were at the higher level and higher paying positions. Regarding diversity and inclusiveness support within geospatial/STEM organizations, 21% have no diversity policy, 58% have a diversity policy, and only 21% support active diversity initiatives.

Anne concluded her talk with a list of organizations that support women in the geospatial field. This list included: Geospatial Information & Technology Association (GITA), the American Association of Geographers (AAG), Women in GIS (WiGIS), Supporting Women in Geography (SWIG), Association for Women in Science (AWIS), Girls Who Code, Society of Women Engineers (SWE), IEEE Women in Geoscience and Remote Sensing Society, and the Earth Science Women’s Network.
Jana Müllerová — Timing and Scale Matters: Unmanned Aircraft vs. Satellite Imagery in Plant Invasion Monitoring

By: Pete Coulter, PSW Region Director

Jana Müllerová gave the plenary talk at the April ASPRS Technical Meeting at SDSU. Her talk was titled “Timing and scale matters: unmanned aircraft vs. satellite imagery in plant invasion monitoring.” Jana explained the problems associated with invasive plants, and how remote sensing improves early detection (before eradication is difficult), provides efficient and computer-assisted methods for monitoring, and reduces the costs of field campaigns and ultimately management and eradication. Unmanned aerial vehicles (UAV) utilized by Jana provide very high spatial resolution, and moderate spectral resolution with blue, green, red, and near-infrared wavebands. She pointed out that while UAV are low cost and flexible in terms of acquisition timing, some issues associated with these platforms are very high data volumes, weather can be a major constraint that forces data to not be collected, and some expertise is needed to operate UAV.

Two invasive plant species that Jana discussed monitoring with UAV are giant hogweed, and invasive knotweeds. Giant hogweed are herbaceous perennials, up to 4-5 m tall with white round flower heads up to 2 m in diameters (and generating over 20,000 seeds!). Giant hogweed causes a loss of biodiversity within infested areas, and the plants are dangerous to humans as the sap causes dermatitis. Invasive knotweeds are also herbaceous perennials and grow up to 4 m tall. Invasive knotweeds also yield biodiversity loss, as well as alter hydrological processes, displace native species, damage roads and flood-prevention structures, and increase erosion potential of rivers. These two plants are among the worst invaders in Europe.

Jana described how characteristics of spatial, spectral, and temporal resolution may be exploited in order to classify the invasive plants of interest. In particular, plants such as hogweed may be discriminated based upon their shape within high-spatial resolution imagery using object-based image classification techniques (where individual plants are associated with multiple pixels). Conversely, plants such as knotweed that grow in large patches are not easily discriminated based upon spectral, spatial, or temporal characteristics may be difficult to automatically detect. If spectral resolution is the primary characteristic used to detect and classify invasive plants, then timing of image acquisition becomes important and pixel-based image classification approaches may be used. For example, invasive knotweeds are best detected during late fall, during senescence of the plant.

Remote sensing from manned or unmanned aerial platforms can provide information about landscape history and disturbances to the landscape. For invasive plants, remote sensing provides information such as duration of the invasion, rate of spread, and distance from the dispersal foci, and helps to identify and manage areas at the highest invasion risk. The choice of manned or unmanned systems will depend on the size of the area of interest, it’s location, the type of remotely sensed image data required to detect features of interest, and likely weather characteristics within the area. For image classification, the methods used must reflect phenology, morphology, and structure of the target plant. Jana pointed out that the choice of data depends on the purpose and considerations of trade-offs between species of interest and data to be utilized. Jana’s current research includes assessing the efficiency of eradication campaigns, understanding the roles of landscape history on invasion, socio-economic impacts of invasions, and engaging the public in order to conduct citizen science and raise awareness.
Event Funding Support Request
ASPRS Pacific Southwest Region

Funding requests to the ASPRS Pacific Southwest Region (PSW), may be made for financial support of events hosted by other organizations in the region with similar missions and goals. The request for funding should be made by a member of ASPRS PSW on behalf of the requesting organization or event one calendar quarter prior to the event date.

Examples of support include: Funding of venue charges, refreshments (no alcohol) and other similar expenses incurred in hosting educational events, workshops, speakers, GIS Day events, and other similar activities. Typically support of up to $100 will be considered reasonable, with larger amounts possible pending the specific nature and impact of the specific event.

In recognition of ASPRS PSW sponsorship, promotional materials should mention ASPRS PSW (e.g. include region logo and acknowledge region support) and/or ASPRS PSW should be mentioned during opening comments at the event. ASPRS PSW may also request that information regarding ASPRS PSW and membership in the organization be provided to attendees.

Date of request: ____________________________ (please submit at least one calendar quarter prior to your event date)

Organization/Sponsor of the event: _____________________________________________________________

Individual requesting funding: _______________________________________________________________

Requestor’s position/role with the sponsoring organization: ________________________________

Requestor E-mail address: _________________________________________________________________

Requestor phone number: _________________________________________________________________

Event for which you are requesting funding: ________________________________________________

Event Date: ______________________________

Event location: __________________________________________________________

Anticipated Attendance: __________

Please briefly describe the nature of the event or program for which you are requesting funding. (Event type? e.g. speaker, workshop, outreach event; Who is the audience? E.g. professionals, students, public; how will the requested funds be used to support the event?)

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

The above form is available at https://goo.gl/tHah91
Student Chapter Benefits from the ASPRS Pacific Southwest Region

Participating in an ASPRS Student Chapter helps you develop technical knowledge, leadership experience and lasting relationships with peers and mentors. To help you achieve success with your student chapter activities and events, the Pacific Southwest Region of ASPRS offers student chapters in our region a variety of benefits, as described below.

Visit the ASPRS website to learn if there is a chapter at your school. If there isn’t one there, please contact us: pswasprs@gmail.com about the process for getting one started at your university.

Grants and programs to support chapter activities

- Receive an annual Student Chapter Support Stipend (currently $150) to assist your chapter operations and activities.
- Apply for a Special Event Grant (up to $500) to support a high-impact event (e.g., GIS Day, Geospatial Symposium or Speaker Events, support to help students to attend State or National Conferences).
- Assistance in identifying and scheduling ASPRS Professional members in our region to speak at a campus event hosted by your chapter.

[The above may be useful in leveraging additional campus club and activities resources]

Networking and scholarship opportunities

- Participate in the ASPRS annual meeting and get involved with the Student Advisory Council.
- Enter your chapter team in the annual Geoleague Challenge and win prizes!
- Opportunities to apply for National Awards and Scholarships
- Access to PSW Region Student Scholarships
- Assistance in identifying APRS Professional members as mentors or for other professional opportunities (internships, summer jobs, etc.).

Materials and Resources

- Access to outreach materials from ASPRS
- Discounts on a variety of resources and materials available through the ASPRS Bookstore.
- Use of the PSW Region banner and/or table cover at your events and post a custom ASPRS PSW Region logo on your materials.
Your Pacific Southwest Region Council

The officers for the Pacific Southwest Region are working hard to provide you with quality technical presentations near to home. In the last few years we’ve offered technical sessions in San Diego, Fresno, Reno, and Davis. We are currently planning sessions for 2018. If you have suggestions for locations and topics for a session near where you live, please contact one of our officers or the region email at pacificsouthwestregion@asprs.org.

President: Lorraine B. Amenda, PLS, CP
Vice President: Dr. Riadh Munjy
Secretary/Treasurer: Melissa Christie
National Director: Alan Mikuni, CP, PE
Regional Directors: Lloyd (Pete) Coulter, CMS
Dr. Radoslav (Rad) Gaidadjiev, CP
Dr. Yushin Ahn
Dr. Omar Mora
Dr. Steven Steinberg, GISP
Ross Winans

Join The Regional Council’s Monthly Teleconference

Are you interested in joining the regional council’s teleconference, in order to share ideas or learn more about ASPRS activities? If so, please RSVP by sending an email to pswasprs@gmail.com. Teleconferences are held on the second Monday of every month, at 3:00 PM Pacific time.

Upcoming Events of Interest:

Sep. 5-7, 2018 Las Vegas, NV
Sep. 13, 2018 Concord, CA
Sep. 19-21, 2018 Prescott, AZ
Oct. 1-3, 2018 Las Vegas, NV
Oct. 9-12, 2018 Palm Springs, CA
Oct. 16-18, 2018 Reno, NV
Oct. 23-25, 2018 Redlands, CA
Nov. 5-7, 2018 Las Vegas, NV
Nov. 6-8, 2018 Redlands, CA
Jan. 28-30, 2019 Denver, CO

InterDrone 2018
ASPRS Technical Meeting
AGIC Education & Training Symposium
Commercial UAV Expo Americas
GIS-Pro and CalGIS 2018
NGIS 2018
Esri Health and Human Services GIS Conference
2018 Trimble Dimensions User Conference
Esri Ocean GIS Forum
International LiDAR Mapping Forum (ILMF)