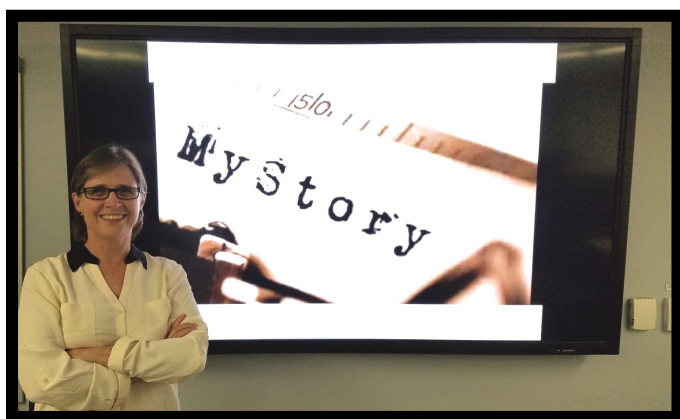




Becky Morton, ASPRS President

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Review of the April ASPRS Pacific Southwest Technical Meeting (SDSU)

Becky Morton—Overview of ASPRS Technologies

ASPRS President Becky Morton was the highlight of April's ASPRS PSW Technical meeting at San Diego State University (SDSU). Her plenary talk reviewed the range of technological improvements in photogrammetry and remote sensing, starting in the early late 1800s. Below is a summary of the topics covered in the presentation.

The USGS was established 1879, and became responsible for mapping the nation. Surveys included calibrated levelling instruments and plane-table mapping. Cartographers transferred ink and paper drawings to copper press plates (a process called scribing). The 1930's included the birth of photogrammetry, with the first aerial acquisitions for mapping using calibrated cameras. During the 1940's, analog stereo mapping systems using stereoscopic viewing and polarized lenses were used. In the 1970's and 1980's, digital mapping began including the first automated nautical charts (computer generated pen plots). In addition, GIS systems such as the Topologically Integrated Geographic Encoding and Referencing (TIGER) had been established, and satellite mapping using film (i.e. spy) and digital (i.e. Landsat) systems had begun. The 1990's brought personal computers and digital photogrammetric mapping, the nationwide USGS DOQQ program, and commercial use of the Global Positioning System (this is when Becky entered the scene!). By the 2000's, printed maps were no longer the principal repository for geographic information, and the use of GIS grew tremendously by organizations such as federal agencies, police forces, military, municipalities, transportation, etc. Since the early 2000's, we have seen improvements in global positioning (with systems such as GLONASS, BeiDou, Galileo), high spatial resolution commercial satellite systems, light detection and ranging (LIDAR), mobile GIS, small sats, airborne persistent wide area surveillance systems, cloud computing, the era of the unmanned aircraft systems (UAS) and Structure from Motion (SfM). Becky also talked about her story, including starting a drone imaging business (Geowing Mapping, Inc.). Becky concluded by discussing the benefits of participating and being active with ASPRS for careers and the community as a whole.

By Pete Coulter, PSW Region Director

Ron Eguchi —Earthquakes and our Urban Environment – A View from Space

By: Pete Coulter, PSW Region Director

Ron Eguchi was the first presenter at the April ASPRS Pacific Southwest Technical meeting. He is president and CEO of ImageCat, Inc., an international risk management innovation company supporting the global risk and catastrophe management needs of the insurance industry, governments and NGOs. Using NASA funding, ImageCat is performing research looking at general risks to populations and the buildings these people are living in. Ron's talk covered three topics: 1) how has technology changed the way we view disasters? 2) how has social media (i.e., crowdsourcing) contributed to these changes? and 3) what do we know about our built exposure relative to natural hazards?

Ron discussed how high-resolution aerial images enable us to see the tops of buildings which you can't normally see from the streets, and how aerial images can provide a lot of information about the condition of buildings. However, during disaster events such as earthquakes, information is needed as soon as possible. Automating image analysis is one method to increase the speed with information is extracted from imagery.

During the Bam, Iran earthquake in 2003, commercial and other imagery was used for a large scale damage assessment. ImageCat analyzed before and after imagery in order to count collapsed buildings. The process utilized image segmentation, image classification (building, vegetation, shadow, and other classes), building footprint extraction, shrinking of footprint polygons, image differencing and creation of a textural change map, and thresholding in order to count collapsed buildings. The challenges for this process included obtaining good pre-event images, quantifying more than just "catastrophic" damage, and false negatives.

Following the 2010 Haiti earthquake, the Global Earth Observation-Catastrophe Assessment Network (GEO-CAN) utilized crowd-sourcing technology for rapid post-disaster assessment. The network included 600 individuals from 23 countries, 60 universities, 18 government agencies/non-profit organizations, and 53 companies (including ImageCat). Five damage classes were assessed as part of the methodology. Over the course of 10 days, 14,364 individual buildings were determined to be damaged using the crowd-sourcing technique. The process also included field data for validation. Challenges with this approach included: 1) agreeing on a common damage scale or damage criteria, 2) back-checking an individual's assessment, and 3) quantifying damage at the lower damage levels.

In terms of understanding risks to and locations of populations (i.e., building an exposure database), we have this information in the U.S., but not in other areas. The World Bank is interested in establishing risk profiles in Africa. In addition, companies in England would like to offer insurance coverage to customers in China, but don't have enough information. In order to perform assessments, companies like ImageCat must have current imagery because many areas are rapidly developing. The imagery can provide information such as structure type, age, occupancies, building replacement costs, etc.



Ron Eguchi, President & CEO
ImageCat, Inc.

Darryl Anunciado —Opening New Doors with Industrial Drones

By: Pete Coulter, PSW Region Director

Darryl Anunciado is the CEO of Action Drone, Inc., a company that manufactures industrial drones for commercial applications world-wide. Darryl started as an aerospace engineer, but changed majors to psychology, which he believes helps him to communicate with people as a CEO. He was in the banking business for a while, but ended up starting Action Drone after working with model aircraft and drones as a hobby. The focus of Darryl's talk was on the expanding capabilities of drones in our modern world, as technology improves and as more devices have size, weight, and power configurations appropriate for use on drones.

Action Drone's first line of work was cinematography using GoPro cameras. A YouTube video created by Action Drone caught the attention of a range of organizations that were interested in flying drones and using data collected by sensors mounted on the drones.

Action Drone has used thermal cameras to identify cows that cross the border into Mexico and then return sick with fever into the United States. The company has also worked with firefighters who use the thermal drone imagery to determine if a roof above a fire is safe to walk on.

Action Drone is currently working with SDGE for powerline and solar panel inspection, using color and thermal cameras, and has a contract with Siemens to perform wind turbine inspections. Siemens has 300,000 turbines around the world, in 50 countries, and performs over 200,000 inspections every year. The traditional human-based inspection takes one day per turbine, but drones are able to inspect 22 turbines per day substantially improving efficiency. Action Drone is also hoping to perform railroad and bridge inspections with Siemens. Action Drone offers drone-sized multispectral cameras for agriculture and similar applications, as well as survey-grade global navigation satellite systems (GNSS) for precise positioning and rapid surveying that does not require ground control point collection. In addition to building drones for industrial purposes, Action Drone is teaching high school kids to build and race drones.



Darryl Anunciado, President & CEO
Action Drone, Inc.

Upcoming Events of Interest:

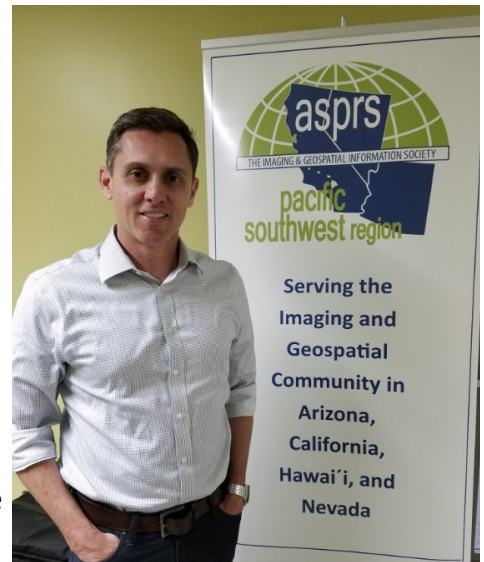
Jul. 8-11, 2017 San Diego, CA	Esri Imaging and Mapping Forum
Jul. 10-14, 2017 San Diego, CA	Esri User Conference
Jul. 10, 2017 San Diego, CA	Pizza Night at the Esri UC - RSVP: http://cgia.org/events/rsvp
Sep. 19, 2017 Oakland, CA	SF Bay Area GIS Users Group Quarterly Meeting - 8:30 a.m., 375 11th Street, Oakland, CA
Sep. 20-21, 2017 Denver, CO	GIS in the Rockies
Sep. 20-22, 2017 Prescott, AZ	2017 AGIC Education & Training Symposium
Sep. 28, 2017 Sacramento, CA	Geospatial Data in Emergency Situations - 6:00 p.m., 1727 30th Street, Sacramento, CA



Mike Ritter —SlantRange—Improving Agriculture from Above

By: Pete Coulter, PSW Region Director

In college, Mike Ritter wanted to build aircraft. He did end up building a plane out of balsa wood, spending 80 hours or so working on it. Within seconds after take-off on the maiden voyage, the plane ended up in pieces. However, Mike did not let that stop him. As a mechanical engineer out of UC San Diego, Mike wanted a good aerospace job, and got an internship with Sikorsky Aircraft Corporation. He began working with a team calculating how radar waves interact with different materials (e.g., aircraft), and performed testing with the first stealth helicopter. He took a job at Scripps Institute of Oceanography (SIO), and began using radar backscatter from the ocean surface to measure wave height and wind speed, and also helped developed sonar, LIDAR, and aerial imaging systems. Mike then went to General Atomics, working with thermal, LIDAR, and other systems.



Mike Ritter, Founder & CEO
SlantRange, Inc.

Outside of his day-job, Mike was also interested in commercial applications of low-cost drone systems. Since agriculture was seen as one of the best drone applications, Mike began developing sensor systems and software to help farmers be more efficient at managing their lands and soil inputs. In his presentation, Mike noted that \$18 billion is spent on fertilizers, but only 50% of the fertilizer is effectively used. Further, \$7.9 billion is spent on pesticides, but only 5% of pesticides reach their target. Improving the efficiency with which these materials are used in agriculture could help save farmers a lot of money, so Mike recognized a business opportunity here.

Drone-based imaging systems provide imagery of such high-spatial resolution that they can essentially replicate the view a farmer would have if he/she walked the field. However, imagery from drones can also be analyzed quantitatively, enabling automated review of field status. When pixels are a lot smaller than the plant, analysts can begin extracting bare soil, weeds, and shadows, and then isolate the pixels on the leaves of the plants and identify health issues earlier than the human eye. Drone imagery can also provide useful information about the number of plants in a field (assuming they are spaced apart) and plant density (which relates to yield). Mike noted that there is an immense diversity of information needs for agriculture. He also noted that in many cases, the processing by agriculture imaging vendors is done onboard the aircraft and results are delivered immediately, with no data being maintained or taken back to the office. SlantRange's first patent came through early this year, and is for a solar irradiance spectrometer.



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 2017. 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.

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We welcome any suggestions that would allow us to better serve ASPRS membership in Arizona, California, Nevada, Hawaii, and the Pacific Islands.

Help Wanted

The ASPRS PSW Region is seeking volunteers to mentor local community colleges or universities with the process of starting and growing ASPRS student chapters.

If you are interested, please contact Steve Steinberg at steves@sccwrp.org

Can you suggest a better name for our Newsletter? Send your suggestions to pacificsouthwestregion@asprs.org. If your suggestion is adopted, you'll receive a PSW Region USB Drive as a prize!