



2016 Symposium by the Sea: Are Unmanned Aircraft Systems (UAS) Right for me?

September 16, 2015 8:30am – 4:30pm
Lincoln City Cultural Center
540 NW Hwy 101 Lincoln City, OR 97367

8:30 am – 9:00 am	Registration
9:00 am – 9:15 am	Welcome, Introductions, Instructions CCGISUG Organizing Committee
9:15 am – 10:00 am	Drones 101 Victor Villegas, Oregon State University
10:00 am – 10:30 am	Summary of the Small Unmanned Aircraft Rule John Bragg, South Slough National Estuarine Research Reserve
10:30am – 10:45 am	Break
10:45 am – 11:30 am	The Way Forward: Unmanned Aerial Vehicles for the National Estuarine Research Reserve System (NERRS) Susan Bickford, National Estuarine Research Reserves
11:30 am – 12:00 pm	From Idea to Orthomosaic: Flying and Processing an Unmanned Aircraft Photogrammetry Mission Erik Suring, Oregon Department of Fish and Wildlife
12:00 pm – 1:15 pm	Lunch
1:15 pm – 2:00 pm	UAS for Structural Inspections and OregonView STEM Education Initiatives Christopher Parrish, Oregon State University
2:00 pm – 2:20 pm	Above the Mud: The Challenges of Visualizing Small Features in Oregon Estuaries with UAS Liz Perotti (presented by Stacy Strickland), Oregon Dept of Fish & Wildlife
2:20 pm – 2:50 pm	Tell a Story about Research With Your sUAS John Bragg, South Slough National Estuarine Research Reserve
2:50 pm – 3:30 pm	What will your Drone Do for You? John Sharrard, ESRI
3:30 pm – 3:45 pm	Break
3:45 pm – 4:15 pm	Round Table Discussion: Applications for Unmanned Aerial Systems
4:15 pm – 4:30 pm	Closing
5:00 pm	Evening Socializing Roadhouse 101, 4649 SW Hwy 101, Lincoln City, OR 97367

Abstract:

A basic overview of UAS technology and research: what UAVs are, the different types of platforms, pros and cons of their use, how they are being used in research, and some of the challenges in using them.

About the Presenter:

Victor is a drone advocate and educator who avidly shares drone technology news and research. He enjoys helping people learn how to use technology to improve their work and lives, and is especially passionate about using drones to encourage STEM/STEAM education. Victor's main claim to drone fame, however, is through his online alter ego - DroneSinger. As the "Weird AI of Drones", he creates parody songs about drones to bring attention to drone issues and culture, while encouraging safe and responsible flying.

Abstract:

The new Small Unmanned Aircraft Systems Rule (Part 107), including all pilot and operating rules, is summarized. The rule takes effect August 29, 2016. An unmanned aircraft system, sometimes called a drone, is an aircraft without a human pilot on board. A UAS is controlled by a ground operator. When flying a drone in the United States, it is the operator's responsibility to understand and abide by rules developed by the Federal Aviation Administration. The rule assumes that manned and unmanned aircraft will operate harmoniously in the shared national airspace. Pilots may deviate from some rules if the FAA finds the operation can be performed safely.

About the Presenter:

John Bragg is the Coastal Training Program coordinator for the South Slough National Estuarine Research Reserve in Charleston, Oregon. He coordinates the provision of training and technical assistance to coastal managers and decision makers, and coordinates the South Coast GIS Users Group of ORURISA. He holds a private pilot certificate and recently began honing his skills piloting a Yuneec G quadcopter with a Go-Pro Hero 4 Silver video camera. With a professional background that includes journalism and photojournalism, Bragg anticipates using small unmanned aircraft to record research and other field activities for use in outreach and communication products.

Susan Bickford

Abstract:

Drone, UAV, UAS. These terms are instantly confusing and that is only the beginning of the discussion. The use of unmanned aerial vehicles and the systems that support them have caused confusion at all levels, from the youngest recreational flyer to the halls of Congress. This confusion exists in part because it is a new use for a tool that has been in the military's toolbox since World War I and in part because of the outcry of the public over privacy concerns.

Remotely sensed data is a valuable resource for natural resource science. It allows natural resource scientists and managers to visualize data at scales impossible to see from the ground and to investigate relationships of objects in great detail. It also saves on the allocation human resources being deployed on the ground and in some instances, offers views of areas that are either too remote or too dangerous for ground crews to access. Advantages that UAS offer over traditional technology such as: relative affordability, mission planning and flexibility, low altitude flights, customized sensors and imagery and high imagery resolution.

Because UAS are operated aloft along with manned aircraft in the National Airspace System (NAS), the regulatory environment governing UAS use is complex and hard to understand. The Federal Aviation Administration (FAA) is currently developing comprehensive regulations for UAS operators to ensure a continued safe environment in the NAS. The FAA has also recently released new rules for the operation of small UAS (sUAS) which has made it much easier to fly sUAS that weigh less than 55 pounds.

Ultimately, each organization must decide if the benefits of UAS technology outweigh the costs of navigating this complex system. This presentation will showcase the progress the NERRS has made with integrating UAS technology into its science, stewardship and education programs and then discuss the resulting benefits and lessons learned.

About the Presenter:

Sue Bickford has been the GIS/Natural Resource Specialist for the Wells National Estuarine Research Reserve in Wells, Maine since 1999. During that time, she has seen continuous changes in the geospatial mapping industry. The use of unmanned aircraft systems (UAS aka "drones") is a natural extension of the geospatial industry, providing high-resolution, timely aerial data. Her particular interest in UAS is bringing the use of this emerging technology to other Reserves in the National Estuarine Research Reserve System as a tool for natural resource management & research.

**From Idea to Orthomosaic: Flying and Processing an Unmanned
Aircraft Photogrammetry Mission**

11:30 am – 12:00 pm

Erik Suring

Abstract:

For the past year the Oregon Department of Fish and Wildlife has been investigating how Unmanned Aircraft Systems (UASs) can be used for counting and measuring fish, wildlife, and their habitats to further our mission of managing these resources. With a camera as the primary payload, our UASs have been a portable and efficient tool for deploying photogrammetric methods, yielding high quality, georeferenced, 3D point clouds and orthorectified photomosaics that can answer a variety of questions. I will walk through one recent survey as an example of the steps, gear, hardware, and software that can be used to build an orthomosaic and speak to some of the limitations we have encountered.

About the Presenter:

Erik Suring is a fish biologist and project leader for the Oregon Department of Fish and Wildlife's Salmonid Life Cycle Monitoring Project and the Chum Salmon Reintroduction Project. He has worked for ODFW for 12 years after graduating with an MS from the University of Otago, New Zealand. Erik has enjoyed radio controlled cars and aircraft since childhood, and so is glad to be a part of ODFW's nascent UAV program.

Abstract:

Structural inspections are rapidly emerging as one of the primary applications of unmanned aircraft systems (UAS). The addition of UAS to the suite of technologies available to inspectors can assist in improving both safety and efficiency. We will present the results of several UAS based inspections from a research project being conducted at Oregon State University in support of the Oregon Department of Transportation (ODOT). We will also discuss the use of UAS in K-12 classrooms as a tool for introducing students to mapping technologies. UAS are currently being used in education initiatives of OregonView and its parent organization, AmericaView, a nationwide consortium dedicated to remote sensing research, K-12 grade and higher STEM education, workforce development, and technology transfer.

About the Presenter:

Christopher Parrish is an Associate Professor of Geomatics in the School of Civil and Construction Engineering at Oregon State University. His research focuses on full-waveform lidar, topographic-bathymetric lidar, hyperspectral imagery, uncertainty modeling, and UAVs for coastal applications. Chris holds a Ph.D. in Civil and Environmental Engineering with an emphasis in Geospatial Information Engineering from the University of Wisconsin-Madison and an M.S. in Civil and Coastal Engineering with an emphasis in Geomatics from the University of Florida. Chris is the Director of OregonView, a statewide consortium under AmericaView, dedicated to applied remote sensing research, STEM education, workforce development, and technology transfer. Prior to joining OSU, Chris served as lead physical scientist in the Remote Sensing Division of NOAA's National Geodetic Survey. He also holds an affiliate faculty position in the Center for Coastal and Ocean Mapping - Joint Hydrographic Center (CCOM-JHC) at the University of New Hampshire. For additional information on current projects, please visit Chris' research group website: <http://research.engr.oregonstate.edu/parrish/>.

Above the Mud: The Challenges of Visualizing Small Features in Oregon Estuaries with UAS

2:00 pm - 2:20 pm

Liz Perotti (presented by Stacy Strickland)

Abstract:

UAS can complement field research for scientists and natural resource and wildlife managers by enabling more frequent sampling and greater aerial coverage. The Oregon Department of Fish & Wildlife's Shellfish Program is tasked with assessing shellfish and their habitats in Oregon's estuaries. Typically, an estuary survey takes more than one year to complete, includes areas that are inaccessible or unsafe, and is revisited on a decadal scale. Described here are the preliminary efforts to use UAS to visualize and quantify features that require sub-centimeter resolution as well as recommendations and pitfalls for developing a UAS program from the ground up.

About the Presenter:

Liz Perotti obtained her doctorate in Integrative Biology from UC Berkeley, where she enjoyed marrying disparate disciplines and tools to address scientific questions. She now employs this integrative approach to assess shellfish populations and estuarine habitats with the Oregon Department of Fish and Wildlife's Shellfish and Estuarine Assessment of Coastal Oregon (SEACOR) project. Liz is very interested in the potential of UAS for biological monitoring and management and has started using UAS for estuarine surveys this past year.

Tell a Story about Research With Your sUAS

2:20 pm - 2:50 pm

John Bragg

Abstract:

A small unmanned aerial vehicle can add another dimension to a research project when you use it to tell an interesting story to the public. The presentation explores how one national estuarine research reserve is using sUASs to do tell stories about coastal stewardship and science.

Abstract:

Presentation will discuss and demonstrate the application of UAV technology in ArcGIS. Drone2Map for ArcGIS is a new desktop app that turns raw still imagery from drones into orthomosaics, 3D meshes, and more, in ArcGIS. Create 2D and 3D maps of hard-to-access areas for land analysis, infrastructure inspection, and monitoring events such as natural disasters and environmental changes. ArcGIS now also supports Full Motion Video (FMV) technology and it's a natural complimentary technology to UAV deployment.

About the Presenter:

John Sharrard is a GIS Solutions Engineer for Esri and works as part of team supporting Esri customers in the Northwest. He has been working in the GIS field for 29 years. John concentrates on GIS solutions for Local Government, 3D GIS, GeoDesign, Land Records, and Transportation solutions. John is a graduate from the GeoScience program at Oregon State University.

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*Please join us for a social event following the meeting at Roadhouse 101
4649 SW Hwy 101 Lincoln City, OR 97367*

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The Central Coast GIS Users Group (CCGISUG) promotes networking, idea exchange, and education between GIS professionals, students, and others on the Central Oregon Coast involved in mapping and geospatial technologies.

We meet bimonthly on the second Wednesday from 12:15 to 1:45. Membership is free!
To join our listserv, please contact Sandy Gruber (Sandy@lincolncity.org).

For more information please visit <http://www.orurisa.org/ccgisug>