EE2020 Webinar
Using Drones for Improved Environmental Results
17-Dec-20
Question & Answer Log

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	Although, not within the Dept. of Environmental Quality, the Virginia Dept. of Mines, Minerals and Energy began a drone program in 2013. Primarily dealing with mined lands.	Thanks for the info, Daniel. If you like, you can add information about that program in the E-Enterprise Community Inventory Platform at eecip.net. Just click the "Add a Project" link. If you have questions, feel free to reach out to me at krakouskas@ecos.org		
	will a recording of the presentation be available later and can you share the slides?	Yes, we will have a recording available on the eenationalmeeting.net website in about a week. And slides will be available on the webisite following the webinar.		
	Thanks Michael Griffin - I also work with drones in benthic habitat mapping, particularly SAV. Here in the northeast, our biggest challenge is we have yet to find a software (incl D2M) that successfully mosaics imagery over featureless, homogenous water surface where no coastline or other features are present. Have you experienced this, and have you troubleshooted a solution? I image the same challenge could present itself with highly homogenous crop or forest flights, too.	Hi Jill, We have experienced simliar issues. We have been able to alleviate it by using multiple control points withing the study area. We sink PVC pipes with tagets mounted to them sporadically througout the study area. This has workd well. We use a GNSS GPS to log the coordinates of each control to input into Drone2Map.		
	Speaking to states that are thinking about just getting started with a developing a drone program, what are some key lessons learned that you've experienced along the way that you'd recommend states think about.	licensing and committment by staff wanting to take part, agreements with other State Agencies on flight access, developing your own in-house policy on use tha	Start with one drone and one Part 107 certfied pilot. A phantom 4 pro, Mavic Pro, Parrot Anaif are all under $2000. The goal is small baby steps and sharing these initial projects to build momentum. Mangers will come on board. Fly safely, legally and ethically, one project at a time. If you have huge resistance...become a recreational drone pilot, go on ebay and get a used $500 dji aircraft and get some cool pictures. And get your Part 107 certification.	
	Do any of the speakers also have experience with using contracted drone services by 3rd parties? If yes, compare/contrast the benefits of owning your own drone fleet w/ certified pilots vs. contracting with a 3rd party.	We have contracted drone services. In out experience, contracting services once can easily almost cover the cost of a UAV. Most depts. can find an eager individual to learn to fly and get FAA certified for a small cost. If you intend to contract repeatedly then inhouse drone solutions are undoubtedly cheaper. If its a 1 time thing then contracting is viable.		

	I am from RI. We just purchased our first drone and are getting pilots trained. How have the States and Tribes dealt with issues associated with flying over private property? Do you need to get the owner's permission? Obtain a warrant from a court? Do you let the owner know you are doing this?	Hi David, This topic was top priority for us in developing our policy. Our current policy is silmilar to law, in that it requires prioir authorization for collection over private property. While the law within NC requires virbal authorization, we took it a step further to require written authorization.	Google Earth has mapped nearly 98% of the WORLD. I dont remember them asking anybody. You have to determine on every drone flight over private property "Is there an expectatation of privacy" and has google earth already have a shot? Another aspect to consider is the picture or video's INTENT. We fly to monitor the Natural Resource. we may inadvertantly capture shoreline or private property, that is ok. There is s difference between surveillance" and simply takeing a picture for natural resouce monitoring. Surveillance can become tresspassing....get consent if your doing "surveillance" of a private property....but if your just captuyring inconsequential periphery private property, weve been advised not to worry about it, it happens....just like taking photos on vacation and getting other people or buildings in the background.	
	I am curious how the presenters are hosting their imagery after it's been processed.	We utilize ArcGIS online for hosting. The credits required for raster storage is low and very economical	ArcGIS for us in the ER program at USEPA. We love to have our contractors create StoryMaps. Here's a link to the Wildfire StoryMap: https://storymaps.arcgis.com/collections/eafc1655aefc43c1b4f7c25cd7d36bee	
	This is for Pete Guira- is that policy avaialble for us to take a look at? We are developing a comprehensive policy and it would be helpful to see what other groups are doing	EPA Drone Policy is available at https://www.epa.gov/irmpoli8/unmanned-aircraft-systems-uas-policy		
	can we get a copy of presentations	Yes, we will post slides to the website following the webinar. And the video recording will be available on the website in about one week.		
	Thank you speakers- fascinating to see the earth this way. What applications use thermal infrared imagery?	live answered	We have used thermal for measuring temps, landfill fire monitoring and closure, tank volumes, etc.	We have been using thermal imagery to find groundwater seeps along shorelines. It helps to define where to sample. We are trying to use thermal imagery to map potential methane seeps from landfills. AO Michigan

	Please explain pros and cons of the Part 107 vs. COA FAA tracks/certifications for having multiple staff at an environmental agency fly drones.	We have a COA to fly as a public aircraft under Part91. It was more restrictive than Part107, and it meant we were self-certifying out pilots. With 107 the FAA takes most of the liability of certifying the pilot, and since commercial operators are using 107, they are continually pushing the FAA to expand those regulations.		
	Can you use drones to (regarding prescribed and wildfires): 1. To take daily photos/videos of planned fires 2. Determine acreage of fire. 3. Determine the fuel characteristics (i.e., what species of trees/shrubs/grasses, fuel moisture. % of material burned..) Thanks! Always trying a beter ways to obtain fire data for emissions and burn inventory.	Hi Gil, Absolutely. They are being widely used for this task. Couple things to take in to consideration is heat (may need to fly higher than the 400 ft FAA ceiling, which would require a waver). Also airspace deconfliction. during wildfire response efforts, there are often maned aircraft responding to the event. But the technology is perfect for this effort	I do know that Ft. Bragg's base forestry program uses these for their planning a prescribed burns but given its tie-in with the military base I don't know how much they can share. Also, our Division of Air Quality is planning on use of this with DAQ assessments during and following wildfires in NC	
	Have there been a crashes or near misses with birds or other aircraft? Do you have incident procedures for this type of situation? FAA involement?	I have been chased by hawks and had some close calls. Whenever a crash occurs the FAA has a very simple reporting requirement. If theres damage to someone or something else then you need to let them know.	This August, and EAGLE took down an EGLE drone. It made national headlines. We have an incident protocal (minor, major, catastrophic). We have had 4 crashes, and we have recoverd every drone. We have not met the threshold that would require FAA or NTSB reporting thank goodness. We have added Strobes and Drone Markings to Phantom 4s AO Michigan	
	What do you find are the preferred image classification softwares for drone images - Idrisi, ERDAS?	I use ERDAS, ArcPro, Agisoft Metashape for post process. We are definately shifting way from ERDAS as capabilties get added to ArcGIS		
	For Pete Guira, is the EPA looking to purchase their own UAVs or rely on contractors? We were looking to possibly purchase some drones for the RERT here in Vegas but the policy seems unclear.	Currently the Agency policy only allows us to use UAVs thru our contractors. We cannot own or lease the aircraft.		
	In your experience, do you feel drones have reduced the need for inspection staff or allowed them to do more for their respective environmental organization (i.e. more inspections than normal)?	they have not reduced the need for staff. It has just enhanced their capabilities to allow more inspections, get better information, etc.	We have shown the ROI is great, but we still put boots on the ground. Its going to take another 5 years or so of doing both before managers will feel to go with Drones alone... AO Michigan	
	Please share a ballpark budget that your agency/state started its UAV program with (including post processing software & IT needs).	Around 40 k for initial efforts of aquring 17 drones, fleet management software, bringing 40 pilots on board		
	What type of training & certification for pilots is required for drone flights?	Pilots should operate under FAA Part 107, remote pilot certification.	You can fly under Part91 as a public aircraft, which once you get the COA you technically do not need any certification/training. However, I would suggest going the Part107/commercial route. You need a FAA Part107 license and technically can begin flying, but I would suggest taking a class, even an online one, to understand more about the drone. Then lots of practice.	

	We are using drones in doing bathymetry work ...is there any one else out there using drone boats?	we looked into this extensively but found most bathymetry unmanned boats struggle with dense vegetation. This creates a limitation. Also public boat traffic can present a real challenge.		
	How long does it take to train a drone pilot?	We used Drone Pilot Ground School in Michigan at $200. It is a selfpaced Part 107 training and certification test preparation course. You can take as long as youd like, but we give staff 6 months to finish and take Part 107 ($150). Our success rate is 100% passing, with averagle of 92%. We have additional FLIGHT training requirements with plastic $50 drones,before starting pilots on DJI spark or Air drones. total process has take staff 3 weeks to 1 year.		
	For the state agencies: has drone use for optical gas imaging purposes been considered for routine compliance evaluations (and not just emergency response situations)?	We are interested in OGI, and while ER situations will be the first use, I think using them in compliance will come in the future. EPA recently had an OGI working group meeting, and hopefully they will include some UAS info.	The equipment is very expensive...no one wants to crash a $30K device. We have considered the FLIR MUV and the Scentroid Mobile Labs...we are awating those manufactures incorporating ChemResponder API	
	I'm not familiar with drones. could you give us an overview of types. Also Tell us about how you deal with commecial aircraft.	There are all kinds of drones. From fixed wing, to quads to hybrids of the two. There are different ways to deal with commercial aircraft. The FAA sets the rules of flight and our pilots all have to have FAA UAV pilot licenses. Those FAA rules tell us how to deal with and avoid commercial aircraft. We're also limited to flying at 400 feet above ground elevations.		
	What is the regulation on using drones for environmental compliance for tribes	Tribes were not considered Public Entities by the FAA early in the drone commercialization process. We are part 107 certified but we have since recieved COA authorization for some exceptions to the 107 rules		
	Is anyone using AirMap UTM for fleet managment? Pros? Cons?	We use AirMap to check the airspace for the flight location, but not for anything else. We do not file flights in the app.		
	Have any agencies used UAVs and IR technology to monitor methane at fuel terminals, etc.?	live answered		
	new to this , which website will the presentation and avideo be posted?	Here's the URL: https://www.eenationalmeeting.net/december-2020		
	Michael Ware - Anything you could share on your data storage solution would be really helpful.	live answered	We are using Storage as a Solution, Vion provides the solution with Vion hardware and NetApp as the front end interface. It is a modern solution and we have the hardware in the state's datacenter with all the protections the state provides. It has been an incredibly effective solution.	
	is anyone set up pilot minimum flight standards (x hrs, x to's, x landings) they must accomplish annually to remain proficient ,etc?	we have in our Division within DEQ to require a minimum of 2 hours per month to keep skills up and for training. Many missions are only 10-20 minutes.	Our pilots have to get 8 hours of stick time after they receive their FAA license. After they get the 8 hours, they have to pass a simple flight test. Then they are certified to fly for the department. They have to get a minimum of 1.5 hours of stick time per quarter to maintain currency.	

	Re map of drone availability: How is that being maintained? Is it a direct edit of an SDE feature layer? Linked to an Outlook shared calendar? Any details would be helpful. Thanks!			
	For Guria, the data, photographs or videos taken in a field investigation, who is the person in charge of keeping the information and how long?	The Agency must maintain the data collected by our contractors.		
	Will there be a training on the different uses of the drones? I like the last presentation on the orgainc land use and all the different layers that the drone was capable of doing. I will need the link to this recording so I can share it with my staff.			