UC GIS Week
Wednesday, November 20, 2024
10am-11am
Opportunities for Current Students: Panel

Panel:

This panel session is aimed at undergraduate students to learn more about opportunities to get involved with geospatial data while still in school. Hear from several colleagues about opportunities through the National Park Service, a County GIS Program, and more.

So welcome today to UC GIS Week. We have a wonderful panel for you all this morning. It's the opportunities for current students and learning more about geospatial opportunities.

We have some basic housekeeping. We'll have each panelist go through and talk for about eight to 10 minutes on sort of their background, their role, opportunities that they see.

And then we will open it up for questions. So feel free to ask questions in the chat as we go through. We'll open it up to all questions at the end. So you can also take off your mute button and ask a question if you don't want to type it in. There is a Slack space as well that you can join and continue the follow-up conversations. This meeting is being recorded and will be available at the end of the event if you're not able to catch this. But we ask everyone to mute themselves while our panelists are talking and we'll go from there. So I'm happy to welcome today to this session

Doug Wilder from the US National Park Service, Daniel Manchado from Solano County and Liam Bhajan who is representing the National Developed. So from UC Davis. So we'll go from there. Doug has gracefully volunteered to kick us off. So Doug, we'll turn it over to you and we'll go from there. So thank you all.

National Park Service – Doug Wilder

Video Timestamp: 1:25

Thank you very much, Amy. Again, Doug Wilder, I work for the National Park Service. So Yellowstone, Grand Canyon, all those good places and lots of little places too.

I've been with Park Service since 2002.

First in Alaska and then Wisconsin and then Nebraska and now Colorado. And that's actually a few places in comparison to a lot of Park Service careers. I've been in now 22 years. People

have moved around a lot in the parks. So as a career, it can be very exciting. You get to go to a lot of great places.

And so I'll preface it with that. And then if anybody wants to contact me directly, I'm very open to that. And I think my email will be available via information regarding this meeting. I can go ahead and share my screen and I'll run through a quick,

so a few slides of our NPS GIS internship program.

Is it starting?

Can you see my screen?

It looks like it's coming. There it is.

Okay, so you see an NPS GIS internship program? And we see the full slide deck zone. Yeah, so I'm not in presentation mode. I'll go to presentation mode and see how that goes. I'm worried that sometimes it, you know,

oh gosh, oh no.

All right, there we are. So we've been running the program since 2020.

I'll tell you about some other internship opportunities as well, but we felt that there was a need for a GIS focused internship program in the park service. A lot of different needs, as you know, with GIS technology. The neat thing about GIS is you may bring your knowledge and skill sets to a wide variety of disciplines, whether it's geology, visitor use management, utilities, you know, facility management. It's just, we get to do a lot of different things. And I run a support office for the park service office as Intermountain region. So it's the eight different states of the Western United States.

California is in our Pacific West region and there's a similar GIS support office there. And they also are hiring interns. I'll get to that in a little bit.

So we support all this different work going on at the national park units and adding in this GIS internship program has been a huge help and it's very popular with our parks. So we put out a call twice a year to the parks first to say, "Hey, are you interested in getting an intern?" And then we get the information back from them and then we put out calls for opportunities for students to apply for those internships at the different parks. And so far we've hosted 115 internships at 55 different park units. And you can see this map where we've done it so far and we keep growing to the point where we need to add more people to our program. Cause it's sort of other duties as assigned for us so far. The way it's, well, I get too far ahead of myself but if anybody wants any of these slides obviously you can screenshot them or contact me later and I can give you the slide deck.

So it is a GIS first program, as I mentioned, GIS plugs into all these different disciplines and our interns have opportunities to do field work and apply GIS technology and skills to lots of different areas that the park needs. A lot of it is pure data management.

We do try to emphasize getting our interns out into the parks as much as possible. A lot of the internship opportunities are based at parks. Mine's at a regional office so we're in the Denver Metro area and I have a couple of the interns right now and they're actually working remote. So there are remote opportunities too.

The Alaska ones are often remote because it's difficult to get, arrange somebody to be able to move up to Alaska, although that happens and it's certainly in the cards.

But a good thing about a lot of the work we do, it can be done remotely. So we typically will ship a good laptop and a couple of big monitors. I'm looking at two big monitors right now for the interns to do their GIS work from wherever they are and then we use online platforms like we use Microsoft Teams in the park service and we're in constant contact with our interns as they're doing the work. But so far, we've distilled the data and you can see on the screen,

a lot of the work is data management, which is huge. As you know, it's the under the hood stuff that makes everything possible.

It makes it possible to, if you're gonna do analysis, you wanna have good data going into it. And so a lot of parks have recognized that they really need to work on their data management. We're applying data standards and enterprise processes, including branch versioning. And if I'm throwing any terms around, you wanna follow up with me later on, happy again to take any questions now or later, even after this call, just put me on your mailing list. But 40% of them are GPS, GNSS data collection as well. Definitely wanna get people out to do that. And then a wide variety of other things. The interns on my team, we're a support office for that Intermountain region I mentioned. And we have 86 park units, big ones like Yellowstone, Grand Canyon, all the way down to very small ones, but very important ones like the Sand Creek Massacre site. So the park service tells those stories of beautiful outdoor areas and amazing natural resources, but also amazing and significant and terrible events in our nation's history. And all of these parks to some degree have GIS needs. And so interns get to apply their skills to all that. I've said that many times already, but anyway,

there's another breakdown of the types of work. We try to get them out into the fields as much as possible. I just wanna stress that. Oh, and then the training. The first week of the internship program is training that my office puts on in the, how we do GIS in the park service and doing mobile data collection and how we do data management in particular.

The process and we do the recruiting. I've mentioned this a little bit. We do the onboarding, the training. And then we do have weekly meetings. And this is all online. And we really encourage the interns to get to know one another, even though they're scattered across the country. They

are communicating. We have a live chat going on all the time that people fire questions back and forth.

There are a lot of committees in the park service that address different aspects of geospatial needs. And we get our interns involved in that as well. So they really see the under the hood operations of GIS and how we apply these skill,

this technology to the needs of the parks.

Critical component of all this is, and how it's all set up is we're in a cooperative agreement with Southern Utah University. And so all of our interns actually apply and are employed technically through Southern Utah University.

They're paid through them. And the SUU helps us track all the hours that the interns put in and gets them paid, which is important. So we get in the park service, our partnership side of it is making sure that SUU gets the funding that comes from the parks. And by the way, these are funded internships. I'm sorry, I'm kind of, I don't have a straight game plan for the information I wanted to convey to you, but these are funded internships. They pay on average $18 an hour, but 20 to $22 an hour also is not uncommon to see for our interns. So we work with SUU through this cooperative agreement to ensure that they are funded and then they do the recruitment. But in the park service, we make sure that they're hiring GIS first and foremost.

As I said, it's GIS first.

In some parks, they need GIS help, but they don't have any GIS people at their park and that's why they need the help. And the archeologists, for instance, at a park may start to hire somebody who has a lot of archeology training or background and just got out of a program with an archeology degree, but we say, well, wait, this is GIS first. So while it's great to have those other skills, we wanna ensure that they have the GIS skills first and foremost. And so my office steps in where parks need assistance in evaluating applications for the internships to ensure that they have the GIS skills.

And they do go through final presentations and evaluations at the end. So we try to make a good career experience for them too, to start going. And the ideal is that they find permanent positions in the park service. And I don't have the data on that, but we've had quite a few interns have been able to be converted into more permanent roles in the park service.

Let's see. So there's some fun stuff going on. There's the dollar amounts again,

costs to park usually 30 to 35,000. That's the whole costs and not just the salary, but usually travel is built into that too. And other overhead costs that come with how we've set up the program. So far moved about $3 million in this program. And if you're based at a park, often park housing is available, which is a fun experience too.

So major issues, administrating the program, I kind of touched on that, doing the training. I should have just let the slides lead me instead of talking ahead of them like this. And then bring

onboarding them and then hiring authority opportunities, which I'm continually working on. We're looking at adding public land core or hiring opportunities, which gives people who've come through the program an opportunity to have a little bit of a boost in through the USA jobs hiring process. So we've had nine cohorts so far. We're starting to work on our 10th, 115. Obviously it's not all of them, but that's a lot of our interns and the photos of them at the parks.

If you wanna learn more, there's the SUU website. A lot of our pages for this program are internal to the park service. So this is the public facing one. You could just do a Google search on it and find it. There's also a youth programs office out of our Washington DC that you can find our site listed on that as well. But this is the main one and it's through the SUU page.

And there's some other opportunities too. I wanna say that this isn't the only way that students can get GIS experience with the park service. The scientists in the parks program is also a big one.

They don't hire directly GIS only like we do, but they look at different branches of science, obviously. And a conservation legacy, the Student Conservation Association, AmeriCorps is a big one, and the National Conservation Preservation, and I forget what the E is.

Those are all links there. And again, I can provide those links, but there they are for you.

And then the cooperative agreements I mentioned, a lot of parks do one-offs. So there's lots of opportunities out there. I don't know exactly how to find all those, but you can always contact somebody in the park service, but there are lots of opportunities. But we're trying with this MPS GIS internship program to normalize it all so that there's really just one main place to go.

If you are somebody who's had some GIS training and you wanna put those skills to use in the park service, our program is the biggest for that for sure. And we're continually growing, but there are many opportunities. And you can combine some of those opportunities too, like do our program and then know scientists in the parks program. Funding is always a little different, but also some programs are able, because they have different designations in the federal government, they're able to offer things like that PLC, Public Land Corps Hiring Authority, or sometimes DHA, which is Direct Hiring Authority. It all depends, there's a lot of nuances involved, but it's something to always ask about. And again, if you talk to anybody in the park service and questions arise, feel free to loop me in. I'm very interested in this. It's the future of the park service, having people come in for GIS and do this work. We need to keep it going.

So that's all I had for my stuff. And I'm sorry if I took a whole bunch of time, I'll pass it on to whoever is next.

Thanks Doug, that was wonderful. And perhaps we can follow up with you and get the slides as well to make those available with the recording afterwards. So not a problem there.

Daniel, go ahead.

Solano County GIS – Daniel Manchado

Video Timestamp: 16:21

Thank you, Amy. And thank you, Doug, for setting the bar so high. It gives me the wonderful opportunity to just go ahead and tell folks, I don't have a slideshow and my chat here is going to be less impressive than Doug's. I apologize in advance for that.

So good morning, everyone again. My name is Daniel Machado. I'm Solano County's GIS manager. I'll give you a quick bit of background on myself, the county, and then I'll talk about the thing that's really interesting, which is the opportunities for students at UC Davis. So I have a BA in anthropology. I received that from Washington College in the state of Maryland. I have a master's of science in applied anthropology from the University of North Texas. Obviously that's in Texas. I've been in California actually for a little bit over three years. I moved here from the East Coast to take my current job. And I hold professional certificates in GIS and as a project management professional.

So what exactly is GIS doing at Solano County? We work in the Department of Information Technology and we provide county-wide support for GIS services. We also provide regional support to our seven cities and to a handful of special jurisdictions, special districts within our jurisdiction. So as a manager, I work with a team of 20 or so. It's a combination of full-time and part-time. We do everything. That's basic data entry, building custom applications, making maps. We do advanced data engineering, spatial data architecture. We do systems architecture, imagery analysis, cloud-hosted data analytics, 3D visualizations.

We also do the really hard stuff. We work with people.

Right, so like most professional spheres, GIS has a translation problem or a translation requirement. We have a lot of technical knowledge and we have to translate it back into practical terms. So we have to get people past their first instinct, which is to think of us as map makers. And instead we have to constantly reframe situations to essentially sell the value of spatial data to help solve problems, give new capacities, and build new perspectives, right? So Solano County has well over 2,000 employees. According to the last census data that I looked at right before this call started, there's about 450,000 people in the county. Just for comparison, YOLO, which is where most of UC Davis is, has 220,000. All right, so we are taxpayer-funded. We have quite a lot of residents, quite a lot of staff, and everything that we do is designed to serve the residents and visitors and make their lives a little bit better and a little bit easier. But I don't do that by working directly with the public, right, I don't take phone calls from Joe Public asking me if I can please make them a map. I'd love to be able to, but as large as my team is, it's not large enough to actually be able to handle that type of calls.

Instead, we work on things like address data, which is distinctly unglamorous.

But the address data that we work on means that when someone picks up the phone and calls 911, the dispatcher has a better chance of knowing where you are if you tell them the name of your building or if you tell them the nearest intersection.

And in a less gloomy context, it also means the person delivering your DoorDash order has a chance of getting there in a time, in a time frame that means that your food is the appropriate temperature, right? Google Maps might actually get you to your local pizza place rather than get you just straight up lost. That's in large part because we curate the data, we improve the data, and we make it available, taxpayer funded, right? So it's free to everybody who uses it, including Google Maps. And its results mean that everybody's lives in theory should be getting a little bit easier because the applications and the things they work with are making it easier for them to interact with the digital world.

Okay, that's enough. I'll get into the actual opportunities for students. So we have two different types of opportunities. We've generally got unpaid internship opportunities available pretty much year round.

The obvious disadvantage is there's no money in it. The advantage is if you have some experience with GIS and you reach out to me and Amy and the team maybe can help share my email, I'm totally happy to be contacted at any point.

If you have experience with GIS and you're interested in an unpaid internship or you have an academic project that you'd be willing to do in Solano County, I'm pretty much willing to work with anyone to actually give you the support to build a project, work with the data and assuming it's a good project, I'm also happy to be a professional reference for you because we'd have had that experience, right? You'd have worked on my team doing some work and I'll be able to speak to your capacity. My team will also be available to help you in a professional context to answer questions and to solve things from a little bit of a different perspective than maybe your professor's might with an academic background.

That's the unpaid stuff. Now the paid internship.

We classify it as either a paid internship or an extra help opportunity. I didn't know I'd be competing with Doug on price here, but I think we're pretty competitive.

The paid internships usually start around 1760 an hour.

That's the sort of the lower end of the range and the high end of the range. The County does allow for interns to be hired all the way up to the rate of our professional staff. So think well over $60 an hour.

Before folks get too excited, I really wanna clarify that to make something like $60 an hour, you would have to have the same kinds of qualifications as a full-time professional staff currently earning that rate, that means years of professional experience, professional certificates, a lot of

work in the field to show proven capacity. So that might be something that's more suitable to graduate students who have a mix of professional and academic experience than undergrads.

But for undergrads who have a couple of GIS classes under the belt, maybe some coursework and some fieldwork experience, you could probably look at a rate closer to that 1760 an hour as something realistic to make during a paid internship.

So what would you do during a paid internship? The wonderful thing about Solano County, keep in mind what I described before, right? A lot of people, a lot of staff.

I have more work than I currently have people who are capable of doing, right? So it's a target rich opportunity. If you come to me and you tell me you have an interest in working on a project, boy, can I put you to work. If we put together an internship and we share it out, I have so much work that I'm actually able to tailor the internship opportunity to the experience of the person who is our intern, right? So maybe we have an intern that has a lot of experience. They're pursuing something in urban planning. So I could find them projects related to ArcGIS urban, working with the planning team to develop work on the zoning general plan data sets that we're working on, or maybe in a completely different direction. You've got a student who has a lot of background in CAD. Maybe they're just starting to learn a little bit about GIS, but they're actually in an engineering program. We have a lot of work to do with our public utilities, and that's everything from stormwater infrastructure, water runoff and flow, because we're a part of our regional group. We also work with the Solano County Water Agency, the Transportation Agency, and our sewer districts. So there's a lot of opportunity just related to translating an understanding of that data into a real world application that would actually help solve problems and help people do better with their data, which helps improve decision making. So when we get an opportunity to put together paid internships, again, I can tailor them to the background of the students. So if you see an internship opportunity in Solano County for GIS, I encourage you to apply regardless of your background. And I'm just gonna finish by echoing this question. I'm echoing myself again saying the unpaid internship opportunity, if you have an interest, you have a class project, you would like to do some hands-on GIS, just let me know. I can't pay you, unfortunately, but I'm usually pretty good for pizza money, as in I will buy pizza in exchange for work. Having gone to college for a number of years, I'm fairly certain market rates still apply.

Pizza for work is still usually the go-to. No beer, sorry, but pizza, pizza I'm good for.

I'll wrap up there, Amy, thank you. And I'll hand this back over to Liam. Yeah, thank you, Daniel. So Liam, feel free to take us away.

NASA Develop – Liam Bhajan

Video Timestamp: 25:13

Okay, let me share my screen real quick. (Computer Mouse Clicking) Okay, can everyone see my screen? All good? Yep, good to go. Awesome, thank you, Doug, Daniel.

And so today I'm gonna talk about a program from NASA called NASA DEVELOP as part of their Earth Action Capacity Building Program.

So I'm Liam Bhajan, I'm a current PhD student at UC Davis. And a couple of years ago, so during 2020 and 2021,

I was an intern and participated in this develop program. And since then I've sort of been an ambassador for it to encourage folks to apply.

And so I'm gonna try and just give you a little overview about what the program is about and then maybe highlight one of the project examples to try and give you guys an idea of some of the stuff that the program works on.

And so to start off, the develop program falls under sort of this larger umbrella of NASA's science division, which aims to understand our planet's interconnected systems from sort of like a global scale down to small processes. The division conducts and sponsors research, collects new Earth observations, develops technologies and extends science and education to the global community and decision makers to answer fundamental science questions and improve the quality of life on our home planet, all that good stuff.

More specifically within the Earth Science Division, you can find this program called NASA DEVELOP under NASA's sort of Earth Action, which if you're familiar with some of the NASA lingo, it used to be called Applied Sciences, but now the name has changed. And so the main goal of the NASA Earth Action Division is to discover innovative and practical applications of NASA Earth Science. And we do this by partnering with both public and private organizations to examine ways in which sort of the work that we would do might support their environmental decision making activities. And so currently this Earth Action Division currently works in nine different application areas. So these would kind of be sort of like project thematic areas that you would possibly work in. So we have like agriculture, ecological conservation, water resources, energy and infrastructure, urban development, health and air quality, disasters,

wildfires and climate. And so for example, when I was intern with the program, I worked on a project within the agricultural thematic division and then also in the urban development one as well. So a lot of flexibility to sort of match what you want to work on.

And so develop collaborates specifically with decision makers to conduct feasibility projects that apply sort of the NASA Earth observations that we would collect to address sort of these environmental issues. And these projects engage participants, so people who you would apply, in 10 week projects that sort of identify opportunities to use NASA satellite data to sort of create methodologies and tools for project partners to aid in sort of their decision making processes and policies. And so develop builds capacity in accessing and applying sort of that NASA Earth observation data in both its participants. So you actively being a part of the project and then also the project partners as well. And so it's this really cool opportunity to sort of showcase the vast amount of information and data that NASA and the satellite sort of collect.

And then also you as a participant being able to sort of play around with that data, analyze, learn how to sort of use that information. And then for project partners to also understand how they can use that information to help in sort of the environmental decision making.

And so sort of where are these opportunities located? And so develop locations are housed in various NASA centers and institutions around the country. And the national program office, the home office is located in NASA Langley Research Center in Virginia. There are also pop up project locations, which are temporary sites for participants to work at, each with their own set of unique advisors and networks that will vary from sort of term to term. And so this figure right here is sort of showing this the 2025, so summer 2025, the different pop up locations that have projects going on. And so generally the idea is that each one of these locations will offer sort of unique set of opportunities. So for example, like the node in Colorado works really closely with the USGS, while the node in Alabama tends to partner with another NASA program called NASA severe, which is based out in Alabama as well.

And I should also note that even though right now what I'm showing is, sorry, this should be summer 2025, not spring 2025 on the slide. Even though what I'm showing right now is for summer 2025, NASA DEVELOP also has projects in the fall and winter, but those project locations and information normally come online right after the summer node has ended. So if you wanna keep updated with information and maybe you can't apply for this summer, but you can apply in the fall and the winter, you can always stay updated for information on the website, which I'll provide. And then also there's a mailing list that you can sign up for so that you will get emailed when opportunities arise. And I'll provide that information afterwards.

And so I guess, so who participates and develop. And so the participants, so you folks who would ideally apply sort of various backgrounds. So recent graduates, I was a recent graduate when I did it in 2020 and 2021. Also military personnel, students, and then also transitioning professionals. So the idea is it's not only restricted to sort of current undergraduates or graduate students, even if you're a transitioning professional, it's also open to that. And so then each team of participants will have like a group of advisors that are typically NASA researchers, university professors, or scientists from partner organizations to help work with the team to help guide them on their research.

And partners on the projects are normally decision makers from state and local government, federal agencies, NGOs, and international institutions. And then some of the frequent project partners are like USGS, Groundwork USA, and then the National Park Service. So right now for summer 2025,

there'll be both in-person and virtual opportunities. So you don't necessarily have to be at one of those physical locations. You can participate online.

And then so when you go to the website and you check out the projects, they will outline specifically if the project is gonna be in-person or virtual.

All participants have developed a paid on an hourly basis. And so rates are based on sort of your current level of education, your applicant classification, and sort of which location that you would work at. So those can vary.

If you want more information about that, I can give you the information of like where you can email somebody and they will tell you like what the rate would be for this specific location.

And then in terms of participant eligibility, you know, you just have to be 18 years or older and have a minimum of a 3.0 GPA to participate. And this could be either be like your cumulative GPA or your most recent semester. And again, you know, we accept current students, recent graduates, early career professionals, and those who might be transitioning careers. And then one big thing that we wanna stress is that we value participants with sort of interdisciplinary values. And while no experience is required in terms of like GIS and remote sensing, I think what we super value is just you have that interest in GIS remote sensing and aid science.

And also we accept US citizens and non-US citizens.

And so what might make somebody a successful developer, I guess, and that's the term that they call somebody who is a participant, a developer.

And I think one of the big things and one of the most important things from the program for me when I participated is that it really teaches you how to work well on a team. Collaboration is key to the success of any project. You know, participants should also have a willingness to learn. You develop a ton of skills at develop that go beyond sort of GIS and remote sensing. This includes like public speaking because there are opportunities to present sort of how do you conduct a feasibility study like what that whole process looks like from ideating a project to iterating on different designs and then going back and forth with your partner and the community that you're working with to try and help and refine what it is your project scope might be. And so the idea is that we want developers to be flexible, be able to change as project changes, be able to overcome challenges throughout the team because it is a short program, it's only 10 weeks. So what develop really tries to emphasize is that end goal deliverable, we really try to have participants go through that entire process of beginning on a project, conducting a methodology, collecting data, analyzing data and then producing some sort of tangible outcome so that the project partners can use and then also you as a developer can understand like what that process from data collection to like tangible science action looks like.

And so yeah, it really shows you what that full process can be like. And so in develop, you'll learn to improve sort of your scientific and technical skills and the use of specifically sort of NASA observation so you get experience with the different types of remote sensing and GIS data available, but you'll also be able to build up sort of your science communication. Here we have like someone who presented, I think this is maybe at AGU so you can also people have presented the projects that they've worked on at AGU, also given presentations to the different communities or even with their partner, their project partners given a presentation with them,

it's sort of a end of terms sort of wrap up. And so there are definitely different ways that you can improve not only your hard STEM skills but also your softer like interpersonal skills as well.

And so, you know, many of our participants come from technical and science related fields such as geography, environmental science, GIS engineering. I was a geology major in undergrad when I had applied, but we also have folks that come from accounting or public policy, economics and communications.

And so developers open to all majors and it's really about just demonstrating that you have that interest to understand how with science, how with science information can be used for sort of tangible action.

And so one of the big things that we also emphasize is that you'll also get experience in learning different software tools, coding languages, you might use some of this, all of this, you just get a bunch of experience of just how sort of actionable research is conducted. And so there are training programs within the actual term itself that will give you like a bootcamp in R or like a bootcamp in MATLAB. And so those are always super really great opportunities to partake in. And so for some of the project characteristics,

you know, there's normally about 55 to 65 projects for the entire year. So that includes like every single term of like summer, spring and winter.

And each project highlights the applications and capabilities of again, the NASA observations, though we do often use data from other space agencies in conjunction of that. So, you know, if you're familiar with remote sensing, like Sentinel data from the European Space Agency. And so the idea is that the projects will address real world community concerns related to environmental decision making. And then also all teams with the partner with organizations who can benefit from using NASA observation data to enhance their decision making. So oftentimes you'll get project partners who are really interested in using GIS remote sensing information, a science information, but aren't necessarily sure how to go about it. And so this is a real unique way for them to have sort of a feasibility study to explore an idea that they've wanted to implement and also give folks the experience to understand how one might build a project like that.

And so just a quick thing on some of the project deliverables

and this I think is one of the unique things about the program is that they really emphasize just like what is that final action deliverable that your project partner wants and that can take many forms. It can be a presentation, it can be a poster, it can be a technical paper, all those things will be created from a project. But then in addition to that, some project partners might ask you to do a tutorial so that they can share it with folks in their organization, do like a social media series, maybe even do a video.

I think for when I did my urban development program, we narrated a video about how the city was going to use the data that we created. And so even if you're not, even if you have other

interests or you're more creative and you wanna maybe do other things, there's ways that you can use your interest to help amplify some of the products that you create. And so here I just wanna highlight like one of the projects that one of the teams worked on because I think it's pretty neat just to get a sense of like what folks work on. And so this was from, it was the Maldives Climate Project at the AIMS node. And so they collaborated with the Maldives Ministry of Environment, Climate Change and Technology,

the US Department of State and USAID to sort of develop, to evaluate the potential impacts of sea level rise on human development and coastal infrastructure. And so here the maps are showing sort of sea level rise and inundation for the capital, I think it's pronounced Malay. And so the image on the left is showing you the regions of Malay that are likely to flood with, I think 0.49 meters of sea level rise with each color representing a different probability of flooding. And then on the right, you can see the flood inundation map of Malay with 0.86 meters of sea level rise. And so, as one might expect, the areas for the inland have a lower probability of flooding and then additionally, the cosines do not all flood sort of in the same equal manner and those at higher elevations tended to have a lower probability of flooding with sea level rise. And so the teams were here to understand the potential impacts of sea level rise

on each island influenced the partners coastal infrastructure adaptation planning and future development. So I think, you know, this is, it's a really cool thing to be a part of because this project that they worked on, this data was actually used by the Maldives Ministry of Environment, Climate Change and Technology to help with their planning of maybe specific areas where they might want to focus on for their infrastructure for sea level rise. So, you know, I think it's really important and it's a cool opportunity to see like the stuff that you work on actually be used. And that's all I have. I have some backup sites based on questions, but we can go ahead and end there for me. Thank you.

Thank you, Liam. And Liam, maybe you can put the URL to that in the chat here in just a second, but I'm gonna ask Liam to keep his video on. Doug and Daniel, turn your videos back on. And I will say sort of a virtual round of applause for our panelists. It was sort of phenomenal. I learned a lot as well.

Q&A

Really, really interesting opportunities out there. So I have some questions as well, but I will say I'll open it up to the audience. If you have any questions, feel free to put it in the chat. Also feel free to raise your hand and we can call and you can take yourself off mute if you would like to do that, but lots of great opportunities. And I saw that there were some questions in the chat already, so I think I'll call them out, but I think Doug, you already answered that one, right? Is NPS, an Esri shop, if you will, in quotes, and more or less. More or less. Yeah.

Yeah, so do we have any questions from the audience? I'll turn it over first and then if not, I've got a few as well.

Okay, I guess I'll start us off. And so I think Doug and Liam, I think you both mentioned sort of remote opportunities as well as available. And Daniel, I'm thinking like, do you also support remote internships because you're in Solano County and I know I'm here in San Diego County, so if I had students that wanted to do some work, would you also support that? Yes, short answer is yes. Longer answer is we're currently working through a partnership with the Workforce Development Board here in Solano County. And I believe our very first intern is scheduled to start soon. She is actually at UC San Diego, I believe. Wonderful.

Wonderful.

And I guess in terms of like the length of time that you would be willing to work with someone on an unpaid internship, is that ideally a quarter or a bit longer?

Is a quarter based on a calendar or is that based on an academic quarter? I would say an academic quarter, right? So like 10 weeks, you know, or are you looking for maybe an unpaid intern who might be able to do something more than like a 10 week period?

An unpaid intern, I'm pretty much willing to take under any and all conditions so long as they have the interest to do the work and to learn. I'd be happy to be flexible to design a smaller project for even as short as maybe six weeks because it takes a while to sort of ramp up, get to a point where you're starting to do real production work and then sort of wrap up and make sure that you've delivered enough that the rest of the team can work with whatever you create. So I'd say six weeks is probably the minimum. But when I worked in Maryland, I ran an undergraduate GIS program. We had 115 students working for us and we'd run programs year round, right? So I'd be totally comfortable managing an intern for January through December. Obviously you have to be flexible around the student's calendar, spring break, holidays, exam season, all of these things matter. But again, I have a lot of work and just not enough hands and not enough time in the day to get it all done. So I'd be willing to work with pretty much anybody who wants to put something impressive on their resume. Perfect, now that's wonderful.

So then I'll open this up to sort of all of you. And I think you mentioned some of the skills and I think Liam, right, knowing that you went through the NASA DEVELOP program and I'm thinking, what are some of the skills that really stand out for you and someone who might be applying for some of those positions, right? And so, Daniel, I know yours is flexible, but like if I'm a current student, right? Or if I'm a recent graduate, like what can I do to help make my application stand out a bit more to be able to do this, right? We know that we're starting to see more GIS users,

and I get questions that say like, I've got three quarters, I've taken a QGIS, a Google Earth engine, and now I've taken sort of a Python, Jupyter Notebook, geospatial process, but like I want to do more. And so I'm curious if all three of you may be able to speak to some of that.

Sure, I can go first. I think, especially for the develop program, because folks come from different majors, I think what we really try to emphasize is that interest in working on a team and emphasizing the idea that you want to be collaborative and that I think what I see the program is, is sort of like almost like a professional training program of how you want to work in a business or like in the government of like how projects actually get done. And I think for recent graduates, undergraduates who are looking to apply, just emphasizing your willingness to lean, your willingness to collaborate. And then it's also great to have sort of the demonstrated experience in that you've taken a GIS class, you've sort of worked on a project. I think, if you wanted to be more competitive, like having, talking about projects that you worked on, if it's in your introduction to GIS class and you're talking about maybe sort of that final project you worked on on what that sort of sparked for you in terms of how you collect data, how you present data, I think those are things that the program really emphasizes and wants to be a part of. And then I think even just strategically thinking for the program itself, there are both in-person and virtual opportunities. And so because of location bias, like a lot of times people wanna go down to NASA Ames or JPL because it's a nicer location. There's some locations that don't necessarily get as many applicants. So you can be strategic if you have the flexibility to be elsewhere.

I don't know, maybe Doug, if that's also the case with some of the epoxy of this stuff, if you wanna touch on that as well. Absolutely, and a lot of the things you said are exactly what I would echo, teamwork, flexibility.

I would add to what Liam said that we really look for people that keep the long term in view, that we try to give all of our interns

discrete things to get done so that they can have a product that they've worked on. However, it's important that, and I instill this in all the interns as much as I can, that operations go on. They expand whole careers of people. People move on. What you put in place needs to not be siloed and it needs to be able to be picked up by somebody else and be a part of the operations that we need to get done. So having that mindset, what we found is important. Coming out of a lot of academic programs, there's this idea that you get a project done and you move on from it. In the work we're doing in the Park Service,

while there is that element, all of it really has, you have to think about the long term and that what you do is something that will be built on

and lead to more and good things that other people will pick up. So teamwork, flexibility,

being able to plug in and have an open mind and really think out of the box. Very similar to what Liam and Daniel have talked about.

I can add a third piece to this.

And again, for me, it's a little bit different because I have both paid internships, which there are strict guidelines. You must have experience in these things, professional experience, academic

experience. You have to have it on your transcripts and be able to show it. Unpaid internships, it's a little bit looser.

I think there's a great value in having a portfolio to be able to show work. I'm sort of echoing Liam and Doug here when I say this, but it's great to say that you had all of these classes. That's wonderful. It's better if you can say, "I had all of these classes for each class. "There's one project and here's what I did."

Everybody has projects, but you have to be able to really nail the fundamental. What did you do on that project? Did you manipulate data? Did you make maps? Did you create an application?

Where were you in the process? And that's really helpful for on the interview side, on the candidate screening side, to be able to say, "Okay, this is a person who can show me their work "and who can talk about it, "which helps reassure me that, "Yes, they've done the work. "Yes, they know what this is like." And that's invaluable. Can't tell you really how much I appreciate when I see a candidate for any level of work that is able to show me, "Here's my portfolio of work, "nine or 10 big projects that I've worked on "and what I've done." Huge, always huge.

That's great to hear from all of you. I mean, and just making your application stand out and thinking about how to do a better job of that. Jayden, I see you have a question. Go ahead and unmute yourself if you'd like to ask. Yeah, thanks. This is a followup to your question, Amy. From a student's perspective,

I was wondering if all the panelists could characterize how competitive the applications are. Like, is it only 2% of all the students who apply get accepted, that kind of thing? Just, I think that might be valuable for students to understand. Thank you.

I can say on the Park Service side, it's pretty competitive.

We get hundreds of applications for every cohort

that's at maximum. The biggest cohort we've had is 23 students

and that's out of hundreds. So I haven't done the math, but it's pretty competitive.

That's how our program works. And it's hard because you don't wanna turn people away who have a lot of interest and they're coming with a lot of enthusiasm, but Parks have to make decisions about who they select and move into the internships.

I think for the NASA DEVELOP program,

since there are sort of three terms throughout the year, so spring, summer, fall, I think summer tends to be more competitive because people are more free during that time. You can apply during the spring and the winter, even if you're still in school and taking classes because the amount of hours you're required to work, I think are 20 to 29 hours, so it counts as like part

time. So you can do it while you're doing school. I don't have the exact statistics on terms of like how many applicants and how many are accepted,

but you should feel confident that you can apply, I think to a maximum of three different projects for each term that developers offered and you can keep applying. So I've known folks who have applied maybe once didn't get in, applied the next term and did get in for a different project. And so I think for DEVELOP, I think don't be dismayed. I think the program has gotten more popular over the years and they've also added more projects.

So just, you know, even if it sounds just hardening to say, keep applying, I think you should keep applying. And then maybe again, thinking strategically about like, if maybe not for the summer because it might be more competitive, if you have the time in the fall or winter, because you have a lighter course load or you're just, yeah, do you take in one class to graduate in the spring and you have the time, maybe that would be a good opportunity for you to apply then as well.

I can talk about our recent experience with our current internship.

We had over 70 candidates and we were looking for one intern.

Sounds like doing the math with Doug, several hundred looking to get 20 candidates. And with Liam, you're probably looking at a less than 10% applicant to slot ratio, right? There's just not that many openings. It's a wonderful thing to be on our side of the table because that means that we get to find the best possible candidate. It is a hard thing to be on your side of the table and be trying to apply for these. And that's absolutely an understandable frustration.

But I'll just add also,

Liam made me think of this, the apply, just, you know, you can't do all of them, but don't pick the one that you think you really wanna do. Apply to all the opportunities and then you're in the driver's seat and you can pick the one that you, if you get offered several, you can pick the ones. I would say throw every noodle at the wall. Don't hold back, don't second guess things. Because you don't have the, wait until you have the thing in hand before you reject it. So go ahead, get used to applying and throw all those noodles at the wall and hopefully one will stick.

Yeah, I think the other thing I would say as well is just like, don't be the one to tell yourself no, let somebody else tell you no, because I feel like I often try to tell myself that, like I'm not trying to tell myself no. And so just apply. And I think, I'm not sure for Daniel and Doug how it goes with the application, but I think for develop,

a lot of emphasis I think is placed on who the recommender is. I think they ask for a recommendation. And so if you are thinking about applying, think critically about like who you're gonna ask for that recommendation to give for you. For me, when I applied, it was a professor that I worked with one-on-one for a project. So she could speak to sort of the work that I had done, the class that I took with her on my final project. So when you're thinking

about who to have as your recommender, try thinking about, have a front conversation with somebody and ask them if they'd be willing to write your recommendation.

And don't be afraid to tell them about what are the things that you are hoping that they would emphasize for you, whether it's like, "Hey, I took this class with you. I'm hoping that you could talk to how I participated in the class or what my final project looked like." I think those are all important steps as you guys are going out into the field and entering the workforce and getting internships of how do you manage those relationships?

Yep, I just dropped a little, a quote in the chat, which I'm hoping everybody can see. It's from a professor, Randy Pausch, who passed away, but was quite famous in Carnegie Mellon for delivering what was called the last lecture on achieving your childhood dreams. He had a terminal cancer diagnosis at the time, and he had a great line about brick walls. They're there for other people. If you want it badly enough,

you find a way around it. To Doug's point, it might be a numbers. You just keep applying. To Liam's point, you work with the sources and the resources that you have to make yourself as strong as possible. You ask for help, you figure it out, but I think the message all three of us are trying to get across is try, because not trying guarantees you the total lack of success.

No, that's great. I think hearing all of this is phenomenal. I'll say I've seen some other comments come through on other programs. If others in the audience are aware of other programs, by all means, feel free to share some of them out. I will post one in as well called NSFREU, Research Education for Undergraduates. There are several programs around the US that actually it's more of a,

there's different applications, again, sort of the same process, but it exposes you to different uses of geospatial. Another colleague of mine did that in Belize with drones and utilizing that for sort of communities down there. I think Esri also has some other ones. I think some of the Boss4G and open source communities also have some. So by all means, if you have others, please feel free to share them in the chat.

Doug, one of the things that makes me think about with NPS, right, and you said sort of the breadth of the parks and locations that people can work, who's ultimately reviewing some of those applications? Is it the actual parks themselves or is it Southern Utah University? Or right, if I'm trying to sort of curtail my application, who do I speak to in that?

The parks. So the first assessment is by the people at the park who have recognized they need GIS help.

If somebody at the park has trouble assessing or evaluating a bunch of GIS applications, my office steps in to help do that evaluation. We actually look at each park that's looking to get an intern and make a judgment call on whether or not they're gonna need our help in evaluating those applications. Cause like I said, it's a GIS first internship program. So we wanna make sure those skills are first and foremost.

That's wonderful.

Others from the audience, questions?

Got a great group here, some great experience.

Well, I wanna thank everybody for this opportunity. Thanks Amy and UC San Diego for this opportunity. It's been great talk with you. I felt like instantly, I know Daniel and Liam and they're great people to sit on a panel with. I'm honored to be here. And again, please anybody reach out to me if you have questions about GIS and the park service. I've been doing it for a while. So I'm really open to questions.

That's wonderful to hear. Go ahead, Liam. Well, and anyone in the chat can feel free to shoot me an email. I'll drop my email in the chat. I'm always happy to answer questions about it. Maybe Doug, Daniel and Liam, you could all do that. Just post your chat in there. Sorry, your email in the chat.

And those that are here can get that. And Doug, maybe I'll ask you and Liam since you did share a slide deck, if you're okay, if you share it with us and we can follow up, but we can post it and make it available to everyone.

I'm happy to follow up with you via email, but I think this was phenomenal.

And again, this is part of UC GIS week. And so it's across the UC system. So I know like Liam, right, Daniel, Maggie, we've got a group of people, but it is truly the UC system being able to make this. And so again, I think this was a phenomenal session. Thank you so much for the insight and we'll see you all this afternoon, which I think there's another great session that comes on right after this at one o'clock. That's looking at geospatial opportunities from humanitarian work to the UCs and Bhutan. So another great followup and that is at one o'clock, but otherwise thank you so much and have a wonderful rest of your day, GIS day and UC GIS Week.

Thank you, Doug, Liam and Daniel.

Thank you. Happy GIS week.