Geointeresting Podcast Transcript
Episode 29: How the Civil Applications Committee's mission hits close to home
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NGA: By now I'm sure you've heard about the Kilauea volcano eruption in Hawaii that's forced evacuations and made urgent the need to predict what will happen next. What you may not know is that NGA has long supported disaster relief efforts by providing imagery and products — and also that NGA is part of a committee that is currently assisting the state of Hawaii with its volcano-related efforts. Stay tuned to learn more about how the Civil Applications Committee helps first responders respond quickly, evacuate residents safely and prepare for future disaster scenarios. Space-based GEOINT capabilities help provide U.S. defense officials and policymakers understanding of adversaries and world events. But the user base for these capabilities goes far beyond the military and intelligence community. Through the Civil Applications Committee, or CAC, federal agencies and entities can leverage these capabilities for many different domestic and international applications. As its name might suggest, the CAC focuses its efforts on remote-sensing support for the federal civil community, allowing civilian agencies to request access to classified images for nonmilitary, nonclassified purposes. In 2010, the committee expanded its mandate to include commercial imagery contracts procured by the United States Department of Defense and the intelligence community. The U.S. Geological Survey manages the CAC, acting as liaison between the intelligence and defense communities and the civil agencies. The CAC coordinates and filters requests from federal civil agencies, which are then approved by NGA. The CAC then converts the images into a declassified product and disseminates the information while protecting intelligence sources and methods. We talked to Dan Opstal and Rick Wessels to learn more about the CAC mission and what day-to-day operations are like.

Opstal: So my name is Dan Opstal, and I work over in the National Civil Applications Center. My job there is to be the Civil Applications Committee executive secretary. And the idea behind the executive secretary is to support the efforts of the Civil Applications Committee, which is a group that facilitates the appropriate federal use of remote-sensing data — emphasis on facilitate and appropriate — for a wide variety of applications. And what we're doing is we're using the DOD and the IC to promote sensing collection systems and the commercial remote-sensing contracts for other missions outside of the Department of Defense. They are a broad range of science, disaster response missions. They include volcanos, which we'll talk a little more about in a minute, sea ice, glaciers, tracking wildland fires, natural disasters such as hurricanes and earthquakes, floods, invasive species monitoring, and ecosystem change. So it's just a wide variety of missions from a big set of interagency partners.
So we have a number of interagency partners at the department level — our principles include [Department of] Interior, Agriculture, Commerce, Health and Human Services, Transportation, the domestic side of the Army Corps of Engineers, the Coast Guard, EPA, FEMA, National Science Foundation, and NASA. And then we have some associate members in the IC community and some ex officio members that oversee us — the GEOINT committee, DNI, and the White House Office of Science and Technology Policy. So we have a broad committee that meets together monthly and is able to kind of work out all the other uses of remote sensing that I described outside of the Department of Defense in conjunction with all of our partnerships there within the IC and DOD.

NGA: And we have another special guest with us today.

Wessels: I'm Dr. Rick Wessels. I am a geophysicist with the Volcano Science Center, which is mostly concentrated in the western part of the U.S. with all their volcano observatories, and I or one or two others are located in the D.C. area to, basically, handle some of the issues that come up here. So I'm actually collocated in the National Civil Applications Center with Dan. I also have offices a couple of other places, but I spend a lot of time there looking at data of volcanos from around the world. So we have a global mission as well as a domestic mission, and I help with the 200-plus volcanos we consistently monitor there.

NGA: So you've been quite busy?

Wessels: Yes. There's always something erupting somewhere.

NGA: We'll get to that in a second, but, Dan, could you tell us a little more about NGA's role in the Civil Applications Committee?

Opstal: Sure. So NGA's role within the CAC is to help serve as oversight and help us make sure we accomplish the missions within our charter and the charter of the CAC. The charter of the CAC is an effort signed by the director of national intelligence and the secretary of the interior, and it looks at a wide range of science and disaster response applications that we talked about. NGA, being the functional manager of GEOINT, has made USGS a principal functional manger and the CAC as an associate member within this sort of larger GEOINT community that we call the National System for Geospatial Intelligence.

NGA: Let's take a 'Zach Morris-style time out' to explain what functional management is. Dan says NGA is the GEOINT functional manager, but, actually, it's the director of NGA, currently Director Robert Cardillo. Essentially, the functional manager provides the strategic management for a specific functional area in the intelligence community. In our case, that's GEOINT. So the GEOINT functional manager provides guidance to assure that everyone using GEOINT has the same standards, training, technical tradecraft and so on. And the GEOINT functional manager serves as the principal geospatial-intelligence advisor to the director of national intelligence. Being the GEOINT functional manager is a duty separate and distinct from being the director of NGA. The goal is to improve effectiveness and efficiency within and across the entire GEOINT community. Now, back to Dan and Rick.

Opstal: And so we all work together — the mission sets are different, but they're complimentary — and we're all using remote-sensing technologies. So what this is really about is it's a good government story. It's the ability of the national sensors and the commercial sensors that are acquired by DOD to be able to be used for other missions as possible. It's not to forsake or alter anything NGA does as a combat support agency, but to augment —

NGA: Use it for another application —

Opstal: Use it for different applications — lots of creative efforts we can do like tracking sea ice, tracking volcanoes, wildland fires. There's such an incredible volume of missions that the remote-sensing community takes on, and it's nice to kind of have that link to NGA.

NGA: And what is the request process like? So we know that NGA won't look at any imagery over the homeland without being requested by a lead federal agency such as FEMA for a natural disaster. And FEMA is one of the most prolific users of the CAC, right? So what is that request process like?

Opstal: So the CAC maintains an oversight rule through a series of civil domestic tasking memoranda. We make sure all of the appropriate rules are followed with respect to intelligence oversight and ensure that when tasking goes in, that it's being done for a federal statutory mission and with a federal connection. The work of the CAC does not preclude any agency from working directly with NGA, but this is sort of a block group that can help put together perspectives that are different from the combat support side of things — and the combatant commands — and allow that sort of perspective to come forward in discussions.

NGA: And for both of you, what are some of the other reasons that requests would come in? What would they use the imagery or data for?

Wessels: There's all sorts of science questions out there, and since the IC community — NGA, NRO — has some fairly exquisite assets up there, we want to make sure they're fully utilized for every question, not just the national security [ones]. So we go after everything from looking at floods to fires to volcanoes [to] the aftermath of earthquakes, since we're not so good at seeing them beforehand. And we actually have a lot of people working on wildlife studies — tracking wildlife, looking for polar bears in the Arctic, things like that — that you can do with good satellites. So it's a pretty wide spectrum, and USGS's mission covers that whole spectrum as well. So NGA is an obvious partner, because [it has] the expertise with these kinds of data and what's possible.

NGA: And it's more than just imagery, right? Other geospatial products or data as well?

Opstal: Absolutely. LIDAR, a wide variety of geospatial data sets — they all come into play. One of the things we looked at, too, is the development of the data science aspects of remote sensing. So now, increasingly, if you're dealing in the aftermath of, say, a nuclear meltdown of some sort like the style of what happened in Fukushima Daiichi, you might be dealing with how many vehicles are in a particular area and have been wiped out. You need to get a count of the number of vehicles. So no longer is the answer: I need imagery. It's: I need to know how many vehicles are in that particular image. And if you want to go further and get into the science and engineering of things, then someone from EPA might be a great person to reach out to, because they understand: ok, this vehicle contains this kind of effluents that might be released because of this disaster. So there's a real level of detail that these organizations can get into where they have expertise.

Wessels: And that expertise is essential now. We have so many satellites, thankfully. It's a great era to be a remote-sensing scientist, because between the DOD and the civil assets and the commercial assets and then around the globe — there's other countries that have freely open data — you need to have these smart systems now that are looking at all the data. Because it's hard for even a small group of people to possibly stay on top of all these data, look for every change that we need to know. So the data science side, which NGA is really pushing forward, is really useful, especially for change detection, which is a lot of what we do.

NGA: And I would imagine for that, even things like archive imagery — you know, going back and looking at the change now versus sometime in the past — could be very useful as well.

Wessels: It's nice, because our volcano archive goes back to the early 1990s, starting with the Pinatubo eruption in the Philippines, and we still have all that online at the USGS. So even though I wasn't there at the time, I can go back and see what others described in their notes. So it's really essential for me to understand what different kinds of activities look like.

Opstal: We also at the National Civil Applications Center maintain a Global Fiducials Library, which has a collection of over 500 environmentally sensitive sites that have been monitored, in some cases, for an excess of 20-plus years. And that allows real ability to monitor a changing environment.

NGA: So talking about real-world examples of this, everyone's probably familiar with the volcano erupting at Kilauea. What have you been working on? What is that like in the aftermath of that or leading up to it, even?

Wessels: Leading up to it was already kind of getting busy, because we — thankfully, the volcanoes send some sort of signal ahead of time before they started getting earthquakes. We saw a big event where we saw all of the lava drained out of the Pu'u O'o Crater. That's usually a bad sign. And then it started draining out of the main summit crater. And usually, when that happens, it all goes down to the lower east rift zone where all of the activity is now. So we can get a little bit of a jump on it by starting to collect data up and down that rift summit. And then once we saw the first ground fissures and we kind of knew where it was going to concentrate, we could focus on that area. So we've been using, collecting a lot of data from all sources [and] mapping the lava as it comes out, where we see new fractures, new steaming. And we've been providing — luckily, the USGS — we've had permissions for a long time now to create map products or descriptive products of all the data we look at and share that with volcano observatory. And then they incorporate it to what they're mapping in the field. So we try and provide them as much as we can to show them what's going on or places they might not be focused on when something new pops up.

NGA: What are some of the biggest success stories of working together, these agencies coming together, requests coming in, and the CAC being able to provide inventory that they needed; or products?

Opstal: Pinatubo was one of the foundational success stories in terms of the story behind getting data from various locations and providing them out to volcano scientists in the field. And the result is chronicled in YouTube and in other places, but the successful evacuation of Clark Air Force Base and

Subic Bay Naval Facility — saving several thousand lives at the particular time and making sure that equipment and materials also moved.

Wessels: That was really USGS working closely with the IC community and the DOD, because some of the DOD assets were able to show us what was going on at the volcano and inform how rapidly things were changing. We were putting in seismometers, and those were getting quite active, but the observations from space were critical in understanding what the hazard was and how big the evacuation should be. And it saved a lot of lives and a lot of expensive jets and things as well.

Opstal: There's more recent stories, too, on the volcano theme. Kasatochi Island — there were some scientists out there, and getting timely information out there allowed them to be evacuated. It's a dangerous business being on an active volcano.

Wessels: Right. There's an interesting one where the Fish and Wildlife people out there actually called the Alaska Volcano Observatory, where I worked before I came here, to say, "Why is the ground shaking?" And this is an unmonitored volcano; our closest seismometer was 20 miles away. And then our seismologists got involved and said, "Yeah, you guys need to get off the island. These are really large earthquakes." And they got off the island about 35 minutes before a huge plenary eruption, which is the biggest kind of eruption you can have. It just erased the island, no signs of the cabin, and deposited probably about 50 meters of new ash on the island. And the boat they were on was getting pelted by ash and rocks falling out of the sky. So there the data we get from NGA helped, because now we could look at the volcano [and] see what's happening. And the eruption lasted two or three days, and we had information there. Alaska is full of examples for [why] the NGA cooperation is essential, because volcanos are remote. They're almost as hard to get to as the volcanos we work on in other countries.

NGA: So there's really no other way to get that information?

Wessels: Yes. That satellite data are essential.

NGA: And what are some of the biggest challenges? It seems like a huge undertaking of all this back and forth, and I'm sure there are a lot of rules you have to follow and procedures that must be met and things like that.

Opstal: Well, first of all, whenever requests like these come into the DOD and IC, there has to be some kind of justification. It has to be a nexus to a federal statutory mission. And, yes, there's a wide variety of federal statutory missions, but it doesn't encompass everything. And there are areas we have to be very careful with in terms of authorities. So that's a challenge, just like anything else. This is a competition for resources, for scarce means. And so we don't always get the ability to have the piece tasked for science that we'd like to task. I think the community would love to have more. Disaster support is a little bit of a different animal. But that's a little higher on the priority. There's a lot of things going on in the world, and the combat support mission certainly takes precedence. And that's well understood. But the fact that there's a voice there for the civil community, I think, is very powerful.

Wessels: I think the CAC has been essential like in Hawaii or other places where domestic issues like the Kilauea eruption — multiple agencies are responding for different reasons; for evacuations, providing shelter, assessing the hazard, in our case, for the USGS. So the CAC is essential in trying to coordinate with all these agencies, because everyone has their own tasking in mind at first, and it takes a little bit to figure out: well, who needs what? And is our tasking messing up your tasking, because you're asking for something different? So Dan and everyone in the CAC has been essential in helping coordinate those responses.

Opstal: It really takes a whole-of-team effort at NGA to help assist with that, too, because there's so many different angles to both the collection and the analysis of this data set. It's not a job for any one person, and working interagency is its own kind of special type of environment. No one has a particular authority over one another, so working collaboratively is an absolute must. And it takes time to develop good solutions.

Wessels: Right. Each agency has its own mandate. Our mandate for USGS is to monitor and do the science of the volcanos and alert other agencies when there's any dangerous activities. Everybody else

has their own mandates that they're trying to accomplish. With the coordination, everyone's happy; we're all accomplishing.

NGA: Working together to accomplish many different missions?

Opstal: Yes. There's lots of other missions outside, too — the wildland fire monitoring is another great one. [It's] so important to have different capabilities available that can track wildland fire used for service operates; two aircraft to do that kind of work. And there's additional support that we can provide through remote-sensing means. And that's powerful, especially when you don't have capability in an area, and you have a fast-moving wildland fire. There isn't the time to set up coordination at that point. It all has to be prepositioned or negotiated.

NGA: Because you need the most up-to-date information for evacuations or to tell first responders where to go or where not to go?

Opstal: Exactly.

Wessels: It's been interesting, because Hawaii is one of those cases where there's lots of property involved, and roads are being destroyed, and infrastructure is in danger. And that involves — luckily, the state of Hawaii has an amazing civil defense group that [is] coordinating all of that. And they work really closely with the USGS. And they're kind of depending a lot on USGS and FEMA to provide the insights to what's happening and the bigger picture. And we're getting a lot of that from NGA support and the data we get there as well.

NGA: Thanks for joining the National Geospatial-Intelligence Agency for another episode of our podcast, Geointeresting. We'd love it if you would rate and review us on Apple podcasts. And this is one case where an intelligence agency wants you to spread the word — tell a friend about Geointeresting. Look for us on your preferred podcasting platform or on YouTube, or read a transcript of the episode at NGA.mil. This episode's music was courtesy of Lee Rosevere — from his aptly named album, "Music for Podcasts" available on the Free Music Archive.