AirSpace Transcript Season 8, Episode 8: Eye From Above

AirSpace Theme in then under

Matt: Welcome to AirSpace from the Smithsonian's National Air and Space Museum. I'm Matt.

Emily: And I'm Emily. Climate change is causing more frequent, and intense natural disasters and the fall of 2017 put that on full display. The Atlantic hurricane season that year was one of the worst on record. And one of the biggest, most devastating storms of the season was Hurricane Maria.

Matt: Maria hit Puerto Rico head on, leaving millions of people without power, water, and importantly, no way to communicate both on and off the island.

Emily: The Coast Guard has a big air base on Puerto Rico most of the time they're tasked with marine search and rescue, and security missions around the Caribbean. But when a hurricane hits they hunker down like everyone else.

Matt: After the hurricane, the Coast Guard is up in the air working on search and rescue, damage surveys, air drops and recovery. We're taking a look at the before, during and lessons learned after Hurricane Maria and we'll talk to one of our own NASM crew members about her and her family's hurricane experience today on AirSpace presented by Olay.

AirSpace theme up and out

Emily: 2017[1] really stands out as a particularly intense hurricane season for the Atlantic. And it was really bad for a lot of communities.

So there were 17 named storms in 2017, 10 of those were hurricanes, and seven of those were tropical storms. Six of those 10 hurricanes reached a Category 3 or higher, which made them major hurricanes. And of those six, four were so intense, and so severe, that the names of those hurricanes were retired.

The names of those hurricanes that were retired were Harvey, Irma, Maria, and Nate.

[1] https://www.weather.gov/news/17512_season-to-remember

And I didn't know that you retired hurricane names um, but just so you won't repeat the name of a hurricane if that hurricane sort of meets a threshold of severity in terms of lives lost and the damage that that hurricane caused.

Hurricane Maria was one of the worst. The storm killed more than 3,000 people--most of them in Puerto Rico[2]. And caused more than $90 billion in damage.

Matt: For today's episode, we're joined by Vanessa Parés, who coordinates online access to the museum's collections. Her family survived Maria, and she's joining us today to share her experience with the hurricane. Welcome, Vanessa.

Vanessa: Thank you. Very happy to be here.

Matt: As part of our National Air and Space Museum family we asked Vanessa to join us and tell us about her personal experience with Hurricane Maria as one person who was impacted by the storm. Vanessa, what was that day like for you?

Vanessa: So my personal experience, I wasn't on the island, but my parents and my entire family was. For me, you know, it's personal in that sense, because obviously I'm over here going on with life as usual, right? Working. And still worried and concerned about whatever may be happening back home even though I knew that my parents were prepared for it…but you just never know.

We are used to, obviously being in the middle of the Caribbean, uh, Puerto Rico always gets slammed with storms and hurricanes, so it's nothing particularly different. But in this case, it was very different.

Emily: As you said, Vanessa, living on an island in the Caribbean, hurricane season is a fact of life. Just like fire season in the west coast of the country and huge blizzards in the northeast part of the country, everybody has natural disasters. But we all know that these natural disasters have been increasing in frequency as well as increasing in their sort of intensity or severity.[3]

Matt: And, you know, after any natural disaster, there are a lot of people who respond in varying ways. Generally a combination of sending military aid, government agencies sending aid, non profits, journalists showing up on the scene to document what's going on, and of course, Good Samaritans. And in the case of Maria you had a combination of all of those things coming together to try and help out on the ground to recover from the incredible damage of that hurricane.

---

[2] https://www.mercycorps.org/blog/facts-hurricane-maria-puerto-rico
[3] https://climate.nasa.gov/news/3184/a-force-of-nature-hurricanes-in-a-changing-climate/

Emily: And it wouldn't be AirSpace without air or space, so we reached out to the Coast Guard, whose preparedness and response to hurricanes relies heavily on their aircraft.

And as we said in the beginning, the Coast Guard has a big air station[4] on the island and that base is where a lot of the official rescue operations and disaster relief was coordinated from after Hurricane Maria.

Matt: Yeah, we spoke to two Coast Guard members about their personal and professional experiences before, during, and after Hurricane Maria in Puerto Rico. The first is avionics technician first class Mari DeLong[5], who was posted to Puerto Rico but had also volunteered to work the hurricane recovery in Houston after Harvey before returning to the island before Irma and then Maria hit.

Mari: My most vivid memory is watching the news. I think it was Tuesday night, so it must have been September 19th, and it was about midnight, and Maria reached Category 5, I think, in no time, and she was straight over the island of Dominica, which is in the Lesser Antilles south of Puerto Rico, and I remember seeing this huge monster.

She was all red, and humongous and the trajectory path was she was going to come in through the east side of Puerto Rico and make her way out about, I would say, an hour east of us. So we weren't going to get the eye. So I remember just thinking that our lives were never going to be the same. That was a thought that I had.

And sure enough, I think all power was cut off shortly after that. They preemptively turned off the power. And, um that thing hit like a freight train. It just freight trained over us for hours and hours. But really what caused confusion, I say, I think you can say is the eye. We didn't know it at the time, but the eye was over us for an hour and a half, so it was just very still.

And I believe it was a clear sky. And it was just really bizarre because we were not supposed to get the eye. So there was a lot of confusion, neighbors, everybody. And turns out that she took a pretty sharp left turn where she was supposed to go out. She didn't continue, she took a left turn and then took the entire northern, western coast of Puerto Rico[6]. So everybody felt her wrath.

Emily: We also talked to Captain Ed Aponte[7], who's a helicopter pilot, and was posted to Puerto Rico right before the hurricane.

---

[4] https://www.atlanticarea.uscg.mil/Our-Organization/District-7/Units/Air-Station-Borinquen/
[5] https://aoptero.org/wp-content/uploads/sitrep3-18.pdf pg 3 column 2
[6] https://www.weather.gov/sju/maria2017
[7] https://www.linkedin.com/in/edward-aponte-35012135/

Ed: I was stationed in Elizabeth City. And August 24th, 2017, I reported to Air Station Borinquen. My family showed up a week after, and our household goods were in storage, or actually they were on a ship getting sent down to Puerto Rico.

So when September 19th rolled around, the last Coast Guard C-130 was getting ready to take off and it was evacuating families and keep in mind we had just showed up a month before and now I'm saying goodbye to my wife and my three daughters. They're little too and they're crying, they want to stay, but they don't understand why they can't stay and uh, they were the last ones to board that C-130 and the ramp door closed and I was like, okay, this is it. I'm here with the, uh, you know, the men and women of the, of the Coast Guard and we're going to ride this thing out.

Emily: Ed's family and all Coast Guard families on the island were evacuated shortly before the hurricane[8] and a lot of them didn't return for months, but Vanessa, you said your folks are accustomed to getting some hurricanes on the island of Puerto Rico. This was a really different hurricane. Did your parents think about evacuating?

Vanessa: Um, they didn't. The place where they're at, they're located, it's kind of high ground, it's not going to be prone to floods. They have, like, a little hill behind them. So I mean, the place where they're positioned is pretty good. There's no need for them to evacuate, thankfully. I knew they would be, overall, they would be okay.

Matt: Most people in Puerto Rico couldn't or didn't evacuate[9] before Hurricane Maria hit. Being an island, it's not as simple as just driving out of the path of the storm.

Emily: And besides evacuations, the Coast Guard prepares for a hurricane by putting their aircraft inside their hangar. And all Coast Guard members are trained in water and inland search and rescue. They're ready for whatever disasters happen.

Ed: We make sure that these aircraft are safe to fly. And as long as we have all those ducks in a row day in and day out, anything can happen. It doesn't matter if it's a hurricane, an earthquake, a forest fire, we can get these aircraft on the line, get the crews on the line and go and react. So we're all trained to turn that on like the flip of a switch. Something happens, we know what role we, we have and we can integrate with FEMA right away and DHS, big DHS and, and, you know, help out no matter what the situation is.

---

[8] https://www.youtube.com/watch?v=IcDGrwr4D6c

[9] https://www.e-education.psu.edu/earth107/node/1664#:~:text=Prior%20to%20Maria's%20landfall%2C%20hundreds,mainland%20to%20stay%20with%20family.

Emily: If you're ever in a situation where you need to be rescued by the Coast Guard and their helicopters, you're gonna recognize them by their iconic white and orange paint job. They all fly with a crew of four, two pilots--that's Ed's job, one rescue swimmer, and the flight mechanic--that's Mari[10]

Mari: We fly in the helicopters as aircrew. So we're the ones in the back that are helping the pilots fly the aircraft and then also operating the rescue hoist. And that's what we use to lower and pick up the rescue swimmer and the survivors.

Music button

Emily: What made Maria really different is that there's one part of the island that's a little bit more prone to getting really direct hits from hurricanes. But what made Maria different was it was such a big storm that it kind of covered up the whole island.

Vanessa: Yeah, it was huge. I mean, when you look at it in satellite pictures it really did cover the whole island[11], like all the bands covered the whole island. But I think part of the reason was that it came in through that southeast corner, and so then it made its way basically, like, right up towards the northwest, um, hitting the mountains. Which, that was one of the worst hit areas, when usually, again, it's just the northeast corner, and then it kind of, like, makes a little curve down and then goes back up. But this was, there was just really no escape in this case. It really was just enveloping the whole island.

Plus we had also had, you know, you mentioned Irma earlier. So that was literally two weeks before Maria hit the island. So there was already all this saturation of the grounds. You know, we already had loss of power in certain areas, loss of potable water. So they were already encountering all these issues and then having Maria come at that tail end, you know, just right after it just made everything worse.

Emily: And I think it's interesting when we talk about folks preparing themselves for a natural disaster, in this case of hurricanes. When you live on an island in the Caribbean, you're accustomed to how you prepare yourself and your home and your community for these storms, because this isn't the first time it's happened.

But when you have a storm that large, covering that much of the island, especially, you think you brought up a really great point, the ground is already saturated and that makes it more dangerous for subsequent storms to come through in terms of things like flooding risks. So I think it's interesting when we talk about natural disasters because we don't

---

10 https://www.mycg.uscg.mil/News/Article/2579365/join-the-flight-crew/#:~:text=The%20Dolphin%20is%20the%20Coast,flight%20engineer%20and%20rescue%20swimmer.

11 https://www.weather.gov/sju/maria2017

spend a lot of time talking about the fact that people do prepare and they prepare as if it's going to be the largest storm they've ever seen. But Maria literally blew that all out of the water.

Matt: Hurricane Maria made landfall in Puerto Rico on September 20th, 2017, after it already bowled over the island of Dominica and then the U.S. Virgin Islands. During these landfalls, the storm varied between a category 4 and 5, with sustained winds maintaining over 155 miles per hour, and it was just growing more intense.[12]

Ed: When it eventually got to Aguadilla, the airport there was clocking winds at over 206 miles per hour. But it basically came up and hit the bottom right corner of Puerto Rico, right over Yabucoa. And then it beelined it to the northwest. And when it got over Dorado, the eye was 35 miles in diameter.[13] That's where it stalled out, like Mari had mentioned.

And it sat on top of us and it actually formed a second eye. It created a really wide eye and it was almost two hours and it was unprecedented, some stuff like that hadn't happened before. So, we actually thought we were done with the hurricane. So some, some of the facilities inspectors started to walk around to assess damage and then that next wave of wind came in and we're like, 'oh man, buckle down still.'

Matt: So Ed just mentioned the eye of the hurricane[14], and you know, I think we're all familiar with that metaphor, the eye of the storm, but it's actually a physical thing, right? The eye of the hurricane is sort of where you stop encountering the actual rain and wind of the storm because you're in the middle, sort of in the middle of that swirl of wind and rain.

So it gives you a false sense of security and people might go out and they might sort of feel like the storm is over, but in fact, the second wall, the sort of second eye wall, that's now swirling in the opposite direction of what you just experienced is about to come in and hit you.

Emily: On the island, once the hurricane has passed the Coast Guard can launch their aircraft and start doing search and rescue and damage surveys. But the decision to launch is made by the whole group.

---

[12] https://www.nhc.noaa.gov/data/tcr/AL152017_Maria.pdf

[13] https://en.wikipedia.org/wiki/Hurricane_Maria The eyewall replacement cycle that caused María to weaken to Category 4 strength also caused the eye to triple in size as the diameter expanded 9–28 nmi (10–32 mi) prior to landfall. This change in size caused the area exposed to high-intensity winds on the island to be far greater

[14] https://www.livescience.com/60469-hurricane-maria-pinhole-eye-causes-fierce-storm.html

Ed: Fortunately you can almost always launch right after a hurricane because it's pretty clear skies after, but leading up to it, uh, you know, like there were other air crews as Maria went up the Caribbean that had to decide if they were going to launch towards the hurricane in order to effect a rescue.

Uh, the, the aircraft have limitations by the manufacturers of the aircraft and they're written in the, in the manual and we have all those memorized. But before we even hit those limits, we talk as a crew and we have this term called crew resource management where everyone gets a voice and everyone gets a say in whether or not they feel it's safe to execute a mission.

You know, the old Coast Guard saying used to be, you always have to go out and you don't always have to come back[15], but that's long gone. Now it's like you always have to go out and we're always going to try and bring everybody back home, right?

So during the hurricane, it was, it was actually easy to determine when we can go. The limiting factor was, was it safe to open the hangar doors? Like seriously, we had to wait for the facility's engineers to do their walk around to make sure there wasn't a bunch of debris on the hangar to jam the tracks. Once that all clear was given, we opened those doors and we just launched.

Emily: But coordinating that effort among the agencies was a little more challenging because Puerto Rico's cell phone network[16] had gone down with its power grid. Communication on the island was limited to radios. Communication off the island was limited to a small number of satellite phones. Most people don't have satellite phones[17] because they're expensive, there's a lag time often when you're speaking on them which makes them ok for emergencies but not practical for everyday use.

Matt: And, Vanessa, at what point was it clear that, like, communications had broken down? That nothing was getting in or out?

Vanessa: I think later that day that it had, you know, that 20th of September in the afternoon, when you knew that power was out. And so then after that, the grid basically was gone for the entire island, so once that happened, it definitely was a peak moment where you were like, oh, okay, this, hmm, this is, again, a little different than normal. So

---

15 https://www.mycg.uscg.mil/News/Article/2978215/the-long-blue-line-you-have-to-go-out-but-you-dont-have-to-come-backorigin-of-t/#:~:text=There%20are%20those%20of%20us,in%20the%20modern%20Coast%20Guard.

16 https://transition.fcc.gov/Daily_Releases/Daily_Business/2017/db0927/DOC-346943A1.pdf

17 https://www.outfittersatellite.com/Why-Aren%E2%80%99t-Satellite-Phones-Universally-Used_b_198.html#:~:text=In%20truth%2C%20more%20often%20than,trip%20takes%20quite%20a%20while.

it was, it was pretty immediate that you knew that things were, were breaking down pretty quickly.

Ed: In the aftermath came the normal activities. I mean, everybody had chainsaws out. We were moving trees. We were doing everything, you know. And then, uh, it hit me that no one could really call home right away. We didn't have power, we didn't have water, we didn't have comms, and the unit had one sat phone that we were passing around, so we didn't get much time to talk to family and tell them if we were okay.

So, that's the biggest thing that hits me is when I finally got to talk to my family. Just hearing the fear in their voices of like, we haven't heard from you in days, we thought, you know, we didn't know what happened to you. That, that's, that's what really made it like a real event for me.

Emily: So when it came to trying to rebuild a communication network, at least temporarily during the search, the rescue, and providing resources to folks, you know, radio was the primary way to make that happen. [18]

Ed: One of the biggest challenges we had was that all of the help that came to the island wanted to talk to everybody a different way. So it actually took us a few days to get everybody in sync and it took a few days to iron out all the kinks and then, um, the other aspect of comms that was difficult was that, um, everybody had different types of equipment. So it literally made talking to each other difficult.

So, took even a little bit longer to get that going. And the best example, the easiest way I can describe it is everybody wanted to talk on the secure radio network. And then in the end. Because it was so hard to maintain that, we all went all, everybody went unsecured and we're, and that cleared up all the comms issues and everybody was able to talk to everybody whenever they needed to, um, so that helped out.

Um, but basically, communications is always going to be the hardest part of any organization, of any activity and any task, regardless if you have two people working a task. So it just took us all to sit down and just focus on defining that and, The solution was we wrote our comms plan on a whiteboard, rolled that whiteboard out to the middle of the hangar. And every day people would go and check that one whiteboard to make sure they knew how to talk to who whenever they needed to.

Mari: It felt like we went back to the Stone Age because, you know, as far as the mechanics on the hangar deck, if we had to tell somebody something, we couldn't just

[18] https://blogs.cdc.gov/publichealthmatters/2018/06/5-lessons/

text it. So we were going to each other's homes, knocking on each other's doors just to say something we could have texted in two seconds.

So I thought I was kind of funny, but it was a challenge. Um, I remember a friend pulling up and was like, 'Hey, they need you at work.' And it was just bizarre to me that he had to drive all the way to my house just to tell me to go over to the hangar deck.

Matt: So for those millions of people on the island who didn't have access to the satellite phone, their families off the island had really no idea what had happened to them, even whether they had survived the hurricane or not[19]. Um, there were some journalists and Good Samaritans who were able to access satellite phones and able to get information off the island in those early days following the hurricane. But obviously they couldn't talk about everyone on the island. So information was very limited. Um, you know, Vanessa, um, can you talk about who was working to get word out that, that you were aware of?

Vanessa: So there were a couple of people that were instrumental in getting information out those first few days. I was very lucky that I did hear from my parents two days after the hurricane hit.

So you know, this happened Wednesday and Friday my parents managed to get WiFi at a little shopping plaza near their house. And so my mom was able to send me a Facebook message letting me know that they were fine, the house was fine, and everybody was fine.

We had not heard from my 99 year old grandmother yet because, again, communications were down, so across the island we couldn't, we couldn't really reach them, um, on that other side.

But other than that, the other way to get information, at least, the people that are in the diaspora, we all found out through, there were two people that were very instrumental. And so one of them is David Begnaud[20], he's a journalist. And you know, he had been covering Harvey and Irma, and so then was placed in Puerto Rico to cover the the hurricane, like to cover Maria. And then also Giovanni Brignoni[21], who was a rapid response pilot for the Puerto Rico Police Air Unit or FURA[22], which is based on the acronym in Spanish. And they were both able to share videos and images of what was

---

[19] https://www.cbsnews.com/boston/news/puerto-rico-hurricane-maria-damage/
[20] https://www.cbsnews.com/news/hurricane-maria-begnaud-reporters-notebook-puerto-rico/
[21] https://www.buzzfeednews.com/article/adolfoflores/with-cell-service-down-puerto-ricans-work-to-connect-each
[22] https://en.wikipedia.org/wiki/Puerto_Rico_Joint_Forces_of_Rapid_Action

going on. These two different men, even though they, they both had their own jobs to do, they really wanted to help the people.

Emily: So for the Coast Guard, immediately after the hurricane, the first thing they did was to check out their hangar where all the things were. So they started pulling out vehicles and getting them in the air or otherwise out and around the island.

Ed: We had pre-loaded our hangar. It's one of the largest in the world for a military unit. And we had all kinds of agencies shelter the, their aircraft in our hangar. Not just for Maria, but we did it for, um, Irma as well, just not as many. But we had a couple hundred assets inside the hangar. I mean, from the Navy to the Army National Guard units that deployed out from the stateside, there were hundreds of cars, boats, aircraft from all over the world in there.

And as soon as we got the all clear, those hangar doors opened, we pushed all those aircraft out, and they got up in the air as fast as they could.

Emily: And I love this part of talking to Ed and Mari because I don't think I fully appreciated how much multitasking needs to happen once they first get their helicopters up in the air, um, because they're not just doing search and rescue, which is an enormous part of their job. They're also surveying what roads that maybe need to be cleared and where people need aid[23]. So that once there's supply chains available, how do you get things to places that you can drive to? If you can't drive to them, do you airdrop to it?

Mari: So I remember flying and we were doing a lot of, um, I guess surveying, recon, seeing where we could fuel our aircraft, where we could land, could not land, what hospitals were intact, things like that.

Emily: And I thought that was a really, really interesting thing that I had never thought about because I always assumed that search and rescue was a different task from the people who were providing sort of damage control, which I thought was different and had a different group of people. who are providing, you know, resources, whether that be food, water, et cetera. And the answer is no, not at the beginning, right? At the beginning, it's, it's just the folks in the air and they're doing all the things.

Ed: We actually got our, the locals who are from Puerto Rico. I'm half Puerto Rican, but I've never been there until this tour, right. But, um, some of the, the, like we had a pilot who has coffee farms up there and they help map out the locations of highest probability where people needed help.

---

[23] https://www.defense.gov/News/News-Stories/Article/Article/1553975/

That and we're also in comms with, uh, our higher Coast Guard authority in San Juan. We got a bunch of Air Force cargo planes that were dropping off cargo in various locations, sending reports back to us, too. So, the, one of the biggest things was that we built, uh, communications network between all the aircraft that were actively flying, and getting all those reports back down to the ground stations. That's how we knew where to go when.

And, kind of like, you know, uh, we're triaging the island, kind of how an emergency room triage is when a mass flow of patients comes in, right? So, the places with all the damage that need tarps, that need, you know, ground assistance to just at least provide some form of sheltering, we launched all our forces there, uh, via air.

You know, we knew where to go to land to drop off tons and tons of food and water[24] in baseball fields and stuff. So it was a coordinated effort the whole time. We, we never stopped doing search and rescue while we were offloading food and water. But search and rescue decreased more and more as time went on and it just became a, a rebuild effort.

Matt: And that's where that perspective, that view from the air is so important, because you can actually see the literal landscape of, of what has happened, right? How things have been affected, where people are that need help, um, and you're not going to get that sort of, you know, aerial view any other way.

Mari: I do remember just being in complete, just utter shock that the palm trees, they were just sticks. There's not one piece of green, anything on anything. So no leaves, it was just a bunch of sticks, um, damaged roadways, washed out mountainsides.

Um, really what impacted me the most was when we flew over the center of the island. So Puerto Rico has its um, Cordillera Central in the center and the way the winds hit there, the updrafts, downdrafts, all that turbulent wind. The homes looked like they exploded. It was just rubble. I remember looking down and seeing a family sitting on what used to be their house, but it was rubble and they were sitting on a couch. Just sitting there amongst all the rubble.

So that really impacted me greatly because I'm half Puerto Rican and my family was, they were in the Southwest side of the island, so they weren't impacted, um, too much, but it just felt like those were my families and this, the utter destruction is just, there's no words for it.

Pause

[24] https://www.dhs.gov/medialibrary/assets/images/26668

Emily: And just the nature of being an island sort of changes the dynamic from maybe having hurricanes landing sort of in the mainland of North America, right? Um, you're just isolated in general, because you're surrounded by water on all sides, which means getting things to and from the island are just going to be different.

And so when you have a loss of power, or you have a loss of internet or cell phone service, somebody isn't just trucking in sort of temporary things to sort of put a bandaid on that for now. It's like, if you don't have it on the island, you're not going to get it. Until you can start getting fresh supplies and infrastructure to the island in order to help make that happen.

Vanessa: Yeah. And also, um, it's good to know that we have this massive radar system[25] that's housed in the island itself and it's for weather and for aviation and it just got completely destroyed. So it took about three days for people to actually be able to reach it to fix it. So that's another thing, that you can't have planes come in if you don't know what the air traffic situation is.

Not that there was any traffic at the moment, but you still also need to know what the weather patterns are. Because even though the hurricane was gone, there's still other systems that could be hanging out.

Emily: Once runways were cleared and authorities were sure there weren't other weather systems threatening the island, airlifts of supplies started coming in.[26]

Mari: On an air station level, we couldn't help distribute resources until I remember specifically one of the biggest hurdles was the airport there in Aguadilla the runway was not clear, so aircraft cannot land or take off. But once that happened, I remember Air Force, like C-5, C-17s coming in. I remember Coast Guard C-130s coming in, and they brought in the resources, the pallets with all the MREs, the water. They had boxes of flashlights, blankets, all kinds of things. And at that point, then we could start distributing to the island, essentially.[27]

Ed: After that came the big heavy lift of, we loaded every aircraft up with food and water and we were just dropping food and water all over the island. And that's what we focused on for, like, two or three weeks. And, um, it was, it was, uh, amazing. I mean, we had 53 foot semi trailers full of food and water just backing up into the hangar, moving that stuff onto aircraft and then flying the aircraft, landing all over the island.

---

[25] https://www.climate.gov/news-features/understanding-climate/hurricane-marias-devastation-puerto-rico

[26] https://www.dla.mil/About-DLA/News/Energy/Article/1324431/reserve-citizen-airmen-deliver-aid-to-hurricane-maria-victims/

[27] https://www.nytimes.com/2017/10/03/us/puerto-rico-aid-fema-maria.html

And hordes of people from communities would come up. And on top of that, um, we coordinated ground efforts as well. And, uh, and we led, uh, one effort with, uh, it was a 19 vehicle convoy, including a giant trailer. And we hauled thousands of tons of clothes, food, and water up into the mountains of Utuado. And that community was just so grateful.

Matt: Helicopters delivered and dropped tons of aid directly into communities hardest hit by the hurricane. And that's one of the great benefits of helicopters is their maneuverability. This is also why most of their air assets the Coast Guard has are helicopters and why the Museum's one Coast Guard aircraft is a helicopter hanging out at the Udvar-Hazy Center[28], though not a helicopter that worked Maria in particular.

Emily: We actually talked about this helicopter, Matt. This was a helicopter we talked about in one of our episodes from, season two[29], which means like, we're gonna need some loyal listeners to have remembered that one. (Matt laughs) Um, which was all about, um, a rescue from an oil tanker disaster.

Matt: Ah, that's right. Yeah.

Emily: But as you said, the reason our Coast Guard aircraft is a helicopter is because they're such a fundamental part of search and rescue, especially after big natural disasters like Maria.

Matt: Yeah, absolutely. And, you know, after Maria, the Coast Guard was responsible for giving a lot of help, getting it to a lot of people all over Puerto Rico, but as Mari is quick to point out, everyone who was living on the island was doing their best and helping out whoever they could, wherever they could.

Mari: The Puerto Rican people, I've never seen such resiliency and such love, such brotherly love. Everyone was helping everyone. From the second that hurricane passed through, it was all hands on deck.

Amongst such chaos and such terrible devastation, there is a beauty in it as well. And I think that we are all marked from it. And we all grew from it for sure. I recently talked to my neighbor there, um, about some other thing. And she, again, this is a lady in her 60s, and she says, no one will ever understand what we went through in those, in those days, and that Maria changed every Puerto Rican's life, forever from that day forward.

---

[28] https://airandspace.si.edu/collection-objects/sikorsky-hh-52a-seaguard/nasm_A20160034000
[29] https://airandspace.si.edu/stories/editorial/airspaces2ep6

Emily: Mari and Ed told us it was sort of about two weeks of all hands on deck for rescue and aid dropping and road clearing and organizing of flights before some of those tasks started to slow down enough that they were able to really turn their attention to looking at the infrastructure that needed to be managed, and actually start having conversations about what needs to be rebuilt and how.

And I think it's really easy to forget when you don't live in a place like Puerto Rico that rebuilding infrastructure isn't a thing that happens in just a couple of months. It's a thing that's kind of still ongoing[30].

Vanessa: Definitely. Ongoing is a very good word for this[31]. And when you live on an island that is in the middle of the Caribbean, and as we mentioned earlier, gets battered by storms and hurricanes on a very frequent basis. And then shortly after Maria, also started experiencing a bout of earthquakes, lots and lots of earthquakes.

Yes, it keeps coming. In terms of the infrastructure, like right after Maria it took months for people to be able to restore power, right? My parents, again, lucky-ish because they got power in December.

Emily: Three months!

Vanessa: Yes. And like I said, they were on the lucky, you know, side of things. There were people that it was almost a year.

Emily: That 11 months that it took for folks on the island who lost power to regain it after the storm is the longest blackout in U.S. history.

Vanessa: There are still places that have those blue tarps on their roofs. Six years into it, there are definitely still issues when it comes to that, housing, um, the roads, definitely. I mean, some have gotten a little bit better, uh, but that's another thing, just the roads, there's so much that just hasn't been able to get fixed, even this long after the fact. We keep experiencing other natural disasters, so whatever inroads you make, to make things better, it still gets kind of walked back because there's another disaster that happens. So all you can do is kind of hope that at least there's better preparation for what's to come.

Emily: Well, and on one hand, it's, you know, it's an opportunity to not just fix your infrastructure, but also update it, right? And so in places like this where, you know, you

---

30 https://www.gao.gov/blog/hurricane-recovery-can-take-years-puerto-rico-5-years-show-its-unique-challenges

31 https://abcnews.go.com/US/puerto-ricans-recovery-hands-6-years-after-hurricane/story?id=103377089

have the potential for lots of storms, parts of the island that historically wouldn't have gotten hit quite so bad by these kinds of storms are now going to experience an increased flux of severe storms, and so this is that opportunity to say, Hey, maybe we should be putting all of our utilities in the ground, right? Which is if you're in a place where you get a lot of storms, whether they be snow or wind or water, um, burying your infrastructure is often a really good way to protect from these really big interruptions and destruction of that infrastructure.

And there's resources that are provided to places like Puerto Rico, um, in order to help make these, not just repairs, but these upgrades. But upgrades take a lot of time. And even though, you know, we're talking about a lot of money, like $900 million from the FCC, um, just to deal with communications infrastructure. Does that include the power? I don't know. It certainly doesn't include roads. It's certainly not going to help folks with their roofs. I mean, it is big money to fix all of this stuff[32]. And this is a hard ongoing thing.

Matt: Yeah, and this idea of rebuilding in a stronger way, uh, and becoming more resilient is also a lesson that the Coast Guard learned from this experience, and along with the rest of the island, the Air Station that they occupied was also without power, without water, in the weeks after the storm, and, you know, they didn't want that to happen to them again[33].

Ed: I think one of the biggest lessons learned is that the Coast Guard had to refocus on resiliency, right? Resiliency of the infrastructure that they own at the various air stations and bases and resiliency on those amenities, I think is the right word, that the families depend on.[34]

So we've really taken a big focus effort because of hurricanes Maria, Irma, and Harvey we got a very large congressional supplemental funding[35] to outfit all the, uh, locations that have these significant weather events with, backup generators, a redundant water supply system. We're trying to make all the bases resilient to be completely, uh, be able to

---

32 https://slate.com/technology/2018/06/the-fcc-plan-to-restore-puerto-rico-internet-and-phone-service-has-a-trade-off.html

33 https://www.news.uscg.mil/Press-Releases/Article/3474534/coast-guard-celebrates-groundbreaking-ceremony-to-rebuild-from-hurricane-maria/

34 https://adcengineering.com/improving-u-s-coast-guard-base-detachment-and-air-station-borinquens-infrastructure-ensures-resiliency-to-future-storms/

35 https://appropriations.house.gov/sites/democrats.appropriations.house.gov/files/Emergency%20Supplemental%20Summary.pdf

operate by themselves for 14 days straight, you know, which that includes fuel reserves, you know, and everything.

Um, so on, on the infrastructure side, we learned all that. And if you were to walk onto Air Station Borinquen right now, uh, there's over 150 homes on that property. And I mean, every house used to have a family in it. And now there's hardly any families because they've got all the streets torn up. They're redoing the stormwater system. They're, they're burying all the utilities. I mean, they're doing everything right, now. And that'll, that'll make it easier to manage and we'll have less of this recovery effort after the fact.

Emily: So in addition to, you know, rebuilding infrastructure, hardening that infrastructure, the Coast Guard has actually shifted some of their training to incorporate not just water search and rescue, but also urban search and rescue.[36]

Essentially, training modules that are going to address specific search and rescue needs in places on land, um, in towns and cities that also experience major effects from hurricanes.

Matt: What we've been seeing in recent years is more and bigger storms continuing to make landfall. And it seems to say that stronger infrastructure and better training is going to be key to saving lives and protecting people's homes as we move forward. So hopefully the next time a hurricane like Maria hits, everyone will be better prepared.

AirSpace Theme up then under

Matt: AirSpace is from the Smithsonian's National Air and Space Museum. It's produced by Jennifer Weingart and mixed by Tarek Fouda. Production help by Sofia Soto Sugar. Our social media manager is Amy Stamm.

Special thanks for this episode to Sean Cross and the Coast Guard Aviation Association, Ancient Order of the Pterodactyl[37], for connecting us to Mari and Ed.

For additional content, photos, and more, follow AirSpacePod on Instagram and Twitter. Or, sign up for our monthly newsletter using the link in the show notes.

AirSpace is presented by Olay and distributed by PRX.

AirSpace theme up and out

---

[36] https://www.usni.org/magazines/proceedings/2019/august/coast-guard-needs-urban-sar-assets
[37] https://aoptero.org/

PRX Audio Logo