

Disasterology with Dr. Samantha Montano

Ologies Podcast

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Oh hey, it's room-temperature cheese, which you always forget is better than cold cheese, Alie Ward, back with another episode of *Ologies*. You know, every week I worry, "Will I make a good enough episode for you? Am I going to bungle it?" This one is a disaster, and I'm happy to report it's a disaster in the best way.

I'm going to get a few formalities out of the way up top. I want to thank the Patrons at Patreon.com for making this show possible. For as little as a buck a month you can donate. Thank you to everyone wearing Ologies merch from OlogiesMerch.com. Thanks to everyone who tells a friend – or lover, ooh – about the show, and who rates it and subscribes to keep it up in the charts. And most importantly perhaps, reviews, because you know on days when I'm eating peanut butter in a hotel room for dinner, I read them and I smile like a creep with a warm heart. Such as for example, this one by TumblrMobile,

Not to be dramatic but listening to Ologies has been helping me slowly climb out of the depressive funk I've been in for the past six months. Thank you, DadWard, for being curious and insightful.

And SocioKathy, hello to your inner curious science kid, from my inner curious science kid and the rest of the ologites. Thank you for your reviews everyone, I read them all. I read all of them. Proof, there you go. Okay. Disasterology. Let's get into it!

This one has *got* to be made up, right? No, shut your mouth. How dare you. It's in fact a very real ology, and as it turns out, it's a pretty vital one. So, this field of study was pioneered by Dr. Samuel Henry Prince, pretty much, after the 1917 disaster in Halifax, Nova Scotia – Whew! I just read about this – in which a French vessel full of gunpowder caught fire, exploded in a harbor. It leveled buildings for half a mile, sent a shockwave that instantly killed 1,600 people and injured nearly 1,000 more. 300 folks later died from their injuries.

This was a catastrophe so huge, so tragic, it wiped out 22% of residents, including a neighboring community which perished in the resulting tsunami caused by this blast. This was huge.

So, Dr. Sam Henry Prince, a sociologist, began studying why disasters happen, how to mitigate them, how to respond and recover. 100 years later and there are now whole research arms dedicated to these fields. When I first heard that disasterology was a thing, I wanted to sit down and I wanted to talk to someone who, as their life's work, focuses on making death and chaos into prevention and recovery.

So, I googled 'disasterology', and the first 1 million results were about a San Diego pop punk band called Pierce the Veil, and their song "Disasterology", which seems to be, from what I can surmise, about getting wasted and having girls crawl out from under your bed. However, there is a very sweet, screechy refrain that goes, "If it's the end of the world, you and me should spend the rest of it in love." And you know, it's not wholly inaccurate. I thought this episode would focus on ear-splitting havoc, discomforts, like a Pierce the Veil song, but really it left me with a faith in humanity, and love, and neurobiology.

So, this ologist you're about to meet has a BS in Psychology and an MS and a PhD in Emergency Management from North Dakota State University. She is an assistant professor of Emergency

Management and Disaster Science at the University of Nebraska Omaha. Y'all her website is Disaster-ology.com! She has the domain name! I *had* to meet her.

So, on a rainy, April afternoon I traveled thousands of miles from home to meet her on campus at North Dakota State University and we pulled up a few chairs and dug into, what is a disaster? What is a catastrophe? What risks do responders take? What are some of the worst historical disasters? What can we do to protect ourselves? Do doomsday preppers know what's up? Which disaster movies suck the most? Should we be afraid of "The Big One"? Should you donate money or get your ass down to a disaster zone? How much looting happens when this shit hits the fan? And why keeping calm is one of the safest things you can do.

So, batten down the hatches, get cozy in the cellar, for Emergency Management Professor and Professional Disasterologist, Dr. Samantha Montano.

Alie Ward: Of all the of all the episodes, I feel like this is going to be the hardest one to pick, because you're like, "Oh yeah, there's some charities." When I found out you were in North Dakota I was like, "Oooh, I'm coming for ya!" And now, how long have you been a disasterologist?

Dr. Samantha Montano: Well it depends on how you define a disasterologist. I've had my doctoral degree in emergency management for two years now, and then before that I was in grad school for five years, and I did four years of disaster-related work before that.

Alie: What does disaster-related work entail?

Dr. M: So, I got my start in disasters right after Hurricane Katrina and the levee failure in New Orleans. I was in high school at the time.

Aside: Side note, this was in August of 2005. Hurricane Katrina was a category 5 storm that hit Florida and Louisiana. New Orleans, which sits below sea level, was protected by miles of levees and floodwalls, in which over 50 breaches and major leaks occurred, leaving 80% of the city flooded after the Hurricane. Over 1,800 lives were lost. Sam, who's originally from Portland, Maine, went to New Orleans in the aftermath.

Dr. M: And there was a group from my high school going down to New Orleans to help gut homes and rebuild. So I went on that trip to volunteer for a week and I kind of just got what we call the 'disaster bug'. So I ended up moving to New Orleans when I graduated, and I lived there for four years doing all different kinds of recovery work with different nonprofits in the city. And then it kind of just spiraled from there while I was there.

The BP Oil Disaster happened along the coast and so I did some work with that in different organizations. Then I took a group of volunteers to Joplin, Missouri after their tornado, and I just kind of kept going until I went to grad school.

Alie: And when you say you got the disaster bug, "as they say," you're not the only person who calls it the disaster bug?

Dr. M: No. [*both laugh*] I don't know who started that but it's definitely a saying, particularly among practitioners and people who do a lot of volunteering during and after disasters.

Alie: What is the disaster bug?

Dr. M: Uh, I don't know, it's like you're being drawn towards disasters when they happen. I think you just notice them more frequently, especially when you are going to a disaster during the

actual response and into the very early days of recovery. It's this very unique feeling within a community that's going through that, so getting the disaster bug is kind of like, not liking that feeling, but kind of being drawn towards that.

Aside: I couldn't find the exact origin or first usage of this phrase, but it's definitely in parlance in the disaster community. In one 2017 disasterology workshop titled, "Preparing for the Future of Disaster Health Volunteerism," Sean Casey, who's an acting director of an emergency response unit said, "Many volunteers get the bug to complete more disaster response deployments." This did not satisfy me though, so like a woodland creature I decided to burrow into Google, screaming, "Why? But why the bug?!" into an ever-deeper trench.

And I found the research of UCLA's social psychologist Dr. Shelley E. Taylor, who for decades has studied the role of the hormone oxytocin in stress response and she theorizes that oxytocin leads us to, "Tend and befriend in times of chaos or disaster." So, the disaster bug. It is a thing and it may also be chemical!

Alie: Is there something about the unity that happens after a big event like that?

Dr. M: Yeah, Rebecca Solnit has written an entire book about this actually. It's called *The Paradise Built in Hell*, and basically the title of that book is kind of describing that feeling that a community goes through. It's like this paradise because there is this sense of unity, and despite what Hollywood movies tell us about disasters, people are actually really prosocial and come together when disasters happen. There's this sense of unity within the community that kind of feels like a bit of paradise. But then of course there's this disaster happening around you and so that is the 'Hell' that this paradise is happening within.

Alie: Were you ever struck by that Mr. Rogers quote?

Dr. M: Yeah, the one about the helpers?

Alie: Yeah.

[Mr. Rogers: "Always look for the helpers. There will always be helpers, just on the sidelines. That's why I think that if news programs could make a conscious effort of showing rescue teams, of showing medical people, anybody who is coming into a place where there's a tragedy, to be sure that they include that. Because if you look for the helpers, you'll know that there's hope."]

Dr. M: Yeah, it's really interesting. I think about that quote a lot whenever a disaster happens and it's shared around. I mean that's where that quote comes from, is that no matter how bad a situation is there's always people there helping in various ways.

Alie: And so that's kind of what your work entails, is helping and figuring out how to mobilize people to help more?

Dr. M: Yeah, exactly. So, within the world of disasters, the part that I study is emergency management. So it's how we actually manage the disasters. How do we make sure that the right people are in the right places at the right time? How do we do things to prevent disasters from happening in the first place? What do we need to do ahead of time to make sure response and recover to disasters goes well? How do we get communities recovered as quickly as possible?

Alie: How do you define 'disaster', and how do you define your role as a disasterologist? I know you weren't the first person to necessarily utter the phrase, but maybe the first to take ownership of it since, like, the 1850s or something.

Dr. M: This is shocking, but there technically is not a consensus on the definition of disaster. ["*What? Why not?*"] There are some different ones out there that people are kind of drawn to. When I explain it, I think the easiest way to think about it is that it's when a hazard – meaning something that poses a threat to us – interacts with us, our communities, the things we care about, to the point that we are overwhelmed. And so at that point, that hazard has become a hazard event, and then hazard events kind of fall along this spectrum. That's one way to think about it. So you have emergencies on the low-end, disasters in the middle, and catastrophes on the high end.

Alie: Oh wow.

Aside: So, it kind of fades up like an ombre of horrors.

Dr. M: In emergency management we study all three. But yeah, they kind of fall along this spectrum.

Alie: So, a catastrophe is worse than a disaster?

Dr. M: Yes.

Alie: It's funny because we think of those words only in hyperbole of, like, [*snobby voice*] "I got a latte that was a catastrophe." [*both laugh*] How do you feel about the show *Catastrophe*? Are you like, "Calm down!"?

Aside: Quick aside, I love the show *Catastrophe*. It is wonderful.

Dr. M: No, it's fine. Words have different meanings in different contexts, so it's fine.

Alie: Okay! As long as you know they're hyperbolic.

Dr. M: Right, of course.

Alie: I have called my hair a disaster so many times, and my apartment a disaster so many times, and it's a little different! So, when it comes to your role from a professional sense, how do you get a degree in it? How is that even structured? How are you teaching it? What's the academic aspect of it like?

Dr. M: Sure, so I did not know anything about emergency management, I did not know it was something you could get a degree in at all.

Aside: Samantha did her undergrad at Loyola University in New Orleans, and one of her professors had gone to the University of Delaware, which is home to the Disaster Research Center. This is a real place, the Disaster Research Center.

Dr. M: And so when I demonstrated this interest in disasters, she recommended that I look into grad school as an option. I started looking into emergency management programs for my master's degree and there are... at that time there was a bunch around the country of, kind of, varying quality. So I just picked what I thought were the top three and applied to them, and then I went with the one that gave me the most money which was NDSU! And that is how I ended up in Fargo, North Dakota. [*both laugh*]

Alie: A lot of disasters come through here? Tornadoes?

Dr. M: Yeah, we do have a tornado risk but mostly it's the flooding from the Red River.

Alie: Oh my gosh. So when it comes to disasters, what are some of the most common ones that start as hazards and end up disasters?

Dr. M: Flooding is the most common one, for sure, around the world.

Alie: Really? I didn't realize that.

Aside: How many floods happen a year? What are we talking? I live in a place where you have to remember to water a cactus, so I looked it up and a Weather.com article from 2018 was titled not, at all rosily, "A Concerning Trend: Flooding Deaths Have Increased in the U.S. the Last Few Years."

It said the average number of flood deaths used to be 86 - this is for the last several decades - and then it jumped to 95 flooding deaths a year in the last ten years, and then over 100 deaths a year in the last few years. So like flood waters, it's on the rise.

Now in India, right now, (August 2019) just this very monsoon season, 1.2 million people have been displaced and evacuated with over 200 casualties. Floods, not a good scene.

Alie: And what can be done about that?

Dr. M: There are a lot of things. This is one of the key things we do in emergency management is look at, "What are the factors that are actually leading to this disaster happening?" Because once you identify those factors, then you can start to try to do something about those factors.

So, in terms of flooding there's a ton that we can do. Some of those things are related to, kind of, addressing the hazard itself, so mitigating climate change itself is going to pull back on some of that hazard risk in terms of flooding in various ways. So that is one way you can drive at the cause of disaster.

Aside: So just like, fix climate change. Easy-peasy. But on an individual level, if you live somewhere that's, say, prone to flooding, you can raise your house, Samantha says. You can put up a flood wall or otherwise modify your own property. You can also go to Craigslist, buy a helicopter, and park it on your roof.

PS, I just looked up: how much does a helicopter cost? And it's about a half million dollars. But if you don't mind a single-seater, without doors, that looks like it's made out of plastic, you can find them on AeroTrader.com for less than a used Audi would cost. You probably need to take a "How to fly a chopper" class first though. It's probably, like, harder than a stick shift, but I'm not a doctor.

Dr. M: And then also we can do things at a community level. Obviously, communities build levees, build other bigger infrastructure projects. There's kind of a push now more towards more natural types of mitigation, like revitalizing wetlands and whatnot. You can do home buyouts. That's something we've done in Fargo along the river, where you buy out people's homes and then turn that back into green space or a park or something so that when it does flood it's not too big of a deal and doesn't cause too much damage. So yeah, lots of different things you can do.

Alie: And what was your experience like in the aftermath of Katrina? I know that is a huge question. How would you quantify that? Because it was a hurricane-caused a flood.

Dr. M: When you go to New Orleans and you mention Katrina, you'll hear New Orleanian say something along the lines of "Hurricane Katrina *and* the levee failure." And what they are getting at there is, that yes there was a hurricane, that was the initial trigger of everything

that happened. But it was that hurricane interacting with the levee system that hadn't been maintained and not built correctly that led to the actual flood of the city. So, this also gets at this other kind of common myth in the disaster world.

We have this term 'natural disaster' that we use all the time, but really disasters aren't natural. They're caused by decisions that we make, and how we build, and where we live, and the policies that we have that are driving these things. And so, we can have natural hazards, the hurricane itself may be natural, the tornado itself is natural, but that point where it interacts with us, then it becomes, you know... we're involved in that now.

If you look back at the way we've thought about disasters in the past, like way back when, you think about them as "Acts of God," then we switched more to this idea of natural disasters, still removing human responsibility from those disasters that have happened. Now there's this push among disaster researchers and others to pull back on that and acknowledge our role in causing those disasters.

Alie: In that it wasn't planned for properly, which then I guess would switch the hand to having more control in the future of how bad they are and how bad the impact is, right?

Dr. M: Yeah, exactly.

Alie: Were you ever raised with Sunday school, with like Noah's Arc and the notion of floods? Was that something that stuck with you?

Dr. M: No, I wasn't, we weren't religious growing up. But people often joke that Noah was the first emergency manager.

Aside: So, a huge vessel on the high seas wherein you are expected to bone a lot. So, Noah, he was also the world's first cruise ship captain.

Alie: When it comes to your work, how much of it is distributing water and getting places for people to stay, and how much of it is on the front end where you're trying to enact policy change and make sure that people are better prepared?

Dr. M: In the US, the way that we generally deal with disasters is that we're really reactive. So, we wait until a disaster happens and then we're reacting to it. That's not good. We need to be proactive. We need to be doing things ahead of time.

Aside: Okay, get ready for a list of four things. This is the base of disasterology, the order through the chaos.

Dr. M: So, this might help. We split disasters up into four phases.

You have mitigation where you're doing things to prevent disasters from happening.

You have preparedness where you're doing things to get ready to deal with the response and recovery.

Then you have response, which is that 72 hours where you're doing life-saving tasks; that's probably what you think of when you hear about disasters.

And then there's the recovery process which, depending on the situation, can go on for months, years, decades.

Aside: So, mitigation, preparedness, response, and recovery.

Dr. M: So in emergency management, we deal in all four phases and obviously that is a lot. So, it kind of depends on what community you're working in and what the situation is. But

emergency managers are doing a lot of their work in preparedness. They're writing plans, they are doing initiatives to help individuals in the community prepare for disasters. They're doing all of those... getting themselves ready for response and recovery. The actual distribution of water and getting people into shelters, all of that happens in this very small window of time, again, like 72 hours, sometimes a week, sometimes a little bit longer. And then you move on into recovery.

Alie: Were you always very helpful as a kid? How many siblings do you have?

Dr. M: I'm the oldest of four.

Alie: Okay, alright!

Dr. M: And I'm much older than them. So yes. *[both laugh]*

Alie: Were you always putting out figurative fires?

Dr. M: Yeah, you could say that.

Alie: Yeah. So has it always kind of been in your nature to help out when you can?

Dr. M: Yeah.

Aside: Okay, side note. Is this an isolated incident, or do firstborns get more shit done and just like helping people? I read up on one study – done of men – in the Swedish military and researcher Dr. Sandra E. Black was looking into if birth order had an impact on non-cognitive abilities like leadership skills. And she writes in one article about it:

Higher scores were assigned to those subjects considered emotionally stable, persistent, socially outgoing, willing to assume responsibility, and able to take initiative.

She crunched the numbers, later-born children have systematically lower scores on all of those attributes.

Now first-born children tend to have jobs that require more sociability, leadership ability, conscientiousness, agreeableness, emotional stability, extraversion, and openness. So, firstborn kids tend to have important jobs like CEOs, and lawmakers, and politicians. What's Dr. Sandra E. Black's stake in the game, you wonder? Oh, she's a firstborn. Hm! Huh! So I will now be pursuing my PhD on the thesis, "So *what* if I'm the last born? Maybe I was too busy getting dunked on and being tricked into giving my toys away when my sisters lied to me, so I became the family buffoon to escape persecution and that is why I work from pajamas writing content about lizard dicks, OKAY?" [*"Girls like swarms of lizards, right?"*]

Alie: I think when people think of disaster recovery, they do think of that small window of time when you're on the ground, and you're seeing things, and you're helping out. Do you find that some people think that they're cut out maybe for this work and it's just too difficult or too emotional for them?

Dr. M: Maybe. I think going back to that disaster bug thing, I think that people who say they've caught the disaster bug, are the people who are cut out for it. So, I guess there is something about it that some people seem to be more capable of handling for extended periods of time.

Aside: Going back to recovery, remember Samantha spent her undergrad in Louisiana after Katrina and the floods and this was a massive catastrophe. Again 80% of the city flooded. Human bodies floated in the floodwaters for days at a time. Infrastructure was out all over; people left and never came back.

So, for this episode I went back and looked up some AP photos of the direct aftermath and I literally cried over my laptop and then had nightmares. The scale of this tragedy was unthinkable. So what was her experience like there?

Dr. M: When I lived in New Orleans, I lived there for four years, I was going to college. I was mostly living on campus in uptown New Orleans. You could walk around outside and not really know that Katrina had happened in the past few years. There were some signs here and there, but for the most part things looked “normal.” But because of the organizations I worked with and the other things that I did, I was regularly spending time in all different neighborhoods throughout the entire city.

When you live in a place that is going through a recovery, especially of the size of Katrina’s recovery, it affects every aspect of your day. From certain roads being closed down because they’re still doing construction on those roads, or fixing the sewer lines for the first time since the storm years later, or trash and recycling not being back, or it being two to three years before the streetcar starts running again. Every different aspect of the city had to be rebuilt. So, you’re operating within this space that is not operating at its full capacity, and so that kind of eats at you. That affects your daily life.

And even I, who was very much still removed from that... I myself was not going through a recovery. I myself was living in a place that was recovered, and even then, when I left New Orleans, I felt the difference of moving to Fargo and being in a community that was all put together and operating the way you expect a community to operate. And so yeah, it definitely eats at you.

We also see that in the research in terms of people’s mental health and the way that stress manifests during recovery. You see an increase in domestic violence, an increase in suicides during recovery among people who are going through that process. Yeah, it’s extremely, extremely difficult to go through, particularly as a survivor of that disaster.

Alie: Does it ever affect you to see how people respond to certain disasters as opposed to others? Or how policymakers or political officials will respond to certain communities affected or certain disasters? Is that something that ever might get your goat?

Dr. M: Yeah, I’m mad, like, all the time. [*both laugh*]

Alie: Okay, that’s what I figured.

Dr. M: Just constantly mad, yeah.

Aside: Just a side note. We recorded this in late April, the world had just watched France’s structural jewel, Notre Dame Cathedral, burn in part to cinders and collapse. Over \$1 billion in donations poured out of pockets, and the church reported that most of it was from small personal donations. So okay, they raised a billion dollars very quickly, fine. It’s Europe. There are so many countries that would chip in. But I just read a recent *Travel and Leisure* article that noted an estimated 90% of the donations didn’t come from Europe, they came from the US.

So, what about Puerto Rico, hobbled by Hurricane Maria? They got less help from the US Federal Government than Texas and Florida did for hurricanes Harvey and Irma. And as for personal donations, folks gave about \$32 million to Puerto Rico, as compared to that one billion for a Paris church. Hurricane Maria’s death toll in Puerto Rico, which is a US territory, is estimated at 3,057 people. The death toll for the Notre Dame fire? Zero. Huge financial discrepancies there.

Dr. M: Certainly, everything about disasters is injustice manifesting; who is affected most directly by disasters, which communities are affected, in what ways they're affected. Their ability to prepare for disasters, their ability to mitigate disasters, their ability to recover, their ability to literally survive disasters, all of this is tied to policies that are shaped by race, class, and gender. And all of those inequalities come out in the middle of a disaster. Those inequalities exist in all four phases, but of course it's during the response that they are most visible and in everyone's face.

Alie: Mmhmm. Kanye West, sometimes just calling 'em out on a telethon. [*Kanye West: "George Bush doesn't care about black people."*] Vintage Kanye West, that is.

Aside: The golden days of Yeezy, before red hats and proclamations that slavery is a choice. So next time someone gets unhinged on Twitter and pisses off huge swathes of the nation, you can ponder academically, "Is this a PR emergency? PR disaster? Or a PR catastrophe?"

Alie: When it comes to disasters coming up verses how they were 10, 12, 20 years ago, not to use the word forecast too on the nose, but are we looking at more disasters? And less preparedness?

Dr. M: Yes, we're definitely looking at more disasters if we continue on the trajectory we're headed, based on a couple of factors. One, climate change. Two, the number of people and where they are living. And three, the way we're building. Those are the three big factors that are going to be driving that increase in disasters. So it's a little bit difficult to tell, but generally that's the trajectory we're on, for sure.

Aside: Let's touch on a few historical disasters, shall we?

Dr. M: So, I started my understanding of disasters probably back mid-1800s like The Great Chicago Fire, then going to the Galveston Hurricane of 1900, the San Francisco earthquake and fire in 1906, Mississippi River flood of 1927, the Dust Bowl, and then kind of back up into more modern disasters.

Alie: How have disasters changed since 'ye olde disasters', as we might call them?

Dr. M: Well, a lot of things have changed. The first thing that's changed is the actual hazards that we have to deal with. Now we have more technological disasters, like human-made oil spills, chemical spill-type of disasters. What we've also changed is the way that we build, the things that we have in our community are just worth more now and they're more complicated to put back together after a disaster happens. Like putting the electric grid back together in Puerto Rico, right? Those types of things are more complicated and it takes longer.

Aside: So what's changed in the last 150 years isn't just better architecture, technology, communication, transportation, soap. But also an increase in government involvement, Samantha says.

Dr. M: But we have FEMA now. FEMA wasn't created until the 1970s. There were some offices that were a precursor to FEMA.

Alie: And what happens when FEMA gets on the ground of a disaster? What type of organization is most effective in getting people help? What's the triage method? Where do they start to assess and act on things?

Dr. M: The response begins before FEMA gets there. So, the first responders to any disaster are the people who are in that community. So, the survivors themselves, the like traditional first

responders – police, fire, etc. They're the first there, the local emergency managers, state-level agencies and offices are all there. And then the federal government comes in.

Aside: So, you might recall photos of the Katrina response. There were houses drifted from their foundations, apartments still standing, and really lovely historical downtown architecture bore not only stains from flood water but also spray-painted Xs surrounded by numbers and codes. And these Xs were kind of crudely slashed on thousands and thousands of house exteriors. And they looked ominous, almost biblical, but you know, instead of lamb's blood, it's just orange spray paint. And these Xs served as warnings and a heads up to other disaster relief workers.

Upon entering to check out the building, one slash was made, and then after searching the property for survivors, the other slash was done, completing the X. So in the top quadrant was the date the structure was searched, and the western quarter notes who searched the property, and the right or the eastern quadrant noted what hazards, like rats or structural instability was happening, and then the bottom section noted the number of living or dead found inside. 0L 0DB means the place was empty, zero living, zero dead bodies. That number wasn't always zero though.

Many survivors of Katrina kept the X markings that were on their homes, even after they repaired all around it. And others had iron sculpture replicas made to endure and memorialize the event after the paint faded. Others kept that memory alive in the form of tattoos, like that hurried spray-painted X was transferred from their houses onto their skin via needle to take to the grave.

Alie: You look at that and it is incomprehensible sometimes to think of how much chaos, how much heartache, how much loss, how much just disbelief and denial people must be in from a grief standpoint and then to try to figure out where do we put people, what's safest? How many people are in this house? I mean, how do you even begin to tackle that?

Dr. M: So first of all, communities have plans in place ahead of time. They're not always great plans but they have them. And anybody who's been involved in creating those plans theoretically knows what those plans are. There is a system that we use nationally to help try to organize and coordinate. And there is a national framework for which major agencies are in charge of different areas, like sheltering versus search and rescue.

So there's some breakdown in that sense, and also, once we're talking about the big disasters here and you have that national involvement, you also have agencies and people that have worked together before on disasters and so they have more familiarity with each other and they're bringing all their experience at past disasters into their response.

Aside: So, there's FEMA but also more grassroots efforts, Samantha explains.

Dr. M: So, what happens during disasters is that people look around and they see that help is needed and they work together to address those needs. Sometimes these emerging groups are like little search-and-rescue groups in the neighborhood that start going around knocking on doors to check on people, sometimes it is a group of people getting together to open a shelter in a church that they weren't expecting to have to do, but there's a need for it so they do it.

We also have this convergence of people from outside of the impacted area coming in. Within that convergence you have volunteers coming from the outside area to back up the survivors and help them address the needs.

And so, when a disaster happens you have this formal system that's operating under this plan and procedures that they've thought through, and then you have this informal system doing whatever they think needs to happen in the moment. And that can be very frustrating as you can imagine, for those in the formal system.

I am more sympathetic to the informal system; I think they're great. They are really flexible because they don't have any rules or procedures that they're really following. They're really flexible and can meet whatever the needs are in that moment.

And so when you look at a disaster that's happening, and if you're having a sense from the media that a response isn't going well, sometimes what's happening is that there's been some kind of breakdown in that formal system, and where people's needs are still being met, it's happening through the informal system.

Aside: So, sometimes these big systems get the attention while the more grassroots efforts pick up the slack.

Dr. M: One of the key things about Puerto Rico is that, because Puerto Rico is in fact an island, the convergence from outside wasn't able to happen as quickly as it was able to in Texas during Harvey, or in Florida during Irma, or North and South Carolina during Florence. It just took longer for people from the outside to be able to get in.

So in Puerto Rico you saw this kind of breakdown in the formal system but you also saw a breakdown in the informal system, which is less usual and that helped contribute to what people were seeing as they watch Puerto Rico unfold and one of the reasons why it was so bad in terms of the response.

Aside: I mean if only they had more paper towels. [Donald Trump: "They had these beautiful soft towels, very good towels."]

Dr. M: Puerto Rico had almost everything working against them once Maria formed. They already were vulnerable in terms of the infrastructure on the island and the fact that they are more isolated than some place like Houston; then you had the added issue of the emergency management system already having been strained at that point.

Harvey and Irma had both just happened and, I mean, those were major disasters that took attention from everybody. And so by the time we got to Maria, everybody was tired, people were already deployed, resources were already used up. And then you add another layer of government dysfunction at multiple levels, then add a hurricane and you have what happened in Puerto Rico.

Alie: What happens when the President gets in his helicopter, or whatever, surveys something, scratches his chin, declares it an emergency? There's always that moment when, "They've declared it an emergency!" And you're like "Okay, that must mean some paperwork gets shuffled differently."

Dr. M: That's actually a really important thing to have happen. The way that you get FEMA involved and get the federal government involved more broadly in a disaster is that it has to be a presidentially declared disaster. So, the governor of the state has to declare an emergency, and then they go through a process with FEMA of asking the White House to declare it a presidential disaster.

Once the President signs that, FEMA and the rest of the federal government can become involved and start supporting that specific disaster. It has really, really important implications for recovery specifically. In order to get individual assistance, like for a

homeowner to get individual assistance from FEMA post-disaster, you have to be in a county that received a presidential disaster declaration and has met the threshold for all of those programs being opened through FEMA.

Alie: And I noticed you use the word survivors; I haven't heard you use the word victim, which seems deliberate. And I imagine there's a reason.

Dr. M: It is. Oftentimes we hear survivors described as victims. I tend to use the word victims to describe the people who have died in the disaster and use survivors for those who have survived. It varies, if I'm talking to somebody who has been through a disaster, I use the word that they use. So, if they're calling themselves a victim, then I go with that. But generally, I prefer survivors; one, so you can have that distinction between victim and survivor, but also in the way that it is empowering, I suppose.

Alie: It seems to also pay some respect to the people who lost their lives as well.

Dr. M: Yeah.

Alie: I think a lot of people hear about disasters more in terms of the millions of dollars of property damage or how much it will cost to rebuild but maybe don't always remember the number of lives lost. Is that in part of your work something that you try to shine a light on at all? Or is that something that you feel should be considered?

Dr. M: Yeah, it's certainly something to know and to be considered. I think talking about disaster deaths can be really complicated. This is another thing that kind of came to light for the public during Maria; who counts as having their death attributed to a disaster and who doesn't? There are some like legal and financial implications that are tied to that but then there's also, who gets to decide if a death is attributed to that disaster or not?

We know disasters are so complicated and disasters, to me, aren't just that moment of impact. The disaster is the whole thing, all the way through recovery. That's all still... the disaster is still happening; it's just manifesting in a different way. So to say that somebody who has died from literally drowning in flood waters, their death is obviously attributable to that disaster, but then to me, somebody who has died of a heart attack from being so stressed out about the recovery process a week later, I mean, that death is just as attributable to that disaster, in my opinion. But again, there is this complicated legal situation that is going on.

But yeah, we're not good at counting disaster deaths. It's really complicated. Some of it is a logistics issue of... this is morbid, but going to find bodies and being able to actually figure out who is missing. Of course, when you look back at certain disasters you can see who in a community isn't counted among disaster deaths and who is, so it's all just really complicated.

Alie: And I understand that statistics for heart attacks after an earthquake, they spike a few days later. Is that something that disasterologists look at? Health statistics like that?

Dr. M: Yeah, certainly there are some researchers who look at that. Those would be under the heading of indirect disaster deaths if they're counted at all.

Aside: Okay so quick aside, I remember years ago seeing an article about heart attack deaths after LA's 1994 Northridge Earthquake, and I went and found it. So, the county coroner found a fivefold increase in heart attack deaths the day of the earthquake and a week later the heart attack levels sunk back down to normal. And in an area like New Orleans with this catastrophe like Katrina and the floods, the recovery process itself can be

so stressful that Tulane researchers found an uptick of heart attacks a full decade after the event.

In Japan, after the 2011 earthquake and tsunami, there was an increase in heart attack and stroke deaths for a solid month. And for two weeks after Hurricane Sandy in 2012, the areas of New Jersey that were most impacted saw a 22% increase in cardiac-related deaths. So, given that these casualties aren't always attributed to the disaster itself, counts are likely underreported. And just reading about this is wrenching.

Alie: And what do you think people can do when we're watching the news, and were seeing long lines of people waiting to get clean water, and people who have been displaced, and families who are sleeping in gyms? What can a person do? I know you mentioned a lot of people descend on the area, but through your work I've read also that that can displace people who need a place to sleep because there's all these volunteers that now need a place to sleep. What can we do when we're seeing this, to help?

Dr. M: There are a lot of things that you can do to help. It depends on when it is in relation to the disaster and where you are in relation to the disaster. If the disaster has happened in your community and you see an opportunity to go volunteer, and you can get there safely, and you're not in anybody's way, and you're helping, then that is something that you can do.

If you are away from the disaster when it happens, I usually recommend not going there right away. I recommend usually waiting more for the recovery and, kind of, let that immediate crisis subside before adding yourself to that situation. But you can donate money if you're able to. There are a lot of great national disaster organizations, but then there are also a lot of local nonprofits from that community that are going to be involved in the response and recovery for probably a longer period of time than those bigger national organizations.

It does take some effort and some googling, but usually you can find some of those local nonprofits, and usually any that are working in the community are going to be involved in some way if it's a major disaster. If you do really want to go volunteer and you're from further away then there are usually opportunities to volunteer during the recovery. Again, mostly though those national disaster organizations.

Alie: How do you feel about the way some disasters get covered on the news? Do you feel like it's good to expose them or are you like "Oh, you're showing the absolute worst part on a loop, to get ratings"?

Dr. M: It's complicated. It is certainly frustrating at times to see the classic 'weatherman standing in the ocean as a hurricane is coming', right? That's frustrating.

[various newscasters reporting in a storm: "This is about as nasty as it's been." "This is as bad as it will get." "This thing is like pounding us from behind!"]

But at the same time, the media is a vital component of our overall emergency management system. They're providing lifesaving information to the people who need it, they're sending out warnings, they're disseminating information about evacuations, they're telling people where they can go to get help.

Aside: Samantha says that the news media is also amplifying organizations collecting donations and they're shining a light on how the response is going and if governmental organizations are doing what they can. However:

Dr. M: The media loves to cover a disaster during the response and then they go away. Local news outlets will obviously keep covering the recovery but our local news media has taken a hit and so we really need those national news outlets to be covering those recoveries into the long term. It's difficult for them to do and it's difficult to capture people's interest and attention, but it is so important because as a recovery goes on for years and years and years that community needs money, they need that political pressure to hold governments accountable for giving the money that they've said they're going to give, and to do the projects they've said they're going to do.

Alie: When you're teaching, what do your courses focus on? Where do you even begin to look at this?

Dr. M: For our undergrads they start out with, like, an intro to disaster class where we just give an overview of everything. And then they take one class for each of the four phases; recovery, responses, preparedness, and mitigation. They take a social vulnerability class, they take a planning class, they take international emergency management, so all different classes.

Alie: How do you yourself keep mentally healthy despite maybe seeing some stuff that is difficult?

Dr. M: Well, I compartmentalize.

Alie: Okay!

Dr. M: I don't necessarily know if that's a healthy approach, but that's what we've been doing.

Alie: Yeah, just shut that off, put it in a little box.

Dr. M: Yep! [*"We'll just have to deal with that later."*]

Alie: The Fyre Festival doc, did you see that?

Dr. M: I Did! [*clips from Fyre: The Greatest Party That Never Happened: "We are about to go to Fyre Festival!" "Could be amazing, could be a disaster." "Island Getaway turned disaster!" "Nightmare in Paradise" "There was no music." "They were put into disaster relief tents!"*]

Alie: How'd you feel about the FEMA tents?

Dr. M: Oh man, what a nightmare! I saw a picture of the tents, maybe it was even before the documentaries came out, I don't know. But I saw them and I was like, "Gosh those look so familiar to me! Where have I seen those before?" And I all of a sudden I realized and I was like, "Oh no! Oh nooo!" [*both laugh*]

Alie: When I watched that documentary I was like, "There must be people in emergency management just losing their shit right now."

Dr. M: Wild.

Alie: I know. What a vacay. What a beach safari.

Dr. M: Speaking of disaster, yeah.

Alie: I know, seriously. Disaster movies – Let's talk about 'em. You got a favorite?

Dr. M: Let me start by saying this: I hate all Hollywood disaster movies. The one disaster movie I like is *Beasts of the Southern Wild*. It's not perfect, there are some issues, but I think that's the best one.

Alie: You think it's the most well done.

Dr. M: Yes.

Aside: Side note, I have not yet seen *Beasts of the Southern Wild*, but according to the YouTube link for the trailer, it's set in a forgotten but defiant bayou community cut off from the rest of the world by a sprawling levee. A six-year-old girl named Hush Puppy's life is changed by fierce storm and this tiny hero must learn to survive unstoppable catastrophes of epic proportions. Now I very much want to watch it.

But there is one disaster movie I watched in the theater with two of my girlfriends while drinking concession stand white wine and I don't need to see that one again.

Alie: So, you haven't seen, like, *San Andreas* with The Rock.

Dr. M: I mean I've seen them. I hate-watch them, yeah.

Alie: Did you see *San Andreas* with The Rock?

Dr. M: Yes, I did. [clip from *San Andreas*: "We're going to make it! We're going to make it!"]

Alie: I was just like, "Is he surfing on a tidal wave?? Why is there an American flag at the end??" It was pretty bad.

Dr. M: It was wild.

Alie: What do Hollywood disaster movies get wrong, other than everything?

Dr. M: Probably the biggest issue is that they perpetuate what we call the 'Disaster Myths'. So, there are a series of myths about human behavior that will not go away.

Aside: Boy howdy, buckle up for flimflam.

Dr. M: And Hollywood movies perpetuate them. There's this myth that people panic during disaster, that it's, like, mass chaos and everybody's running around not knowing what to do. When in fact people actually are quite calm, they make rational decisions based on the information that they have gathered around them. They help one another, they're prosocial - going back to that, *Paradise Built in Hell* idea - and they all work together. Related to this is this myth that there's rampant looting during disasters. ["Stores looted; people stampeded."]

That does not happen, research is very clear on this. And so, all of those Hollywood disaster movies, everybody's looting, everybody's running around panicked, freaking out. So yeah.

Alie: But there's usually a white heterosexual male that fixes things, so...

Dr. M: Yes, of course!

Alie: And then he always gets laid at the end! It's amazing! Now, how do you approach people who won't leave their houses? And I'm talking about my parents, specifically. Nancy, Larry!

Aside: My parents are very smart, but also stubborn and historically it had been hard to get them to leave when a storm was headed their way.

Alie: How do you approach those people? How do you get people to leave for their own safety?

Dr. M: Sure. A couple different issues here, depending on the situation. The first is if they are physically, financial, etc., able to actually leave. Once you've addressed all of those issues and it's just somebody being stubborn, my go-to is to tell them to write their social security number on their arm in permanent marker so their body can be identified.

Alie: Ooooh!

Dr. M: Yeah. It's tough, but hey!

Alie: That's a good one.

Dr. M: Yeah.

Alie: What happens when you tell people that? Are they like, "Okay I'm coming!"?

Dr. M: You get a reaction. Yeah.

Alie: Is that smart to do in any emergency, just in case?

Dr. M: To write your number?

Alie: Yeah.

Dr. M: Um, I mean, you could. I don't know.

Alie: You could! It can't hurt!

Dr. M: Sure.

Alie: Let's talk about what's in your trunk. Does your car have an emergency kit in it? Are you the most prepared person ever? Or are you like, "When it comes, it comes"?

Dr. M: I am embarrassingly unprepared most of the time.

Alie: Really?

Dr. M: Yeah, yeah.

Alie: You don't have, like, a month's supply of water in your trunk and a flare?

Dr. M: No, certainly not. Well it depends on where I am at any given moment. Technically you're supposed to have a preparedness kit in your office. I do not have that at all. I mean, I have a preparedness kit at home, but I don't pay a ton of attention to it. Which is bad, you should do that. I am setting a very bad example. [*"I learned it by watching you!"*]

The thing is, it really depends on your situation. Just the fact of having a preparedness kit does not necessarily mean that you are prepared for a disaster. There are some things in there that could be useful to you when a disaster happens, but preparedness is much, much more than that. It's also your social network, and your knowledge of disasters and hazards, and your local knowledge of your community.

All of those things are just as important in different ways than actually having the physical items stockpiled in your house. So again, you should absolutely have a three days' supply of water in your house, which I do. But preparedness is more than just that.

Alie: Do you ever watch *Doomsday Preppers*?

Dr. M: Yes, I have.

Alie: Do you watch it like, "You guys know what's up." Or do you watch it and you say, "You've wasted so much dehydrated corn!"?

Dr. M: My biggest issue with that show is that they pick one hazard to obsess over and prepare for, which is fine but it's usually not the hazard that they're not at risk for. There was one episode many years ago where they were preparing for an economic collapse or something, and so they had all of this stuff stockpiled. They had like a million guns in their house and I think bars of gold or something. And then a wildfire happened and they had to evacuate their house, on the show in the middle of the episode! And the things they had done to prepare were not useful in this situation. [*Doomsday Preppers theme intro: "And that's why I'm a prepper. That's why I'm a prepper. And that's why I am a prepper."*]

This is what I'm saying, we need to take this broader view of preparedness. There are some things that will help you in multiple hazards. Having extra food and water in your house is generally a good thing to do, that'll help you in any situation in which you have to shelter in place. But also, be thinking about how different things are useful depending on what the situation is.

Alie: A wheelbarrow full of gold ingots during a wildfire.

Dr. M: So helpful.

Alie: Just the worst. Can I ask you questions from listeners?

Dr. M: Sure!

Alie: Okay.

Aside: Okay, but before we get to patron questions, a few words about sponsors of the show. But before that, these sponsors make it possible to make a donation to a cause of the ologist's choosing. This week Dr. Samantha Montano chose the Bill Anderson Fund. Bill Anderson was a scholar and a disaster specialist, and the Bill Anderson Fund's mission statement reads:

African American and other minority representation in hazard and disaster mitigation is very important. Research has shown that racial and ethnic minorities often have increased difficulty evacuating prior to a crisis and are more likely to experience disproportionate physical and financial loss during disasters. Our focus now is on students who are already enrolled in graduate school.

So, a donation will go to BillAndersonFund.org. And now, some words about sponsors making that happen.

[Ad Break]

Okay, your disaster questions.

Alie: Anna Thompson wants to know: Who establishes what is a disaster, what is just bad?

Dr. M: This ties back into the presidential disaster declaration. In the US, if an event has that disaster declaration then we consider it a disaster. That's problematic in a few ways that are pretty obvious.

Alie: What if someone's like, "Whew, this is a real disaster!" and you're like, "Not yet. It's not official yet." You have to wait before you can call it that?

Dr. M: Well I mean, I might tell them that on Twitter, but... [laughs]

Alie: It's like announcing a pregnancy, "Not until we get the flyover!"

Aside: Question: so how does the president declare something a disaster? Well, the government of the state, or the Indian tribal government, has to request that something be declared an emergency or disaster and that it has exceeded their resources. They're like, "This is above our pay grade, dude." According to FEMA.gov:

The President can declare a major disaster for any natural event including hurricane, tornado, storm, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm or drought, or regardless of cause; fire, flood, or explosion, that the President determines has caused damage of such severity that it is beyond the combined capabilities of state and local governments to respond.

So, I guess this is where the presidential helicopter tour comes in. He's like, "Oh yeah, whew, this sucks." Now, the next question was also asked by Lacy Gilbert and Steve Kowalczyk.

Alie: Anna Thompson also asks: Who determines the levels for things like hundred-year floods or hundred-year storms? How are people going about reclassifying them since they're happening more frequently?

Dr. M: Yeah so this is a huge, huge, huge problem. Not only in the US, Canada is going through it too right now, other countries as well. I'm going to simplify this, but the way that we usually talk about 100-year flood plains has been based on historical records and whatever that community looked like at the time that they drew the flood maps for that community. Of course, communities are constantly changing, any time you go cut down a bunch of trees and put pavement down you have changed the flood risk in that area.

In the past, our maps haven't accounted for those changes. This is all very complicated, and this is a problem. One, because people may not know what their flood risk is. It has implications for flood insurance and who needs to be covered by flood insurance. It influences all of the flood infrastructure that we build in a community.

This is complicated to do across the entire country with everything changing all the time, and then you add climate change to it, which is changing the actual hazards, and you just get this big mess. Currently FEMA has a flood mapping program connected to the National Flood Insurance Program. They are constantly making changes but it's kind of like an evolving policy nightmare all the time.

Alie: Are they going to have to go up in category numbers for hurricanes at all?

Dr. M: You're going to have to talk to the meteorologists about that. *[both laugh]*

Alie: I will! I haven't done meteorology yet. Don't mind if I do! Mary Rose B., first-time question-asker, asks: How has social media changed disasters?

Aside: Okay this social media question was also asked by Sydney Brown and Isabelle B Holper.

Alie: You know, she's thinking about things like the Facebook option to mark yourselves 'safe' when there's a flood, or how has increased communication helped or hindered it?

Dr. M: Generally, they are helpful. They do a lot of things like help us send out warnings, help communicate and keep people more up-to-date, in terms of like official responses. But it's also useful to be able to have all of your neighbors on Facebook and have a Facebook group about your neighborhood if you are evacuated from your house. As people are finding out information here and there you have a place to share all of that information. So, they're also useful in that way when you get into the recovery. Every community that has a disaster at this point, has some kind of Facebook group where people are sharing resources and talking about the recovery.

It's useful for being able to gather donations. It's helpful in terms of people being able to see the damage and wrap their heads around what has happened. So, it's useful in all of these different ways. Search and rescue, also really useful. There are a lot of documented cases of people posting online saying, "I need a rescue; my phone won't dial out, but I can post here."

There are, obviously, issues in terms of barriers, in terms of who has access to social media. Of course, your phone needs to be charged and working in the midst of a disaster for it to be useful. But generally, I would say they're a positive contribution.

Alie: Rachel wants to know: How would we recover from nuclear fallout? That's a pretty simple, easy question.

Dr. M: I would move to another country. *[both laugh]* I'm kidding.

Aside: Is there a real answer to this? Hmm... *[Jeopardy theme]*

Dr. M: First of all, there's the contamination zone which you just leave, but past that you would have to basically deal with an internally-displaced people situation then. So, you're finding new places for people to live, and then past that, the recovery actually looks pretty similar to as it would from any other disaster, where you have to completely leave and start over.

Alie: I mean, I think abandonment is pretty much the name of the game, right?

Dr. M: Yeah.

Alie: Micah Eckard asks: When disasters happen, what is the most helpful thing that people can do in general?

Dr. M: Donate money to local organizations.

Alie: Sydney Brown wants to know: What is the cost of disaster relief, and how long does it actually take communities to rebound?

Dr. M: It is a lot of money and takes a very long time. It depends on the disaster, but I think in the past couple years the US has had 13 billion-dollar disasters a year. You might need to fact check me on that number.

Aside: Fact-checked this and it was 14, very close. 14 different billion-dollar-plus disasters in 2018, killing at least 247 people and costing upwards of \$90 billion. Hurricane Michael did about \$25 billion in damages, Hurricane Florence was just under that at \$24 billion, and the California wildfires were also over \$20 billion.

So, a chorus of experts and scientists have warned that these types of disasters are climate related. So, unless things change with regard to global warming, the government will keep having to write these checks.

Dr. M: And that's just government. Businesses also donate money, there's nonprofits that are involved, individuals are sending donations, foundations, etc. So, there's a lot of money flying around, and we actually don't do a super great job of keeping track of all of that money. So yeah, it's difficult to keep track of all the different sources.

In terms of the length of recovery, it again depends on the resources you have access to and how bad the damage that you've experienced is. So, somebody who has a lot of money and a lot of resources can probably get through recovery somewhat quickly. Whereas somebody who's living paycheck to paycheck kind of gets thrown into this recovery system to get a little bit of aid from the government, to get some support from nonprofits; they're reliant on their friends and families to help. You get really sucked into this cycle that can take many years if you ever get through it. There's no guarantee that you're going to recover from a disaster when it happens.

Aside: A whole grip of folks asked this next question, and they are: Sydney Brown, Danni Q, Rachel Casha, Deli Dames, Savannah Prokop, Michelle Grondine and Anna Elizabeth.

Alie: A ton of people asked: What is the biggest disaster that scientists are anticipating? Is it people running out of water? Is it super volcanoes? Tectonic shifts, climate change, earthquakes, floods?

Dr. M: Like, all of the above.

Alie: All of the above?

Dr. M: Yeah.

Alie: I mean, we're seeing more fires, we're seeing more hurricanes, more flooding. So obviously a drier climate and a wetter climate depending on where you're at.

Dr. M: Yes.

Alie: So, all of it.

Dr. M: Yes. [*Price is Right loser horns*]

Alie: Got it. Just marching headway into the apocalypse.

Dr. M: Yeah. It's great.

Alie: Mm-hmm. Jess Swann says: I have seen various articles listing the US states least likely, statistically, to suffer a natural disaster. Do you think these have any basis in actual fact and should I move to Ohio?

Dr. M: Usually those types of maps are based off of which states have had presidential disaster declarations, so that's where they are getting those from, usually. So yeah, sure, some states tend to have fewer disasters or less severe disasters than others. But again, changing climate. Still, some are safer than others.

Alie: Elizabeth Gabel says, essentially: Are there more disasters now? Or does it just seem like there are more disasters because we hear about them more?

Dr. M: No, there are more disasters because there are more people to be in harm's way.

Alie: Oh, that does make sense, yeah.

Dr. M: Yeah.

Aside: We got a lot of prepper questions from Savannah Prokop, Kitti Halverson, Sydney B, Brendan Dean, Claire Meyer, Ashley, Theodore Vician, Jake, Sara Løquist, first-time question-asker, as well as another firster:

Alie: Jess Swann wants to know: What are the skills that would be most useful in the aftermath of a disaster? And says: I'm skeptical of preppers with collections of guns and gold, but would it be useful to know how to can food, or sew, or something?

Dr. M: If it's, like, the apocalypse yes, probably.

Alie: Okay. [*both laugh*]

Dr. M: No. Generally, in the United States, the most useful thing is to have a savings account with a lot of money in it or really good insurance policy. Past that, other skills to have, if your house is destroyed, having some kind of construction experience is useful.

Alie: So maybe fewer guns, more hammers.

Dr. M: Yeah.

Alie: Learn to cook a squirrel! Isabelle B Holper and a few other people including [*radio mega speaker filter*] Steven Garrison, asked: Is AM radio still a good source to get information during a disaster if a cell phone tower fails? And where's HAM radio during all of this? Is anyone using HAM radio?

Dr. M: Yes.

Alie: Really?

Dr. M: Yes! Yes, those are good sources of information. If you have access to those types of radios.

Aside: Okay side note, there's a rumor that Paris Hilton is really into HAM radio and has a whole room full of vintage equipment. And even if this rumor is fake news, I want you to know that I would read fanfiction about it. [*Paris Hilton: "That's hot."*]

Also, this next question is from someone you know, but also from Sarah Terry, Canon Purdy, Heather Shaver, Mae Merrill, Lilee Hill, and first-time question-asker, Liz Powell.

Alie: Side note, question from me: How screwed are we with "The Big One" in California? Or do you guys out here even check on it? Like when it happens it happens? Or are we like, "Tick tock, it's happening."?

Dr. M: I can't predict earthquakes, but yes, it is something to be aware of and pay attention to.

Alie: Okay.

Dr. M: Also New Madrid, though.

Alie: What is that? New Madrid? Oh no! What's that?

Dr. M: There's a fault line in the middle of the country.

Alie: Where is it??

Dr. M: It goes through St. Louis.

Alie: Okie dokie, so... okay.

Dr. M: Yeah. Google that if you need something else to worry about.

Alie: Oh, I will!

Aside: Y'all I checked this out and yes, in 1811 and 12 there was a 7.9 earthquake followed by a 7.4 aftershock. Those are huge! St. Louis, floods, and earthquakes, *and* tornadoes? Man, it's a good thing y'all have toasted raviolis, because that is some shit to deal with. Speaking of twisters.

Alie: Lilee Hill wants to know: Is there something we can do to prepare for tornadoes? I lived in an earthquake zone when I was little. We stockpiled water, food, and batteries in case there was an earthquake. But now living in Tornado Alley as an adult we don't do that, mostly just because a tornado would likely just suck up anything we stockpiled and redistribute it to another town. So, is there a way to prep?

Dr. M: Yes, definitely. If you can have a tornado shelter put in, that would be the best thing to do. Depending on where you live, sometimes there are community shelters. Trailer parks will sometimes have a community tornado shelter, or you can have one in your house.

Also making sure that you are tied into your community's warning system. It varies a little bit, but make sure you go onto your city's website and usually there's some kind of sign up for whatever their alert system is. And also, just be aware if your town has tornado sirens and know to listen for those things. We do a monthly drill in Fargo so people are familiar with what it sounds like.

Alie: Chris Brewer wants to know: Not really a question, but I would like it if she could speak about how severe PTSD can be in a survivor after experiencing a disaster. Do you see part of people's recovery as dealing with the post-traumatic stress of it?

Dr. M: When we talk about recovery, we're including everything from physical recovery, economic recovery, to mental health recovery as well. Again, it's going to vary. This is one thing that we're becoming more cognizant of in the recovery process, is accounting for mental health care throughout the event.

Aside: This next question about asteroids was asked by Tyler Q and just Tyler Q, so I was mistaken. Tyler Q, here you go.

Alie: Some people are asking about asteroids.

Dr. M: Oof.

Alie: We're screwed man. That's that, we're dinosaurs, man. Lacy Gilbert wants to know: How advanced are we in predicting natural disasters?

Dr. M: It depends on the hazard. We're doing pretty well in terms of hurricanes, for example. If you compare now to the 1900s, we have come a very, very long way. It's one of the reasons that we've seen a decline in hurricane-related deaths in the United States, with few exceptions. But then other hazards are more sudden-onset and harder. Obviously, earthquake prediction is like a point of great focus in trying to figure that out.

Aside: Seismologist, Dr. Lucy Jones? If you're out there, please talk to me.

Alie: Jon Stroman asks: How organized are response efforts in times of crises? Sometimes it seems like everything is a well-oiled machine with multiple organizations working in tandem to fix broken lives. Other times it seems like a fully-autonomous disaster in itself?

Aside: So why is the management of a disaster, also a disaster?

Dr. M: That is a great assessment. Part of what people are seeing when they see that discrepancy is the difference between an emergency disaster and catastrophe. And once we get large-scale disasters and into catastrophes, that's where everything is just seems like a shitshow, particularly from the outside. And that's part of what is making it a large-scale disaster or catastrophe.

Alie: It seems to me a lot of times... when I see the aftermath of a disaster, it seems like water is one of the most critical things to be distributing. Is it difficult to truck in tons of pallets of bottles of water? Are there better ways to do that, like filling stations? I know this is a super dumb question and I might totally cut it out.

Dr. M: No, it's not.

Alie: But it always just seems like, how are they going to get all of those bottles of water to people and is there enough water?

Dr. M: Sure, sure. I hate to keep saying this, but it depends on the situation. So, here's one way to think about this, I talked before about convergence and how all these people come from the outside. In addition to people, there's also materials coming in from the outside. All different kinds of supplies. Some of those materials are requested and planned for. So, you'll have trucks coming in with water that someone somewhere has requested. And they're coming in to some kind of distribution point. That generally is good and okay, fine, great.

The problem starts to become when you have unrequested donations flooding into the community that's been through a disaster. When people go to their closet and just pull out any old clothes that they don't want. If you're in North Dakota, and I go to the store and buy cases of water, and put them on a truck to Texas, that is not effective, that is not helpful. So, it's those unrequested donations that get to that community and then they sit in a warehouse and are never distributed, or it takes the community's resources to organize and distribute those donations. That's where things become much more complicated. Ideally, after a disaster you just get the community's water system back up and running as quickly as possible.

Alie: Speaking of which, is Flint considered a disaster at this point, or no?

Dr. M: I would call it an environmental crisis, but that's kind of a weird academic distinction that maybe isn't that important for the actual situation. It's definitely still within the realm of what I think about or would research. Yeah, it's so bad.

Alie: Yeah, and then watching 100 million dollars from Chanel go to fix a church is like, "Oh my god, oh my god."

Dr. M: Yeah, it's wild.

Alie: Yeah. Last questions I always ask. I feel like this is absolutely the stupidest question to ask the smartest person given the topic, but what's the thing you like the least about disasters? Like, everything? I don't know!

Dr. M: Honestly, it's watching the same problems just happen again and again. We know what the problems are and we know what's causing disasters. We could stop most disasters from happening, and we don't.

Alie: Yeah. What top problems would you identify?

Dr. M: That are contributing to it?

Alie: Like if you could wave a magic wand and fix those problems?

Dr. M: Oh, okay. With a magic wand, mostly I would change where people are living. Move them into less vulnerable areas. Wave a magic wand and just fund all of the mitigation projects that local communities want to do. People know their communities best, they're the ones who know what their communities need to be safe.

There are communities all across the country that have a plan written out. They've done the research of what project needs to happen in their community to make them more resilient or make them more ready to handle a disaster, prevent a disaster from happening. And very often the barrier is that they do not have the funding for it or there's not political support for it. And so, I think just funding all of those projects would be great.

Alie: Just [*Alie makes wand waving 'blling-blling' noises*] insert here, chimes! Magic wands! Your favorite thing about your work?

Dr. M: I think being able to have a platform to amplify the voices of survivors and to amplify those communities that don't get that media attention, even just acknowledging them. I think that sometimes, yes, I see what you're going through, this is a disaster, you're absolutely right, more people should be paying attention. Being able to understand what they're experiencing, I think, is probably my favorite part.

Alie: Did you ever think that you would be the world's foremost disasterologist?

Dr. M: Well, I'm not the world's foremost disasterologist probably, but... [laughs]

Alie: I mean, I don't know of a lot of other people... You've got the domain name, so...

Dr. M: Well that's true.

Alie: Pierce the Veil's got nothing on you.

Dr. M: Yeah.

Alie: But yeah, in terms of disasterology as a discipline and a disasterologist, it's like, call up "Dr. Sam." You're the one!

Dr. M: I'm just the loudest on Twitter.

Alie: Well that's good! More airhorns and bullhorns! You're doing great work. Thank you so much for letting me pepper you with stupid questions.

Dr. M: Thanks for coming all the way to Fargo!

Alie: I get to check off North Dakota on my list!

Dr. M: Yes!

Alie: I'm glad there were no tornados while we were here though. Yikes!

So, travel far and wide if need be and ask the foremost smartest people you're deepest-down stupid questions because we're all going to die one day! Now, to learn more about Dr. Montano, head to her website at Disaster-ology.com. On Twitter she is [SamLMontano](https://twitter.com/SamLMontano), and her bio says, "I'm not a regular disasterologist. I'm a cool disasterologist." And that's very true and I love her for it.

We are @Ologies on [Twitter](https://twitter.com/Ologies) and [Instagram](https://www.instagram.com/Ologies). I'm [@AlieWard](https://www.instagram.com/AlieWard) on [@both](https://www.instagram.com/AlieWard). More links and attributions are always up at AlieWard.com/Ologies. There's a link to the episode page, and the social media pages, and the sponsor pages up on the show notes, always.

Thank you to Erin Talbert and Hannah Lipow for adminning the [Facebook Ologies Podcast group](https://www.facebook.com/OlogiesPodcastGroup), full of very kind wonderfuls. Also hello to the [Reddit subreddit group](https://www.reddit.com/r/Ologies), I don't know how Reddit works but I hear y'all are assembling there. Hi! Feel free to hit up OlogiesMerch.com, including brand new, 'Check your crevices' shirts and mugs, and some 'heeeey' and 'berbye' shirts that are just up at OlogiesMerch.com. Thank you Shannon Feltus and Boni Dutch of the comedy podcast *You Are That* for all the merch help. You're both wonderful!

Thank you to assistant editor Jarrett Sleeper of the podcast *My Good Bad Brain* for assistant editing. Jarrett just put out an amazing episode with Traumatologist Dr. Nicholas Barr, examining mental illness and mass shootings, in case you like the debunking of flimflam. So go check that out.

And thank you to my own emergency manager, editor Steven Ray Morris, who helps me cobble these together every week and get them up as on-time as possible for a couple of people with ten jobs. He also hosts *The Purrrcast* about kitties and *See Jurassic Right* which is about dinosaurs.

The theme song for *Ologies* was written by Nick Thorburn of the band Islands, they are so good. Also, happy belated birthday to my wonderful sister, Sauce, aka Celeste, and to Boni Dutch. I am so happy you both are on planet earth. And happy birthday to my wonderful pal Izette [ph.], who has been a friend since sixth grade and is the best.

If you stick around until the end of the episode you know I tell you a secret. And this week the secret is that I am in a hotel room in San Jose. I could not get the air conditioning to stop blasting on

me. Maybe I'm tired, maybe it's day two of a no-sugar diet. But I wanted to cry. And then I unplugged the entire air conditioning and it stopped and I let out a Howard Dean noise like, "yaaaaar!" and I'm just riding that high still, even though it's been hours. So, if you've ever given up sugar or cut carbs because of reactive hypoglycemia, please come @ me because I think this sucks at first, but please tell me that it gets easier.

Okay, berbye.

Transcribed by Bergen Adair.

Final touches by Kaydee Coast who reminds you; don't lick toads, check your crevices, milk your thumbs, and never apologize for asking questions. Kthxbi.

Some links which you may find of use:

[Disasterology is a thing. Just ask FEMA.](#)

[So you want to go volunteer...](#)

["Preparing for the Future of Health Volunteerism" seminar](#)

["Tend and befriend"ing in stressful situations](#)

[Flood Deaths in the U.S. are rising](#)

[OG Disasterologists](#)

[Dr. Taylor's work with oxytocin](#)

[Compulsive helping](#)

[Disaster vs. catastrophe](#)

[Birth Order: sorry last borns!](#)

["Born to Lead" article](#)

[Notre Dame rebuilds, thanks to a bunch of money](#)

[How much money actually went to Puerto Rico?](#)

[White House tries to shit talk Puerto Rico on its recovery efforts page. Weird.](#)

[Vice article about Hurricane Maria donations](#)

[Weather people bracing themselves against winds](#)

[Katrina tattoos: hurricane dopplers and X-Codes](#)

[Katrina survivors kept the X-Codes on their homes](#)

[The X-Codes in New Orleans](#)

[Just buy a chopper](#)

[Maybe you just need paper towels?](#)

[A jump in LA heart attacks post-Northridge quake](#)

[Cardiac deaths post disaster](#)

[New Orleans levees are sinking](#)

[Katrina Tattoos](#)

[“Beasts of the Southern Wild” trailer](#)

[Overhelpers Anonymous](#)

[Climate change and disaster costs](#)

[Paris Hilton is into ham radio?](#)

[“Disasterology” by Pierce the Veil](#)

[Disaster Declaration process](#)

SOUND CLIPS

[“Look for the helpers.”](#)

[“What why not?”](#)

[“This is about as nasty as it’s been.”](#)

[“This is as bad as it will get.”](#)

[“We’ll have to deal with that later.”](#)

[“I understand.”](#)

[“Stores looted, people stampeded!”](#)

[“I learned it by watching you!”](#)

[“We’re gunna make it! We’re gunna make it!”](#)

[“That’s hot”](#)

For comments and enquiries on this or other transcripts, please contact OlogiteEmily@gmail.com