Mark Peterson - Host:

I am Mark Peterson, and this is "Before, During, and After: A Podcast from FEMA."

Mark Peterson - Host:

On April 8th, 2024, a total solar eclipse will cross North America passing over Mexico, the United States and Canada. This is no doubt one of nature's most awe inspiring events. The moon passes between the sun and the earth completely blocking the face of the sun. The sky will darken as if it were dawn or dusk. And while the skies will be graced with this celestial spectacle, at the same time, millions will be captivated across the United States. The day will be filled with festivals and revelers who traveled from far and wide to view the total eclipse in the path of totality. So, on today's episode, we're diving deep into the science behind the phenomenon and general safety precautions with experts from NASA. But then we'll take it back to earth and explore the meticulous planning efforts undertaken by Ohio and Indiana Emergency Management, just two of the states - from Texas to Maine, that are getting ready for April 8th.

Mark Peterson - Host:

Dr. Kelly Korreck from NASA. I'm thrilled to join the worlds of emergency management at FEMA and to talk about some of the celestial opportunities that are gonna be happening here in April. Thanks so much for joining me.

Dr. Kelly Korreck:

Thanks so much for having me.

Mark Peterson - Host:

Kelly. I know that a number of our states in the Midwest and throughout the country, from Texas to Maine, are so excited about what is going to be happening April 8th with the total solar eclipse. Tell me a little bit about what they can expect and what it is.

Dr. Kelly Korreck:

So, on April 8th, just before Noon, it'll start in Texas where the moon will start to move across the sun. So, if you were just going about your day and didn't know that was anything was happening on April 8th, you might not notice it for a while. But then when it becomes peak, when the moon actually completely covers the sun, it will be total darkness in those areas. There will be a dark enough that you can actually see stars in the sky and other planets. You'll be able to also experience basically the whole horizon all around you. 360 degrees will look like a sunset or a sunrise. It'll get a little colder. The winds will change. You'll notice some animals if you have crickets, crickets might come out, roosters or, or birds come to roost. And then if you're lucky, towards the center, you get four-and-a-half minutes of that totality, of that experience, of looking at the sun and being able to actually see the sun's corona or its outer atmosphere that's millions of degrees and streams out constantly from the sun. And because it's a solar maximum, that's the time when the sun's super active, we hope to see a lot of different structures and a lot of things during that time.

Mark Peterson - Host:

We know that it will affect different areas at different times of the day. So, for example in Indiana and Ohio, we're looking at it, it's sort of like the, the very middle of the day, roughly. Does it look different if you are experiencing it maybe in the more in the morning or later in the afternoon?

Dr. Kelly Korreck:

The difference will be where in the sky the sun is. So, it's how high in the sky where the sun would be based on the time of day. So, the moon shadow is racing across the earth at thousands of miles an hour. So we, you only get a very short period of time, but it will take some time to get from Texas all the way out through Maine.

Mark Peterson - Host:

Sure. I know that there are many millions of Americans that are gonna be traveling for this event. How often does something like this happen?

Dr. Kelly Korreck:

So, in some ways it's relatively common. Somewhere on earth, every about 18 months, there is a solar eclipse. Now most of the earth is water, so a lot of times it's, it's out over an ocean. But what's unique about this is that it takes between 400 and a thousand years, on average, for a single location to have an eclipse. So, that's why it's so important and so special to experience it in the areas that are gonna get the eclipse this time.

Mark Peterson - Host:

Wow, that's that's incredible. So, this truly is a, not just a once in a lifetime opportunity, but once in many, many lifetimes.

Dr. Kelly Korreck:

Yes, definitely. And we're so special here on Earth that we just happen to have a moon that's the right size and distance away to cover up the sun. I mean, there are other moons that go in front of the sun and would block it out partially or maybe even you know, more, more so. However, we just have this very special arrangement here on Earth that we're actually able to see this. So, it is really a very special event.

Mark Peterson - Host:

So NASA has been thinking about this obviously for a very long time, and actually so have our emergency management partners throughout the area. They've actually been planning for this for more than a year, in some cases, maybe even two years, because so many people are gonna be moving. What resources has NASA put together for all of the people that are so excited about this - the travelers who wanna experience it.

Dr. Kelly Korreck:

We put together a bunch of resources that are online that folks can utilize to educate themselves and to to really fully experience the solar eclipse. We have safe viewing methods from glasses that'll be available at the sunspots where there are NASA participation to indirect viewing methods, how to make that pinhole viewer with a simple box that you might have laying around the house or using even a kitchen strainer or your own hands to make a pinhole so that you can actually view the non-fully eclipsed, or partially eclipsed, sun. So, there's many resources online. There's also the ability to do citizen science. So, to join NASA in the science that we're doing during these eclipses you can record those animal sounds that we were talking about earlier that you might hear during an eclipse, as well as take temperature measurements and take images of the sun to actually get a better picture of how big the sun actually is.

Mark Peterson - Host:

I know that there are many precautions that people need to take when thinking about viewing the actual event, but I know in other areas this becomes a big tourist attraction, right. And so, there are some considerations that people need to take when they're out there, you know, traversing the area. What are some of the things that you're concerned about for people who are out maybe traveling hundreds of miles to come see it?

Dr. Kelly Korreck:

Definitely. So, safety is our number one priority in these eclipse activities. And the first is, again, eye safety. Unless the sun is completely totaled up in that path of totality, that narrower band across the US and those 13 states, unless it's completely covered you need some other viewing methods because it will, it could, hurt your eyes. So, we were first and foremost making sure that there's eye safety involved. And then the other safety measures are somewhat those that you would take precaution at other times, things such as you know, making sure that you have snacks, that you have a plan of where you're going, that your cell phone is charged, kind of basic safety so that you can anticipate things like possible long wait times leaving right after the eclipse because folks come for the eclipse and kind of trickle in and it might be a few hours. And then after it's gone, folks do tend to leave right after that. So, we are encouraging folks to try to stay a little later to kind of dissipate that, but also make sure again, that you have the water and the snacks and the ability and some patients are leaving the event.

Mark Peterson - Host:

Yeah, because a lot of the area, I mean, this is America after all, and a lot of the area is rural. Yes. I mean, there's distances you gotta traverse to get to gas stations and things like that, right? We're really excited to to support our emergency management partners as they, they think about planning of all the movement and the resources that might be needed to to work with that many people. But you know, before I, before I let you go, I'm, I'm just, since we don't have an always have an opportunity to speak with somebody from NASA, which is so exciting, but how does studying a total solar eclipse really contribute to our understanding of the sun and the solar system? And I gotta ask you that since you're here.

Dr. Kelly Korreck:

Definitely. So, there are so many different ways, and this goes back actually even a hundred years or so where general relativity, Einstein's general relativity, was proven through a solar eclipse. Because you, because the sun is a great big, massive body it bends space time. And so, by looking at the stars behind it and noticing that they were bent, they proved that the sun, you know, was obeying or was part of general relativity. So, that was the some original science done with the eclipses. And now what we're looking at is it falls into a couple of categories, the categories of looking at the sun itself and that hot outer corona that comes out and interacts with the earth in terms of space weather. So, that space weather that affects our electronic devices, our GPSs, things like that. So, we are trying to study that more and more and understand it. And it also then has an effect on the earth. So, we study the effects of the sudden day, night cycle on the earth, and that simulates actually some of the space weather that might hit the earth and collapse our, our ionosphere or the layer of our atmosphere that most of our communications go through. So, when we can study that and put those, feed those into our models, we're better able to prepare ourselves for when the sun throws one of her so her solar flares or a coronal mass ejection or some other space weather phenomena at us.

Mark Peterson - Host:

Okay. Kelly, I, I've, I really appreciate it. Anything else you think we should let the viewers know?

Dr. Kelly Korreck:

Really just excited to share the wonder and beauty of the solar corona. Take a minute to just allow yourself to, to drink it in and really experience it. It is a full body experience. It's not just a site. You'll, again, you'll feel cold wind, other things like that. So, definitely have a great experience.

Mark Peterson - Host:

The events high above are just part of the spectacle on April 8th. In fact, state and local public safety have been planning for more than a year for the massive influx of stargazers looking to get the best seat in the house. The path of totality. That zone, that path, traverses areas from Texas to Maine and two states in particular, are gearing up for science, fun, and the potential for a variety of all hazards consequences leading up to, during, and after the skies darken.

Mark Peterson - Host:

All right. So, to talk a little bit more about all of the impacts of the solar eclipse and, and the things that we can expect from a state perspective, because it traverses so much landmass in many states, but it's specifically we're gonna talk with Indiana, Ohio and the Director of the Emergency Management and Preparedness at the Indiana Department of Homeland Security. Mary Moran, thank you for joining me.

Mary Moran:

Thank you for having me and giving me the opportunity to talk total solar eclipse.

Mark Peterson - Host:

And then also I'm, I'm excited to be joined by the executive director from the Ohio Emergency Management, Sima Merick. Sima, thank you.

Sima Merick:

Thanks, Mark. I really appreciate it. And it's an honor to actually be sitting with Mary because we work closely with Indiana, and of course, this is just another one of those events, although a pre, kind of a pre-planned event that we're able to coordinate our teams in, in preparing for this. So, I really appreciate this opportunity.

Mark Peterson - Host:

Yeah. And, and you know, I think it's great to kind of talk to the both of you because obviously you're neighbors and, and the, the solar eclipse will, if you can see the map, essentially traverse through Indiana and then into Ohio. And so, let's start with Indiana. Mary, what are you expecting from your perspective?

Mary Moran:

Well, we spent months and months and months reviewing after action reports from the 2017 event. And some of the things that we are anticipating as being the biggest challenges for us are going to be transportation issues because we have over 64 counties that will be at full totality during the event. We are also anticipating communication issues especially for the use of cell phones the day of and the day after. So, we've been working on communication issues with private carriers and our public safety communication agency. We are anticipating our, basically our infrastructure for those 64 counties to pretty much be overwhelmed. The restaurants, gas stations, parks, campgrounds, all of that have been booked for, for years in some cases for this event. And we, we had a figure that in Indiana, it will be like 71 football games ending at the same time, will be the crowd that we are anticipating.

Mark Peterson - Host:

Sma Is that similar from your perspective? Are those similar planning assumptions?

Sima Merick:

So, interesting. Somewhat. I, I like Mary says, transportation and congestion, and I'm using the word congestion as we've planned because in addition to the transportation impacts, we know that communities will have a lot of people in it more than what they're used to, right. But, as, as we've done successfully in Region 5, we and, and in Ohio, we started planning and talking about this in 2021. And today, I was in a meeting where someone said, we were talking about COVID, and someone in 21 said, what are we doing for the 2024 eclipse? And, and they, we kind of chuckled about that, but we have been planning since then and putting messaging out and making sure people are preparing and, and, and those planning assumptions, we've stayed right on top of, Mark, and we've shared them. And we've told folks, please pay attention to these. These are a starting point. We'll refine them as data becomes more specific as we get closer. But data assumptions and, and the, the data mechanisms that we're using for these influxes of people will still remain the same if, if that makes sense.

Mark Peterson - Host:

Yeah. And you know, to that point, have you done any analysis or do you have any figures on what the tourist impact will be throughout each of your states and and maybe even some of the economic impact?

Mary Moran:

For Indiana, we've calculated that in the path of totality currently, there's like 1.4 million Indiana residents in that path. So, we know that they will be mostly there for the event. But we have gotten some estimates working with our INDOT, our Department of Transportation, DNR, and then in the states that experienced this in 2017. And we're looking at a reasonable estimate of between 500,000 and a million additional people in our path that day.

Sima Merick:

I'm in agreement with Mary. I, I think we started out with around a million or 1.2 as the Ohio Department of Transportation and our data sets have been kind of mined more having the refinement in the modeling. We have said that anywhere into Ohio in particular, along the line of totality. So, Mary mentioned her counties. We have 35 counties of the 88 that will have full totality. Nine of them are along, nine of those counties, are along the line, right? The, the, the, the line. So we are now using somewhere between 175 and 575,000 people into the state, in addition to everyone else in the state who will be out traveling and moving around. So, our refinement has come with the modeling and the kind of information that we're starting to get based off of lodging, based off of tourism, based off of people reserving space at our, our, our state parks. We have, I think, 28 state parks that are in the area of the eclipse. And they're, they're running pretty high non-vacancy rates, right. So, they are booked between 90 and 95% right now. Now, additionally, the lodging association say we can kind of give you better numbers after the event. We said we'd like to kind of see them ahead of the event, so we've been really pushing on them and we have a great relationship with them, and our Office of Tourism's doing a great job, but it helps us pay attention to what kind of rooms are being rented for how long, what will traffic flow and traffic congestion be like, and we plug that into our modeling systems with our Ohio Department of Transportation.

Mark Peterson - Host:

So, Sima, you know, what is it about a total eclipse that kind of gives a real need in the, from the state perspective, to plan so far in advance for an event that essentially, I'll look at it, the, the numbers right here. I mean, in Cleveland, Ohio, the totality begins at 3:13 pm Eastern time and ends at 3:17. So, essentially four minutes. And, and that's the same in Evansville, in Carbondale, and Paducah. It's a four-minute event, but it's, it's a lot of planning that goes into this. What are some of the things that you're worried about considering that goes into this event?

Sima Merick:

So, I think first of all, the question, Mark, just as that, the uniqueness and the nature, right? I mean, it was the early 1800s, I think, since, was that right? And we won't have another one for about a hundred years so, anyone who's alive right now will never have this opportunity again. The other part of it is, is that Ohio is seventh largest in the United States, and we are so accessible by our interstate systems. So, we were kind of often referred to as the gateway to the Midwest, or the gateway to the East, depending on where you're sitting. So, people come through here, we have the Ohio Turnpike that, that crosses then over Indiana, it moves over into New York. So, a lot of people can get here, and the percentage, 70% of the US population can make it to Ohio within a 24-hour drive, I think makes the draw. We also are just, seems like we have a lot of large events and people know that, so there is a lot of resources available. And, and by most human nature, not all, 'cause some people, some of my family is like, I'd rather watch it by myself in a field, but the majority of people kind of wanna be with people where there are resources, there are capabilities, there are festivals, there's other things to do. So, we have some pretty cool tourism draws to Ohio, and then you add this once in a lifetime opportunity and event and I think that's what makes people wanna be here.

Mark Peterson - Host:

Yeah. Mary, from your perspective, and, and I wanna come back to some of the after actions that you, you had looked into in the past, but from your perspective and, and perhaps it was identified in some of those after actions, what are some of the biggest risks and real concerns that you're building into those plans that are sort of things that you're maybe even pre-positioning?

Mary Moran:

A couple of the big items was we read a report from the Red Cross that in the 2017 event, they spent the following 10 hours after the event doing nothing but bringing gas cans to cars that had run out of gas in the middle of traffic. And then those cars become bricks for the thousands of people behind them. So, we started immediately working with our transportation partners on, on dealing with that. Another thing that we had no, that we weren't considering, first of all, that started showing up in the after action reports is medical emergencies that were happening in the crowd. And then the challenge of getting first responders to the crowds. One of the thing Indiana has been hit hard recently with a, with a significant increase in fentanyl deaths. And as part of one of the 2017 after action reviews, we realized that that was an issue in one of the other states.

New Speaker:

So, one of the big challenges we've worked on is trying to find where Narcan doses are and how they can be made to be mobile. Can we put 'em on golf carts? Can we, does an entity have enough? Because a lot of communities have those dosages available, but they're in, you know, like churches or, or school buildings. And how would we get them that, the, the dose to the person that needed it quickly? We are very much concerned, just tagging onto that, with the event that could happen inside the event. At the end of March, beginning of April in 2023, we had 53 tornadoes in one day in Indiana. So, another thing that we are very nervous about is what kind of weather will be delivered that day? We can have sunny and 80 or a blizzard or tornadoes. So, weather is a big concern from us, the medical issues. And then the other thing is, we had always thought that our focus of planning and dealing should be the main event of the day. Well, what we learned from the other states, most of the incidents that they had to deal with were once the event ended and people were trying to get back home. So, we beefed up our planning on for, like our EOC is gonna be activated two days before the event, and then a day after the event with all our emergency support functions in the EOC for that span of time. And that's how we're messaging it. Don't treat this as a four-minute event. Treat it as a three-day event in your preparation.

Mark Peterson - Host:

Sima, the Ohio Emergency Management is co-located as part of Ohio State Police or highway patrol. How are you partnering with them?

Sima Merick:

Yeah, so in Ohio, we have the Department of Public Safety. So, the agencies listed there are the high, the highway patrol and emergency management are each divisions in, in the EOC and the emergency management building. We have our intelligence and our watch office staff, as well as the highway patrol mid-level command staff that are the folks that are a 24-hour ability to launch law enforcement resources. So, we have this kind of trifecta, right, of where we have a 24-hour operation, we can reach into each other, we can look at what's happening from the intelligence world and that data mining, we have the highway patrol and the law enforcement resource mechanisms and their, their breadth of aviation resources, and then all of us here at emergency management and the state EOC. So, we kinda work we work hand in hand in blue sky days, but during events, when we activate the EOC, which we will activate during the eclipse, those timeframes are being figured out. So, we'll go to assessment and monitoring probably Friday or Saturday previous to the eclipse, go into a partial activation over the weekend. And then, and then from there, our ESF partners will be on site and we'll also have that virtual component where people can listen in if they're a cabinet agency but don't have a direct correlation into the EOC.

New Speaker:

But with all of that, and what Mary was saying is that you asked earlier, Mark, about the early decision for planning and moving forward and what were our messages. You know, we've held and continue to hold partner meetings with state, state and county partners to discuss not only that planning efforts, but preparedness efforts. And we refine them for them as we've moved forward to think about those carry on response activities if they were needed. Think about your county EOCs, think about who you have in them, where are your gaps right now? And if you have gaps in staffing, think about your partnerships and know you can come to the state also for us through a mission request to source that for you.

New Speaker:

At the state level, we pull all of our state agencies together and have through our stakeholder meetings and also through our points of contact. We're doing calls with the county emergency management agencies. We just had one today. And we give those updates of what's happening at the state level and how are things being coordinated and how do you find information out about what's going on. So, so frankly, I I've been trying to tell people with some ease, right, when I do interviews that this, this is no different than preparing for any other event. It's just that you have prenotice you, if you don't like congestion and you hate traffic, your community's probably gonna to be kind of busy. So maybe you should go to the grocery store the week before, fill your gas tank up the week before, and then you know what, stay home and enjoy it. Just know that we ask you to pack your patients, come early, stay late, pack some snacks, and just be patient. And, and, and that's what I try to tell people 'cause Some of our counties recently have been really kind of concerned. So, they're like we want you to have three days. All of that is standard, and I don't dismiss that. We should have three days of supplies, but I try to tell them, you have the opportunity to do it ahead of time. It's planned, right. I can't postpone it. I can just keep telling you that this is the day. So, make the best of it and try to prepare early.

Mark Peterson - Host:

Mary, are you doing similar things in connecting directly with the many communities that are going to be in the path of the eclipse?

Mary Moran:

Yes. What we've tried to do, like Sima, we started planning years ago for this, and we now have a, what we're calling a state planning team that has about 147 different representatives from state agencies to local governments, all 92 of our, our emergency management agencies. Educational institutions, yes, we brought everybody that we thought could have a piece of having to deal with an issue or could potentially have a resource like we've brought in our medical community, our hospital systems, our school systems. We are talking to our tourist we have a, it's a Visit Indiana. We, so we have just tried to be all inclusive like Sima has. And then we, as we get closer to the, the event, similar to what Sima is doing, we're refining some of the, the actions that we're taking once we figure out who has what. But yes, pretty much everything that Sima is doing, it sounds like we are, we are mirroring here in Indiana.

Mark Peterson - Host:

So, for maybe both of your states, I'm looking at the visualization tool that NASA has put together that kind of describes the path and you have a number of cities that are gonna be impacted, larger cities. In Indiana you've got Evansville and Indianapolis. And in Ohio, it looks like maybe even parts of Dayton into Cleveland maybe even parts of Toledo. Mary, what is an area of focus of celebration for this eclipse in Indiana?

Mary Moran:

Well, actually, kind of, kind of what you just said we have that strip, like Sima was mentioning, where the path of totality, we have 12 counties that sit along that line, and then 64 total involved. There are thousands of events going on in that path in Indianapolis alone. NASA is coming and is coming to the Indianapolis Motor Speedway, where our 500 race is held. NASA's gonna be doing an event that day. Indianapolis had, at all of our museums and our baseball fields, everywhere that has a, a place where people can gather is, is having events. Like you mentioned, Evansville has just been knocking it out of the park with everything they have been doing, all the community events. So, we have Indianapolis and Evansville are our two biggest, but like I said, we, if you go to our visit Indiana site, we have a interactive map of all the different events that are occurring and there are thousands. So, pretty much the whole strip is going to be one giant good time that day, I hope.

Mark Peterson - Host:

Sima.

Sima Merick:

Thanks, Mark. You know, just to dovetail onto Mary, right. So, we have the majority of our metropolitan areas, our, our metropolitan statistical areas are impacted - Toledo, Dayton, Cincinnati, Columbus, Akron, Canton, Cleveland. I mean, those are all big population centers. Seven and a half million of our 11 and a half million live within those, right. So, big events along those lines. Like Mary said, NASA. Cleveland. Let's go to Cleveland, Cuyahoga and Loraine Counties right now. Cleveland has NASA's doing a big deal from NASA Glen. Also at the Lake Erie Science Center, which is right there next to the Rock and Roll Museum and Hall of Fame, so they have big events planned for that day, for the whole weekend.

New Speaker:

In addition to that, in Cuyahoga County, it's the weekend of the Women's Final Four NCAA basketball tournament. So, it's not in Indiana this year, which it, you know, between Indiana and Cleveland, it's here. And then the Cleveland Guardian's home opener is actually the day of the eclipse as well. They're doing a bunch of amazing stuff, as is NASA out near the intersection of 75 and just north of Route 70. There is the Neil Armstrong Museum there. So, they're doing big events there. Toledo has events. The Lake Erie Islands have events. We're, we are looking at the Sandusky area. I think Cedar Point's open earlier, which is, you know, big amusement park. So, like Mary, and the state of Indiana, we have, there are probably thousands of festivals set up. We are upwards of 400 that we are aware of that counties have put into us so far and that list is growing. So, it gives us that snapshot, Mark. I mean, folks at Speedways, County fairgrounds, cities, recreational sites, the state parks, and they're trying to make it festival wise, Mark, right.

New Speaker:

So, the weekend, come in, see what we have to offer, look at our tourism. Hey, and you don't have to leave right away when it's over. Stay another day, right. Get some good food in Cleveland. Eat, enjoy the ethnic part of Toledo. Enjoy the Great Lakes even though it's April, because I'm gonna tell you, this weekend, there was an event up around the Lake Erie Islands, and there were already boaters coming over to it. And it is cold. It is cold on that lake. So, I anticipate people will dunk their boats quick and early. And it, it's, it's gonna be a great show. We just have to continue to work hard from the public safety space to make sure that we're keeping people informed, prepared, and to enjoy a safe experience.

Mark Peterson - Host:

Thanks for listening to this episode of "Before, During, and After: A Podcast from FEMA." If you'd like to learn more about this episode or other topics, or have ideas for future episodes, visit us at fema.gov/podcast.