

Oklahoma Innovations Radio Show

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Guests: **Gary England**, University of Oklahoma Sooner Series

>> From the OCAST Radio Network, this is *Oklahoma Innovations*, a weekly science and technology radio magazine, brought to you as a service of OCAST, the Oklahoma Center for the Advancement of Science and Technology. OCAST is the state's only agency whose sole focus is science and technology. The OCAST mission is to identify and fund promising research and technologies that allow Oklahoma to compete in a global market economy from our own backyard. This program features some of Oklahoma's most gifted scientists, inventors, entrepreneurs, manufacturers, educators and business leaders who all have one common goal: developing technology based economic growth for all Oklahomans. Now, here are your hosts Gary Owen and Tessa North.

[Music]

>> Welcome to this week's edition of Oklahoma Innovation. Tessa and I are delighted to tell you we're going to tease you about our guest of this week. Most Oklahomans know the name Gary England. And Gary has been on our show in previous years. And this time, he is involved in a new project with the University of Oklahoma that we're very excited to tell you about. And before we lead into Gary, Tessa has a lot of great information here that some of our listeners like to know about. So, heads up there, we have any calendar information this week?

>> We do. We have a couple of cool things that are starting up this summer actually for students. So, if you have students who will be out for the summer and you're looking for some opportunities to keep them entertained while not turning their brains too much in front of a TV perhaps. You might consider the science museum summer camps starting to June 15 Science Museum Oklahoma will host six one-week summer camps for students in the first through six grade. Students will get an opportunity to participate in hands-on experiments of course explore all areas of the museum including some of the cool exhibits that are open right now. So the cost for non-members is \$250 per week but there is a discount for members. So if you are a member, I encourage you to check that out.

>> That could be a cheaper than summer camp.

>> Absolutely. If you are interested in more information give the science museum a call at 405-602-3760. And again, those summer camps will start on June 15th and they will end on July 24th so a lot of opportunity there. Also coming up the Moore Norman Technology Center is going to be hosting a Lunch and Learn on May 28th. And this Lunch and Learn is going to be called "Branding in a changing economy". So this is a casual even that will help companies learn some branding strategies to develop a closer relationship with their customers in our changing economy. The event will be held from 11:30 to 1 at Moore Norman South Penn Campus and the cost is \$19 which includes lunch. If you're interested in finding out more information about this event, which is again is on May 28, so coming up very quickly, contact Moore Norman at mntc.edu. And then finally, the Oklahoma Technology Showcase will take place on August 26th at NSU in Broken Arrow. And this is an event where eight Oklahoma technology-based companies will deliver Ted-like talks. So short high impact talks where they discuss their innovations, the lessons learned and some of the challenges that they face along the way. And

these are all companies in various stages of development from startups to big name companies that have been around at Oklahoma for a long time. So it's a great opportunity for investors, business leaders, and economic developers and just anybody who's curious about some of the cool stuff that's going on in Oklahoma to attend and find out a little bit more about. If you're interested in finding more about registering--finding out more about this event and registering, you can visit ocast.ok.gov.

>> Awesome. What's in our innovations in history this week?

>> So today we have a pretty appropriate innovation. In May of 1999, most people are probably aware that a tornado outbreak ravished the plains. Over 150 tornadoes throughout Kansas, Nebraska, Texas, Arkansas, and of course Oklahoma although the majority of the tornadoes were rated as an F0 or an F1. One monster tornado was rated at F5 intensity and resulted in the highest wind speed that had ever been recorded on land at the time. This outbreak, the innovation during this outbreak came when the first ever tornado emergency warning was issued by the National Weather Service. Unfortunately, this is a warning that I think we've heard a couple of times and since we're all pretty aware of it but pretty innovation that came out to help save a lot of people's lives.

>> I want to get Gary's take on that.

>> Absolutely.

>> You know, have some input on that.

>> Yup. And then in our Oklahoma spotlight today recently on one of our shows we spoke to Dr. Philip Chelsean 04:39 who is representing _____ from--and was also from OU.

>> Right.

>> And he talked a little bit about drones and how they're used to investigate the atmosphere.

>> Right.

>> Among many other things of course. One of the other things that we learned during that show was that drones is--it's a fine word but we prefer to use unmanned aerial vehicles.

>> Yes.

>> Right. So, during a recent unmanned aerial vehicle conference at Atlanta, some of the coolest innovations in drones or UAVs were showcased. Including one from our very own DII, used to be Design Intelligence Incorporated. The Eternas D is a semi solar powered UAV with a 7-foot wing span and a weight of just 10 pounds. It can fly for six hours at 27 miles per hour or just over one hour at 45 miles per hour. And I think that I read that the top winds or the top speed on this thing was about 75 miles an hour. So it's really fast.

>> Impressive.

>> Absolutely.

>> Impressive.

>> Although this solar--Although solar powered UAVs aren't new, integrating them into new frames is an ever revolving art and we're proud to say the DII out of Norman is at the forefront of these innovations.

>> Cool stuff this week, cool stuff. Speaking of cool stuff, before we give a formal introduction to our guest, here's a teaser. And for our affiliates, don't freak out, this is not one of our commercial breaks but this is a teaser of what our show is about today.

>> Even after 40 years in the business of understanding and predicting volatile weather, I'm still fascinated every time I look up at the sky. Hi I'm Gary England and I'm excited to be hosting a new series on severe weather. Every year across the globe, severe weather delivers punishing blows that cost billions of dollars in property damages and often leaves death in its wake. As we know all too well, severe weather can take you by surprise, be extremely dangerous and is often really scary. To better prepare for severe weather, I'm excited to share with you some of the most useful information that I picked up on over the last 40 years. Information I still use myself today. This entertaining series will make it easy and fun for you to become familiar with the fundamentals of our weather, the history of weather forecasting and the technology used by meteorology professionals to keep the public as safe as possible. The University of Oklahoma is making this series available to everyone at no cost to multiple media channels including iTunes View, YouTube and OU's Janux online learning platform powered by NextThought. So join me, Gary England in getting better prepared for severe weather by visiting garyengland.ou.edu.

>> And now joining us on the OCAST Radio Network is a good friend of mine for almost as long as he's been in broadcasting. Gary England. My gosh, it is hard to believe we've known each other over 40 years. Because I came to Oklahoma City in '73 and you went on the air when?

>> '72.

>> OK so time--

>> I was the one who hired you.

>> That's right, that's right and I thank you for that. Actually, Gary was working early--his early stages at Griffin Communications and at Oklahoma City at KWTW Channel 9 which is where a lot of his career just twisted and turn like a tornado like you wouldn't believe because there was so much going on in technological advancements. Thanks to you and many of your colleagues. But before we talk about that, let's really talk a little bit about you in general. Because before you got on television, you have done a lot of weather-related science, talk about that.

>> Well, that happened because I couldn't find a job in television.

[Laughter]

You know, if I get out of OU, I tried to get a job in television, no one would hire me. So, a couple of other guys and I put in Oklahoma's first consulting business. We failed to consult with the potential users if they really wanted to buy our service. We went around and we said, "Guys," and we'd say to aviation people, "Does this sound good? We'll sell you forecast, what do you think?" They say, "Oh we think this is really good." When we put the business and went back, they didn't buy it. They said, "We didn't say we'd buy it, we just said we liked it." So it went on a couple of years and it serviced Agricultural Aviation and Industry. And then at some point there, we found out we were pregnant so I had to get a real job.

>> Oh boy.

>> And I've applied--I've sent a lot of letters out to a lot of companies around--private companies around the country, with respect to meteorology. Only one answered and that was AH

Clinton Associates [assumed spelling] New Orleans, Louisiana, Consultant in Oceanography, Meteorology and Civil Engineering. I didn't know it existed. And so I had to had a job so I went to New Orleans and there's where I really got, you know, I got my Bachelor's Degree at OU, I got a real live PhD from this guy in New Orleans. He was mean, he was tough, he was brilliant, he had taken Meteorology, Oceanography and Civil Engineering. And he's moved them all into one field. And we worked for the offshore petroleum industry. You know, with construction companies, drilling companies, we did chronological reports, we did oceanographic reports, we did 100 year storm, wind, waves bottom pressure knowledge, all these things I had never done in my entire life. You know, if you work for him and you have to have a job, you learn it baby. So that was great. Did a lot of good stuff and it was great for me. And so often, you know, we don't appreciate something good at the time.

>> Yes, that's true.

>> Years later, I realized, if I had not have gone down there and worked for AH Clinton, I would never amounted to very much.

>> Yeah and a lot of the science that you did was worldwide. I mean you've covered a lot of territory--

>> Around the world.

>> Wow.

>> And--The one I'm doing with OU I'm missing a few of them but there were so many, I can't remember them all. Had to go look at my old files and yeah, we did oceanographic studies. And the most, I think that was fascinating one was the Caspian Sea. You know, it was basically enclosed. And they had these sheer walls. And all you really had to go with were the winds. No one ever reported the waves out there. They're getting ready to put platforms and drill in the Caspian Sea. And so he had developed a method by which you could take the wind, and the whether it was in Java Sea, where ever it was, you take the winds, reported winds over a, you know, five year, 10 year period, come [inaudible] square data. And you could--then you'd back that up with those winds, you would--we would create an average annual and monthly wind speed and direction. Then from that, we'd back out and create the wave heights.

>> Oh my.

>> And then, we just go--and then from the wave heights, we work all the way up to the 100 year storm and the 1000 year storm. It was absolutely amazing. You know, I look back it was such a wonderful opportunity.

>> Do you think a lot of that training helped set you up for a lot of the influences you had in the early meteorology technology for television like Doppler and some of the things I know you kind of had a hand in. Talk about those technologies. Because when you started in television, we didn't--you didn't have the nice softwares and computers--

>> No.

>>--and radars that you have now.

>> Well it was an interesting time because the warnings are so bad, I can only warn you because it hit someone else' house--

>> Right.

>>--first. And so, the warnings were terrible, we just didn't have the equipment and down at the, I guess, in those days it was a--well [inaudible] lab, they call it NEST [phonetic] I believe what it was. But as they hold in, someone gave them and the government gave them a--and we called it DEW Line Radar, Distant Early Warning Radar designed to pick up rockets and aircraft coming over the North Pole from Russia. So 32 foot dish.

>> Oh my.

>> Wow.

>> Can you imagine. Titanic, you know, and I put that thing down OU and started testing it. And I started following the research on it and it's pretty obvious after you started looking at the results, after a couple three years, Doppler Radar, which measures wind speed and direction of the precipitation particles, was going to be the next big deal.

>> Wow.

>> Don Burks [assumed spelling], this guy still works there. He called me up at that time, he said, "Gary come in I want you to see this." I went down there and I go, whoa. So that's, you know, they're the ones that really developed it.

>> There's a video on "Gary's Tornado Alley" which we're going to talk more about in just a moment. That it explains a lot more of this in detail, a lot of visuals there too. Gary England, Meteorologist, our guest this week on *Oklahoma Innovations* and we have a lot more to talk about. And his new relationship with OU called "Gary's Tornado Alley". It's an online video series we'll talk more about when we return on *Oklahoma Innovations*.

[Music]

>> Pancreatic Cancer is the fourth leading cause of cancer deaths, with a median survival range of only six months. As an oncologist, I see far too many families suffer from the effects of this terrible disease. We need better treatment options of patients.

>> With the support of the Oklahoma Center for the Advancement of Science and Technology. The researchers at core biotechnology have what they hope will eventually be a treatment even a cure for pancreatic cancer. They have identified a protein that if blocked, may prevent tumors or keep them from growing. With help from OCAST and i2E, the team at core was recently awarded an SBIR Research Grant to enable them to continue their research and move closer to a treatment for pancreatic cancer. If you're a researcher or a small business in Oklahoma and are considering applying for a federal SBIR Funding, contact OCAST toll free at 866-265-2215 or visit us on Facebook or our website at ocast.ok.gov.

>> Now back to *Oklahoma Innovations* with Gary and Tessa on the OCAST Radio Network.

[Music]

>> Gary England began his broadcasting career with Griffin television KWTW in Oklahoma City in 1972. Now those of you who live in the northeast and in the Tulsa area know that Griffin also owns KOTV channel 6. So you might have seen Gary in some splash broadcast of course another way you might have seen Gary is he actually has a little Hollywood to his bio. He made a cameo parents in the film "Twister" and he actually portrayed on the air meteorologist giving tornado warnings during a certain segment of the film. Named the weather god of Oklahoma City by New York Times, Gary England is a recipient of numerous awards and honors including four

Emmy Awards and the Silver Circle Award by the National Academy of Television Arts and Sciences Heartland division. He was inducted into the Oklahoma hall of fame in 2013 he's also received the prestigious Edward R. Murrow Award for best in the nation in breaking weather coverage in all large markets. Gary is the author of four books and has appeared in more than 60 national and international severe weather programs. In 2013 when he decided to retire from being on the air, Griffin said, "Well but wait a minute we don't want you to go." So he took on the position as Vice president for Corporate Relations and Weather Development at Griffin Communications. And now here he is with a new relationship with the University of Oklahoma and the by the way, Gary received the University of Oklahoma's highest award in 2014 an Honorary Doctorate of Humane Letters.

>> And Gary can you tell us a little bit about this new endeavor which is combining two of my favorite things, Sooner and weather?

>> Yes, yeah again me too, me too. Well you know really this came about because my daughter came here from San Diego and brought my granddaughter and we were at OU back a year or so ago and we got with president Boren and, you know, he's so gracious he took my granddaughter in his office we're all in there. We're just visiting and he turns and says to Cassidy [assumed spelling], "Cassidy, what are we going to do to get you to OU?"

>> Oh my.

>> How does that--So that's--So I was down or some, you know, and kind of a long story. But long story short is that what we put together, what we decided is called, you know, the said is called, you know, the Sooner Series, "Gary's Tornado Alley" and it has some of the exciting video and all that, you know. But it's basic meteorology, a little bit history--my history, little history of the research but it's the basics of meteorology, severe weather meteorology. Well you can--If you watch this, you can talk like an expert.

>> I'm telling you, it's a crash course of meteorology in my opinion.

>> Yeah, it is. And then as we go along, the ultimate aim is to say to the public, you have to start taking responsibility for your own safety.

>> Right.

>> Yes.

>> You can't always depend on people and the media to take care of you, you have to know your safety precaution, know your plan so that's the whole thrust of it. It's pretty exciting stuff.

>> And so this new series it's not open to just to--even though the partnership is with OU, it's not just for students, it's open to anybody, is that correct?

>> Yeah we let the cowboys watch it.

>> It's a public site.

>> Oh men that is so generous.

>> It is very valuable.

>> No, yeah absolutely this is something that everybody needs to participate in. Now, how can people take advantage of this series?

>> The easiest way there for me is just to one word, Gary England, that's my name G-A-R-Y E-N-G-L-A-N-D dot OU dot EDU garyengland.ou.edu and then go on there you sign up it's free my name was storm shelter and this programmed play about 15 parts as I recall and you watch some--all of them. And if you like there's a--you can take a test at the end and see how well you've done. You can always go back and refresh. And we hammer safety, hammer what to do and it really--the people I worked with in NextThought and some other companies down there, along with OU, absolutely fabulous people.

>> Awesome and it's interesting that you mentioned NextThought. They're actually funded under OCAST they have some interns working there so it sounds like it's a great partnership for everybody involved and hopefully our students are getting some good work in on this project too.

>> The video titles include of course I mentioned early part of the program, introduction video, which Gary talks a lot about his background. He gives an overview of the technology influences and TV firsts for him as well as television meteorology in general how a lot of the technology evolved. What I really got--What I found entertaining on that video was how you developed your original maps out of paper and cardboard and Plexiglas and all, that was very funny. When you look at technology--

>> It was high tech at that.

>> At that time it was very high tech, yes. But when you look at, I mean, because the generation today, they're use to the softwares and the computers and the radar stuff they see on television. But for young people, to go back and look at what you really had to work with, it's like, wow is that primitive.

>> Yeah. They think what they see right now has always been here.

>> Yes. That's my point.

>> Yeah. But at the time for example, that large map, you know, 12 feet by 10 what it was, I took nine US coast geodetic survey maps, clip the edges off, glue them together, fit everything because they had roads, highways, typography, put them on that board, put Plexiglass on them and it was pretty darn good. In fact, I always want to go back and do a retro thing with those because they're just as good as the computers.

>> Yes, yes.

>> Really, because they're more detailed, I mean, it's just--

>> And when you look at the other thing, I call them television bugs, but the little weather map in the corner when you put up the warnings how did that evolve?

>> Well, originally, we'd have a map of Oklahoma eight and a half by eleven and you had a piece of red cardboard behind it. And then when I took for example tornado warning come out for Oklahoma county, you take an exact [inaudible] Oklahoma county out and you put it.

>> My goodness.

>> And so, only the red shows but you can't roll it, it was pretty good maybe.

>> You know, it's too bad, you couldn't had a puzzle cut out where you could just pop the county out.

>> In and out, yeah.

>> That's--I didn't think of it baby. Why didn't you tell me?

>> OK. So, the mid of the series you get into what I found fascinating looking at the video is the big picture. You talk about geophysics. You talk about wind. You talk cloud formations, tubes, wall clouds, the development of thunderstorms and how tornadoes evolve. You also--The people that helped you put this together did a phenomenal job on getting some animated elements in there. Animated graphic elements that really show the true story of how a storm evolves and develops. And so, for the generations today from Tessa's age younger on down, I'm telling you this is a real educational series. I see schools using this to learn more about weather science. It's a wonderful tool for the public to get involved with. And if you don't know much about it, let me tell you about the time you get done with the series, you look outside and you see a wall cloud or what looks like a thunderstorm developing. You're going to be better educated and really more knowledgeable about, well, I wonder if the tornado is going to form out of that. We'll come back and talk more with Gary and we're going to learn why is the United States having such weird weather this year. He has his take on that when we return on *Oklahoma Innovations*.

>> Don't go away. There's a lot more to learn on *Oklahoma Innovations* with Gary and Tessa on the Oklahoma Radio Network.

[Music]

>> Oklahoma is a leading energy producer with an economy closely tied to oil and gas. One in four jobs in the state are tied to energy.

>> Nitro-Lift Technologies of Oklahoma, manufactures equipment for the oil and gas industry with the support of Oklahoma Manufacturing Alliance and OCAST Nitro-Lift is developing new technologies that will enhance energy production, provide a safer work environment and leave a smaller environmental footprint. With the development of new technologies, the company plans to double in size and triple sales in five years adding jobs and improving Oklahoma's economy. As one of OCAST strategic partners, the Oklahoma Manufacturing Alliance works with manufacturers around the state to develop new products, streamline operations and grow business. The alliance is keeping manufacturing jobs in Oklahoma. For more information, call OCAST toll free at 866-265-2215 or visit us on Facebook or our website at ocast.ok.gov.

>> As a police officer, one of the most dangerous parts of my job is arriving on a scene where an armed suspect has barricaded himself or where we suspect some type of booby trap. We're most vulnerable when we don't know what kind of explosives or weapons are on the other side. It can be deadly.

>> Tactical Electronics, an Oklahoma-based company, invents, manufactures and sells tools such as under door cameras and video fiber scopes that are used by law enforcement officers, military and counter terrorism personnel around the globe. The tools allow areas and packages to be inspected from a safe distance which reduces the risk of injuries and death. With the support of OCAST, the company is developing image recognition software that scans packages and within milliseconds identifies what's inside. OCAST's advancing science and technology that not only improves but also saves lives. For more information, call OCAST toll free at 866-265-2215 or visit us on Facebook or our website at ocast.ok.gov.

>> Research and development. Technology transfer and commercialization. Creating high paying jobs in Oklahoma is what OCAST is all about. This is *Oklahoma Innovations* on the OCAST Radio Network.

[Music]

>> Welcome back to *Oklahoma Innovations*. And if you're not aware or if you just joined us and you're not aware of what we're talking about listen to this.

>> Severe weather can be terrifying and dangerous. The more we all understand it, the safer we all will be. Hi, I'm Gary England. And I'm excited to be hosting a new series on severe weather. This series is online, so it's available to fit your schedule. We'll cover everything you need to know to understand severe weather, from how it's created, to how to stay safe during severe storm. Find our more visit garyengland.ou.edu.

>> Gary England's "Gary's Tornado Alley", what a great series. And if you really want to learn about more meteorology you couldn't learn from--I don't think anybody better than Gary England. And Gary you know you and I have discussed the weather over the years and you have your own take about the weirdness of the weather. Everybody has their opinions about global warming and atmosphere and all of those kinds of things. But you and I--as you and I have discussed, we know the [inaudible] atmosphere over the years and decades and so forth. It's cyclic isn't it?

>> It really, really is. When you look at it, you know, the moon goes around the earth, cyclical. And we go around the sun, cyclical. And our solar system is going around the Milky Way in some ungodly speed. So everything kind of repeats and then when it comes back, might be higher or lower, whatever, but it always kind of returns to where it was. I don't think we've been around long enough really to understand the highs and the lows.

>> Right. What's going on this year? California of course has experienced a severe drought, Oklahoma's has its ups and downs with drought. But this year in moisture weird things going on. Northeast having a lot of snow and, you know, Oklahoma all of a sudden having a very wet spring. What's that all about?

>> Well, you have to keep in mind that all weather is due to the sun. And we're not sure exactly how it effects jet stream, the sun heats the earth, the earth hits the atmosphere and there's differential heating causes the winds, different things going on. But one of the keys for us in the northern hemisphere, really, is El Niño. And you want to know why it's raining now is because of El Niño. We've been sitting for several months at about a half of degree above normal on the waters at the tropical pacific. The tropical pacific can change the jet stream. This is--we're talking about the surface of the ocean, the warmth of it one way or another can change the position and the intensity of the jet stream, 30, 40, 50,000 feet up. Tell me that's not powerful. But we're growing, I think, toward a significant El Nino. And with significantly El Nino usually Oklahoma is a little bit wetter and little bit cooler. And that's already beginning to show up a little bit early. San Diego, a week ago whatever it was, it was raining. So, it's changed there a little bit too. One thing, it's called the Milankovitch cycles [inaudible]. The earth is at a 23-1/2 degree tilt, right off the vertical.

>> OK.

>> OK. They found through research and this is agreed upon most in the scientists. There were 2, 300,000 years or something like that, and how they figured that out, I don't know. But every

two or 300,000 years, there's wobbles, a little bit change is in that 23-1/2 and when that happens, climate changes. So--But everything is a cycle, I believe.

>> Yeah. Yeah. Well, it comes--you know, there's a lot of people that are concerned about the ice melts way up around the Arctic and how it's going to raise sea levels and those kinds of things. But I think you--I've always believed what you believe. I've always believed it's an earth-sun kind of thing because I remember my early years of science and learning about astronomy and those kinds of things or astrological sciences if you will and space and how the planets align and all that. It's really fascinating how that all--has--I mean, I think when I was a kid, you know, and now where we are, we've had some cycle changes with our weathers.

>> Absolutely. You can see where we have the cold stormy winter periods in the same thing with the heat and the dryness. But the interesting things like recently some guys and gals are researching drought found the southwest part of the United States, that quadrant out there. There was a drought that lasted several hundred years.

>> Wow.

>> You know--So, you know, it's really, really truly [inaudible]. We just haven't been here long to figure it all out, because there's really some smart dudes and dudetts. What do you call them?

>> Dudetts.

>> Dudetts. Trying to figure all that stuff out, let me tell you.

>> So, we're right in the middle of tornado season. When does tornado season actually end?

>> When they stop.

>> So tornados season doesn't actually end, ever, does it?

>> Because we got tornados in the fall, haven't we?

>> We have in every month of the year, they're just not as big during the winter. But yeah, we have them all months but--and I've always looked at March 15th to about June 15th.

>> OK.

>> It's the prime season. And some years that may not be true. But that's--When I first came here in '72, we weren't having large tornados in the metro. OK. I remember giving my first talk and I've said the same place, eventually, a large F5 have moved through the populated area in central Oklahoma. It took, what, really to 99 for that to happen. It could be that long again or it could be next year. You just can't pin that.

>> But then when you look at your career, look how many major tornados we've had in Oklahoma City, leave alone the state, massive tornados in succession, I mean, within three--two to three or four years separations. Why are these tornados, the big ones, in recent years going through the Moore, Norman area? What is that? I mean, does it--

>> I need to know.

>> And the people that we talked to, our previous guests, a few weeks ago said there was no reason for it. There was no scientific data to show. It's just a weird phenomenon. You got any take on that?

>> As Lord Gary England, perhaps you have some insights there, right? That maybe--

>> I may have to make a telephone call on this one. No. For years, I've said there has to be some place in the United States that tornados occur more often than any place else. And so your right latitude, it goes to the Gulf of Mexico and the mountains to the west, all of that. But the frequency continues. I talked to a guy, has worked at OU off and on for several years as a scientist. And I said, what do you think? And he said when he was senior; he and another guy did a paper on the heat island effect, every big city is usually hotter than the surrounding areas. It's like a dome that might play into it. Talked to a guy just last week talking about weathers, a little bit of a topography and relief going on in that area. I don't know the answer but I tell you, people are looking at it now. Like I said, I've always been saying, well, it's just a matter of coincidence but--

>> Yeah.

>> After all these, I'm--

>> There's got to be something behind it--

>> It's kind of weird, baby.

>> Look at the recent rains and floods in Norman and Moore, I mean, that particular pocket again getting hit and it's like, what is this all about? There's got to be something scientifically related to that.

>> Nobody's found it yet.

>> I know.

>> They may never find it. Maybe it's the wind generators. You ever think about that?

>> I did not think about that.

>> They're going to build them now to where they're, what, 500 feet high? All right, they disturbed the atmosphere. When they put the first ones in near Dodd City, Kansas and if there's a thunderstorm nearby, they issued a tornado warning because it was right in there and because you get Doppler returns on these.

>> Right.

>> Yeah.

>> And so they do think. That blade on the wind turbine--tip of the blades moving at 170 miles per hour--

>> You wouldn't think that looking at them.

>> It's a drag. OK. On low level winds it's a drag. It's slows it down but also increase areas of turbulence. Who knows?

>> Interesting. Well, of course, this phenomenon is like that Bermuda triangle for crying out loud for many years. There's like, where do those planes go? Why is it always there, you know. So, who knows?

>> Yeah.

>> One of the impressive things about the video and I know this is one of the reasons that this series was developed is to help better protect the public safety. And I do agree with you that I think the majority of Oklahomans for years have taken that for granted as well, we're going get

hit anyway and blah, blah, blah. But I think now, because of more recent catastrophes with the tornados in the Moore, Norman area, in fact, a flood. There was just something came out recently that 40% of those residents down there now has storm shelters.

>> That's a good idea.

>> Yeah.

>> That's a good idea for any community in Oklahoma because, you know, we might go through several years where [inaudible] gets hammered ever so often. The storm shelters are extremely important and the thrust of the video with OU is basically safety. 1999, we lost about 40 people. We had 58 tornadoes in our viewing area. In 2013, we had--now 25, another lady who died from one just recently.

>> Yes.

>> So 25 killed. And the thing is, both of those storms, about 90 some percent of the people--96, 90%, knew it was going to happen. Talked about it for days, talked at morning up, great warnings, everyone did a good job to helping take care of the public and then you still get them killed. They're still dying and you say, why? Well, part of is, they don't have a place to go. Part of it, I think people safe in their homes and let me tell you, the big tornado comes along, you are not safe in your home. And that's an ongoing argument.

>> There's no way.

>> You know, shelter in place well--and you can survive. Well, who want to survive with a tube [inaudible] through their neck?

>> Yes, that's right. Yeah.

>> So most for it is you'll be fine in the closet. Big tornados, no.

>> The bottom line is this series is designed to educate you about storm development, the power and how quickly they can come up, and what precautions you can do right before a tornado, way before a tornado. What to do if you've been a victim of a tornado, and have some emergency plans in place. These things can dropped out of the sky in split second without warning because I notice some of the TV meteorologists, they got--I mean, one that's fell out on the sky and they didn't see it happen. I mean, it's almost--

>> Completely no warning. It was March 25th.

>> Yup.

>> No warning on it. They go through a life cycle. If everyone is paying attention, they're little and they grow up and they reach mature stage and they collapse and go away. But there's a life cycle. But they're all little bit different.

>> Yeah. Hey, we got to take a break. We'll come back and talk more with Gary England when we return on *Oklahoma Innovations*.

>> This is the OCAST Radio Network.

[Music]

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[Music]

>> We are thrilled to have my good friend, Gary England, everybody's friend. Gary England, if you know him by television, in the pretty much two--main two-thirds of Oklahoma, there hasn't been a time you have seen this guy on television talking about the weather and giving severe weather warnings and watches and those kinds of things. And now he's a partnership with the University of Oklahoma and a video series called "The Gary's Tornado Alley", 15 very informative videos that you can check out. Gary one of the things I enjoyed about watching this series is some of the statistics that you presented particularly on the tornados, Oklahoma is not the state you would think would have the most average tornadoes, when we're surrounded by Kansas and Missouri and Arkansas and Texas and interestingly, I'd learned Texas and Kansas have more than double the average tornado activity from 2001 to 2010, I thought that was interesting compared to Oklahoma.

>> That's nice stuff. It is.

>> Yeah, yeah. And then you talked about the average per 10,000 square miles per state from 1991 to 2001 Kansas and Florida ranked higher than Oklahoma, [inaudible] that was interesting.

>> And lots of little ones.

>> I guess so, yeah. And when we get back to Oklahoma's statistics, I'm not going to tell you, I want you to go watch the videos. Gary tells you the highest number of tornadoes and the lowest number of tornado averages in the State of Oklahoma annually. So we do want to give that out on the air. We wanted you go check it out. OK.

>> One thing that I wanted to ask about as Gary Owen mentioned at the beginning, you started off your career working with, you know, very high-tech chalkboards and Plexiglas maps and things like that. I'm wondering where you might see the technology going now. We talked a little bit about drones at the very beginning of the episode today. Do you see drones playing any role in--I know they're already working in the atmosphere but in tornadoes specifically?

>> Absolutely.

>> Can you talk a little bit about where you might see that? First of all, how can a small little drone possibly withstand, flying around in tornado winds?

>> Thanks. Some of these drones you know are not small. They have to be pretty good size, have to be very powerful, very sounds structurally. But they have them or they can build them. And,

you know, just put in cameras on is important or also putting on infrared cameras for night time. Then you put all the instruments on to sample what the humidity temperatures, all of these things are going on. That's going to become a vital part of it. And I see where the drones going to be connected to a super computer and they're going to talk back and forth, and see computers going to tell where to go next based on what the other drones are finding. So I think there's a vast area there. They'll improve the warnings and I think with all the wireless or cell phones, iPads, all those things, the nature of warnings are going to continue to change. I think you probably still always need maybe somebody on television at least for years to come that you trust giving information but it was going to be [inaudible]. The kids nowadays, they'll pop that phone. They got forecast. They don't need somebody on TV.

>> Right. That's actually interesting and that you mentioned that, and the storms that we have last week, we had no idea that there was anything going on and all of a sudden our phones started blowing up with text messages telling us we were going to get hit and sure enough that at least helped us saved part of our house, so.

>> And this is just the start.

>> Yup.

>> Yeah, [inaudible] thing about 10 years, think about 20 years.

>> Yeah.

>> It's phenomenally what's going to be going on.

>> Definitely.

>> And when you look at the evolution of computers and soft wares and of course the sensitivity of radar has changed? So meteorologists are getting much better picture of what's going on and I know that you because you started back in the day when radars just didn't show you a whole lot. And now you've seen the evolution, where do you see this technology going?

>> Well, they develop different types of radars, the phase-array with--actually the antennas really don't move. The ones we have right now, rotate around like with [inaudible]. It does--The elevation is 0.5, it goes around for a minute and goes at one degree that keeps going around, going around, going around. And so you get to scan the entire storm. Now they just have these flat plates and bam they'll scan the whole storm in just a matter seconds. And radars down there now which will update every 10 second and [inaudible] as ever three to 10 minutes, this thing just blab. And I've seen the results, and I saw--I look at the Moore tornado, what the data they gathered. It was like watching Steven Spielberg movie.

>> Wow.

>> It was three-dimensional. And we talked about debris cloud--debris balls. This showed when hit individual structures, you could see the debris going up--

>> Really?

>> --and rotating around.

>> Wow.

>> Absolutely phenomenon. And the guy working at--the kid working on it, the kid he was probably upper 20's maybe 30, brilliant, great facility there. So when I see it going, it's going to keep going. I think the main things, you have faster computers.

>> Yes.

>> And you have really highly intelligent people writing the programs. So there's going to be faster computers, better programs because [inaudible] there's a little bit information. Think about it. There's a tiny bit, a radar fires like we have right now, thousands of times per second, and it grabs that, investigates it, said OK, it's this. It's faster computers, better programs, that's what coming.

>> And you say faster computers and also the evolution of better monitors. I mean when you look at resolution of computer monitors and video screens and all of that, it enhances all the detail that the computers are projecting.

>> Yeah, it really does. Now part of the problem with television, some stations I've seen around in the country, they enhanced looks, so to speak, enhance it, probably not proper term.

>> To make it look better?

>> Then make it--no, no, no. They make it like worse, make it look red and fiery. This is bad.

>> Oh, more dramatic.

>> Oh, really.

>> More dramatic and there's a question of should that be done?

>> Yeah.

>> And I say no.

>> Yeah, because it adds, it increase fear, but--

>> It does.

>> You know, many people might, you know, dispute the fact that part of journalism, mainstream journals anyway is making things look worse than they really are sometimes and in any kind of major news stories. So, you know--and weather of course is a serious issue because it's an alarming to the general public and everybody is affected by that.

>> Yeah.

>> In Oklahoma, there is no question Gary that you have been an advocate of education. You have toured the state and the country and the world doing talks on meteorology, and the evolution of technology. What's next for Gary England?

>> Well, there is just no telling because you know the agreement I have in the business I'm doing with OU--

>> Yeah.

>> It just kind of jumped out there. I don't know what else will come out maybe in the end [inaudible] stuff with drones there's just--let me tell you meteorology is a great field it beats having a real job.

>> Yes. It's like kind of broadcasting, this is my favorite, you know.

>> So, you know, I'm happy for what I'm doing right now but I don't really know what the next plan will be. It'll come.

>> And you also do some keynote speaking around the country, right?

>> I do, I do, and I've--

>> That's a lot of fun. It got to be.

>> Yeah. Well, you do a lot of that.

>> I do, yeah.

>> I--You know, sometimes I get up there and I think what am doing here?

>> Yeah.

>> It's like I will give a talk about the drone meeting, and these are all scientist and researchers. I'm thinking, what do I have to offer to these guys, except 47 years of real world experience.

>> Exactly.

>> I was going to say your experience and you can't beat that. OK. You can have all the education of the world and you've gain no question you got a tremendous educational background. But the experiences you had being both on air and behind the scenes. By the way speaking of that, that's another things I want to tell our audience is that another thing you're going to get to see in this video series is the behind the scenes team at work at a television station. You know, it's not just Gary. It's not just the meteorologists that are standing by the television meteorologist. It's all the activity going on behind the scenes because you need a hefty staff taking all calls, radioing all the storm chasers and the helicopter, monitoring the other storm radars and so forth, talk about that. That's a machine to run.

>> It does. I think we have are the finest in the world, have had for several years. It takes a lot of people to get it on. But there's little other things you don't know about. It's like it's pretty chaotic at times and there's a lot going on, a lot of noise, a lot of different tornados. And occasionally one of the guys well get really engrossed in working on a radar, watching a tornado and I need him for something else. I have perfected the ability to throw a pen or paper across. Now I remember I had Jed Castles in the back what time--his hands went up, he went, "Yeah, Gary yeah, [inaudible]." So we have different ways of communicating. And sometimes it's difficult to pass the workers. You have all these people, all these information coming in, you got to get it to the person on the air to give it to the public.

>> Yes. I must say too to your credit while you were in working for KWTW, you're also a very good at recruiting students, graduates if you will into your team and some of them from OU. They were OU graduates and you'll see some of that on the video series and you just surrounded yourself. You know, they always say that what makes you great is the team that's--that you're supported by a great team and we say that both with your broadcast connections as well as the meteorological connections. You've had a great career there and we only have about a minute left. What would you say on that final comment that Gary would always say about being prepared?

>> Well, stay weather aware, have a safety plan and act on the plan and don't depend on media to take care of it. Make your decisions, do your thing. I go out on Fridays always saying "Don't go out and don't go [inaudible]." I would say make your plan, do your thing, stay weather aware.

>> That's it. That's it.

>> And it's all about safety.

>> That's right.

>> And no panicking.

>> And remember at Oklahoma you don't like the weather now just wait a few minutes it might change on you. Listen, one more time to you web site address.

>> It's garyengland, that's one word, .ou.edu.

>> And the title of the series is called Gary's Tornado Alley. And if you can't find it that way I can tell you, "OK, you can also check it out on YouTube. It's also there, too," so. All right. Well Gary, you've been a great guest. Thank you so much and we hope to see you again on the future. That's it. We'll talk to you next time.

>> See you next week.

>> On *Oklahoma Innovations*, have a good week.

[Music]

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