Oklahoma Innovations Radio Show

Air Date: October 3-4, 2015

Guests: **Jana Smith** and **Berrien Moore**, University of Oklahoma

>> 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 Chad Mullen.

[Music]

>> Thank you for joining us on this week's edition of *Oklahoma Innovations*. Gary O. and Chad Mullen from OCAST and we are at the University of Oklahoma this week, a very interesting thing we're going to talk about.

>> Gary, excited to be here. My alma mater for sure and a lot has changed since I came to the University of Oklahoma. We're on the south end of the campus, which is Highway 9 and Jenkins area and a lot research and development activity has occurred on this end of the campus. We're coming to you right now from the National Weather Center and we'll hear more about that and what they're doing here in a moment but I think it's a great example and demonstration of what can happen when a university and private industry and government entities come together, work together and really work towards advancing new technologies, new innovations into the marketplace. So it's a great place to be and we're excited to be here and we've got some great guests today.

>> And we have an exciting even to talk about because it's, when it comes to media it's big. It's going to be the 25th Annual Society of Environmental Journalists Conference. Boy, that's a mouthful and our first guest to talk about that is Jana Smith. She's the Director of Strategic Communications for R and D at the University of Oklahoma and you've, over the years, have always brought us, plugged us into great guests for the show so nice to have you on the mic Jana. Come right on up to the mic and get close there so we can hear you.

>> Thank you. Thank you so much.

>> So tell us a little bit about your job because you've been involved with this job a long time, haven't you?

>> I have. I've been at the university for over 7 years now. It's really my job to promote research at the university, not just on the research campus but university research at the colleges and across campuses also.

>> So tell us about this conference, a lot of journalists going to be here from all over the world, right?

>> That's correct.

>> So tell us about this.

>> Yes, OU is hosting the Society of Environmental Journalists Conference. This is the first time that SEJ, I'll call it from this point on, has been to Oklahoma so this is a great opportunity for them and us. They are going to bring their membership here to learn more about Oklahoma, the environmental issues here, some of the research here. The reason why we partnered with them is because we have great research here that we wanted to share with them and it's a, it's an excellent opportunity for everyone in Oklahoma to actually learn about this organization because they are the only organization, member organization, in North America that is focused on reporting environmental journalism. They're trying to really close the gap on that area of journalism. It's not reported as much in the, you know, in the daily news so they provide that, that avenue for organizations and people who want to tell their story or have environmental sites or projects that they want to share.

>> Now is it my understanding that the universities, they do this conference at universities around the country? Is that right, usually?

>> They partner with the university.

>> Oh, they partner with it, okay, okay.

>> They may not be on the university campus.

>> Okay.

>> But they actually partner with a university.

>> But they've never been to Oklahoma?

>> No, not ever before.

>> Hmm, interesting.

>> Well, and, Jana it sounds like an exciting opportunity for Oklahoma and I imagine that we have some interesting weathers and maybe different regions of the state that have different types of climate so it might be an interesting place to visit.

>> Yes, absolutely. One of the reasons that we decided to partner with them was because we have such a diverse ecologically environmental state. I mean, we have 11 ecological regions in this state and they're going to be taking tours to various areas around the state. These are all day tours on Thursday, October 8th, to actually learn about the environmental sites and issues that are relevant to those areas. So, for instance, they're going to Tar Creek up in the Picher area because it's one of the worst super fund sites that EPA's ever had to deal with. They're going to the Tall Grass Prairie. They're going to the Altus area to kind of look at the drought, what's happened there with the drought and they're going to visit the National Weather Center and the new Radar Innovations Lab here on our campus. So, they're going to see a lot of different types of environmental sites, meet a lot of different people who are involved in trying to make this state a better state by maybe cleaning up like the Tar Creek area, for instance, or working to preserve, you know, the Tall Grass Prairie. There's a number of other events going on that the public can get involved in if they want to just come in for a day. I mean, they can take one of these tours if they'd like to. There's a fracking tour that I would suggest but it's almost full already [laughter].

>> Gee, I wonder why [laughter].

>> So I can suggest that the Tar Creek tour would be a great one. It is not full but you have to leave pretty early in the morning, like 5 p.m.

>> So, a lot of people may not want to get up that early but we still want to promote it because it's a great place for anyone to go and learn about that area and see how OU researchers are cleaning up the water there. There is a great project up there.

>> As a matter of fact, the theme for this conference is Weather, Water, Energy, News in Every Neighborhood. That's a good theme.

>> That is correct.

>> Pretty well says it all, right?

>> Yes.

>> Well, and Gary, I think it was Will Rogers that said if you don't like the weather in Oklahoma just wait a day. Jana has figured out a way to just drive them around the state and see it all in one day, so.

>> That's right.

>> Now, Jana, it looks like when I'm reading over some materials here there's some great institutions that are going to be here, The New York Times, National Geographic, Chicago Tribune, The National Academy of Science, The Dallas Morning News, Bloomberg, Fortune, the LA Times. I mean, those are great media institutes, they're well known throughout our country and they're also kind of ideologically diverse. So it sounds like there's a lot of interest on this across the spectrum.

>> Well, for one thing, SEJ has a membership that is worldwide. They have 1200 members. We have 400 people registered for this conference now and they're all over. So, I don't have the complete list of where they're coming from yet because they're still registering. So, yes, we're going to have a lot of great people from media outlets, definitely like New York Times and some of those you just mentioned.

>> What about agencies like, of course, we know that NOAA has been involved in previous meetings and so forth, Army Corps of Engineers, organizations like that. Do you know who is going to be here from that angle?

>> I do know that the USGS will be here and Berrien will probably talk about the South Central Climate Science Center, which is on our campus. They are funded by the USGS and he can probably talk more about that than I can but there'll be EPA, there'll be NOAA, there'll be USDA, there'll be the Nature Conservancy, there'll be a number of agencies, federal and state, at this conference.

>> When you look at journalists, I don't know that Chad you noticed this, there is going to be about 400, approximately 400 environmental journalists from around the world. That's impressive.

>> No, that's really amazing and I take it that, Jana, that part of the mission of the SEJ is, and what I think about local news that we watch here is there is talk about weather, as in the day-to-day, well it's going to be 80 degrees, tomorrow it's going to be stormy tomorrow. And then

there's maybe, you know, sort of tragic events that occur, tornado or a volcano or an earthquake. But I think there's a lot more in between those two things and is that what the SEJ is really about is supporting and advocating for that type of reporting?

>> I think they support environmental journalism from one end of the scale to the other. So, I mean, it might be disasters or it might extreme weather and everything in between. So I don't, you know, I can't say what all they report but I know they cover a lot of environmental different types of environmental reporting.

>> Right. And now this event is going to be held at the Embassy Suites in Norman, right?

>> Yes, and it, yes. And it starts October 7th and it will end October 11th.

>> All right and I think there's a football game going on around that time as well if I'm not mistaken.

>> Oh yeah, it's OU/Texas weekend but we still have people that are registered for this conference that are excited about it.

>> Well, that'll be great.

>> All right, so we have another distinguished guest from the University of Oklahoma, Dr. Berrien Moore, and he is Vice President Weather and Climate Programs, he's Dean College of Atmospheric, Dean of the College of Atmospheric and Geographic Sciences. He's a Chesapeake Energy Corporation Chair in Climate Studies and Director of the National Weather Center. That is a, that is a lot of work and responsibilities for you. Welcome to the, welcome to the program, Dr. Moore.

>> Thank you very much, delighted to be here.

>> Tell us, you have quite a background. Tell us a little about yourself.

>> Well, I think that I share something with the Society of Environmental Journalists. This is the first time they have met in Oklahoma and moving to Oklahoma was the first time I'd been to Oklahoma.

>> Did you have anything to do with this [laughter]?

>> Well, we were interested in inviting them because I thought, as I had discovered, that Oklahoma is one of the most fascinating places that you could possibly visit or live. Again, I mentioned the fact that we have a rich collection of ecological zones and the reason for that is that we have a factor of 100 in precipitation from the southeastern part of our state to the northwestern and we actually have a north/south temperature change. And as a consequence, other than California I believe we have the richest collection of ecological zones in the country.

>> And when you look at all the natural issues that we deal with, Chad you just mentioned a while ago, from weather to water and who would have ever though in Oklahoma we would have issues of concern when it comes to earthquakes, for example. I mean, a decade ago we didn't have them.

>> Oh absolutely, fires, rain, hail, you name it we got it here in Oklahoma.

>> We're going to take a break. Dr. Berrien Moore is our second guest and he's just barely got to talk here so we're going to, but the clock commands unfortunately. We're going to have to take a little break but when we come back we're going to talk to Dr. Moore and find out a little bit

more about his background because this is a fascinating man and what an honor to have him at the University of Oklahoma and you're going to learn a lot more, also, about the Weather Center perhaps that you didn't know about. When we return on *Oklahoma Innovations*.

[Music]

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>> Now in its 20th year, this is *Oklahoma Innovations* on the OCAST Radio Network.

[Music]

>> Chad and I are coming to you from the University of Oklahoma this week and we're talking about an event coming up called the 25th Annual Society of Environmental Journalists Conference. Over 400 environmental journalists, well I say over 400, around 400 environmental journalists from around the world will be in Norman. Jana Smith, real quick, did we miss anything that we wanted to talk about this event because there's a lot of stuff going on, so?

>> Yes, absolutely. I wanted to just mention that anyone who's listening that would like to register for this conference can register at sej.org.

>> Sej.org, okay.

>> Yes.

>> And we'll bring that up again at the end of the show. Great. Okay, back to Dr. Berrien Moore with the University of Oklahoma and if you just joined us he is VP Weather and Climate Programs, he's the Dean of College of Atmospheric and Geographic Sciences, Chesapeake Energy Corporation Chair in Climate Studies, and Director of the National Weather Center. Lot of stuff to talk about. I really wanted you to, I know you're kind of a humble guy but I really want to give the audience that may not know who you are a little bit of your background because you've got quite an extensive career.

>> Well I, I came here in June of 2010 and my wife and I think that was the, probably the smartest thing we ever did in terms of decision to come here. I'm not sure she knew where Oklahoma was when I first mentioned to her the possibility.

>> Really?

>> And, in fact, when we came in April of 2010 we were then living in Princeton, New Jersey at the university and we really were probably thinking that we were going to do something else.

>> Hmm.

>> Perhaps go down and work at NASA. But we were so taken by the university and what we saw here and the opportunity, particularly because of the president, David Boren, that we thought that this really made more sense for us even though she wasn't sure just where she was.

>> Interesting.

>> Well, Dr. Moore, tell us a little bit about just some of your background. I think it's interesting your background is in mathematics and tell us a little bit about how that applies to weather and climate.

>> Uh, yes, I did my Ph.D. at the University of Virginia in mathematics and then I went to the University of New Hampshire as a mathematician and I did that for about 8 or 9 years and I was, had a Fulbright to go to Europe to continue my mathematics work and I had the opportunity to meet Bob Frosh, who then was at, had just been, in fact, at the Woods Hole Oceanographic Institution and I had been thinking about switching to earth science and Bob said, well, rather than take the Fulbright, why don't you come down to Woods Hole? And that was in the fall and Jimmy Carter was elected president and the next spring Bob Frosh became the administrator of NASA, leaving Woods Hole. And as he left he said I want you to spend some time at NASA, I think I want to introduce NASA to a new idea and that is the Earth is a planet.

>> That NASA was very focused elsewhere but we ought to start focusing on the Earth. And so that gave me the opportunity to, one, work with the space agency and, two, to complete my transition into earth science by spending a year at Woods Hole and then half a year at Hawaii and then a summer at Stanford. And that gave me this chance of becoming an earth scientist even though I'm still learning all the time.

>> Wow.

>> Well, and Dr. Moore, I think that, you know, for a lot of us we think of the study of climate and weather patterns as a field in and of itself but there's actually a lot of statistical and data modeling that goes into it. Tell us, for those at home, a little bit about what goes into the, the understanding of climate and perhaps prediction of it as well.

>> Yes, it's interesting. If you go back to the, one of the great motivators for developing the computer came during World War II and then immediately thereafter and that was at Princeton, New Jersey, and Princeton University and the General Fluid Dynamics Laboratory where the issue of weather prediction was at the forefront. And in particular, numerical weather prediction and the computer allowed us to begin to transfer our understanding through the physics of the system into a calculation system that really changed weather forecasting from a pattern recognition where you have a high here and a low there and therefore something is going to happen to much more of a numerical-based forecasting system. That process is still ongoing. We are still combining some of the old, a little high here and a little low there with the numerical weather forecasting but that really is what's driving the field now is the advances in computer science combined with our mathematics.

>> I find it, much of what you say collaborates with, really kind of goes along with a well-known meteorologist here in Oklahoma, Gary England, and I'm sure you know Gary, right, have you met him?

>> I think everybody [inaudible].

>> Yeah, I don't know anybody who doesn't know Gary and he's got a partnership with OU, as a matter of fact.

>> Yes.

>> But he was on our show several months ago and he kind of made the same comment about the technology evolution since he got into meteorology and then got into television and so forth and how technology has really come along and how it's affected weather prediction, so.

>> And, Gary, I think Dr. Moore makes an interesting point as well, some members of our congressional delegation have really spoken about the connection of defense and national security with weather prediction so it's more than just is it, am I going to get my picnic rained on but for our war fighters out there in the field are they going to be able to advance? Are they going to be able to move? Is this a good day, night or week? Is this the right time for a plane to take off and begin a, you know, 20 or 24-hour sortie? And so it's much more, I think, than folks realize of just, you know, how's the humidity going to be tomorrow. There's a lot to it and it plays a vital role.

>> [inaudible] it also affects commercial airline piloting so that's, that's a lot [inaudible]. We have, in the next couple of segments we have a lot to learn about the research centers, the labs and projects going on at OU. We want to take a moment, when we come back, Dr. Moore, and talk about the College of Atmospheric and Geographic Sciences because you guys have got a lot of stuff going on there that I think might be of interest to our audience, really giving you an overview perspective of some of the wonderful sciences going on here at the campus. We'll be right back on *Oklahoma Innovations*.

[Music]

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>> 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 could be deadly.

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>> 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]

>> This week on *Oklahoma Innovations*. We are at the University of Oklahoma. We're delighted to have Jana Smith, Director of Strategic Communications for Research and Development at the University of Oklahoma and also we've been visiting with Dr. Berrien Moore, who's VP of Weather and Climate Programs and he's the Dean of College in Atmospheric and Geographic Sciences. They're talking about a conference coming up in October. It's called, it's the 25th Annual Society of Environmental Journalists Conference and each year the Society of Environmental Journalists collaborate with a research university for its annual conferences and, believe it or not, they've never been to Oklahoma. The theme is Weather, Water, Energy, News in Every Neighborhood. Jana, a couple of other things we want to share with our audience related to our Native American tribes. Talk about those. They're going to be involved in some of this, right?

>> Yes. One of the things that SEJ was really interested in was the fact that Oklahoma has 38 federally recognized tribes in the state.

>> Mmhmm.

>> So they invited the Native Americans Journalist Association, who is located on our campus actually, to participate. So we have a number of tribes that are involved in this conference and there are a number of sessions on diversity and law, Native American issues related to the tribes. It's going to be a very interesting conference starting out Wednesday evening, October 7th. One of the things that we're doing, which they've, that they've never done before and I think they're really excited about this, is the Native American tribes are going to be involved in the program. They're going to have a Native American prayer and open with a friendship dance but we're also bringing in one of their Native American chefs from Tulsa who is going to be preparing some Native American foods that we'll all get to try.

>> Interesting.

>> And we're all really very excited that they're participating in this conference because they're adding another dimension to it.

>> Absolutely. A lot of Oklahoma's culture, that's wonderful.

>> Yes, absolutely, I mean they're definitely a big part of why SEJ is here and we wanted to include them and they are included, definitely.

>> So Jana and Dr. Moore what do you, we usually do this on the back end but because we're talking about the event right here, what do you hope that the journalists, when they leave this state, what do you hope they walk away with as far as a perspective and impression. What is the thing you hope they walk away with?

>> I would like them to have a more accurate picture of Oklahoma. I had misconceptions when I came here. There were many things I didn't know anything about.

>> Mmhmm.

>> The tribes is one, I had very little knowledge. And so I think that one is, shall we say some course correction that might be appropriate and then a whole new set of horizons that they might experience. And I think that the, in fact, when we were planning the program the society said to us that one of the difficulties that they were finding is there is so much to see and do in Oklahoma that we just couldn't fit it in and that was not their point of view to begin with.

>> And what's interesting is, as you found out from the outside, a lot of people go Oklahoma?

>> Right.

>> And then they get here and it's like wow, I had no idea all of this was going on. Right, Chad?

>> No, absolutely. I think Oklahoma has certainly battled with those issues before. I think those of you who have heard me before, I've been involved in economic development essentially my entire professional career and that's something we've worked to really try to overcome. Oddly enough, the Oklahoma City Thunder probably helped us the most but I think the National Weather Center here did as well. It really put OU and Norman and Oklahoma, in many ways, on the map. Now, Dr. Moore, at the conference you're going to play a prominent role in that. Tell us a little bit about what you're going to be talking about, some of the opening sessions, and some of the discussions.

>> Well, we're going to have a, say a living room conversation with, on Friday morning, with Dr. Katherine Sullivan, who is the administrator of NOAA. And that's particularly appropriate because her at the National Weather Center we have 5 NOAA centers or laboratories, 3 of which are 24/7, 3 operational NOAA centers, the Storm Prediction Center, which does all of severe weather for the United States but hurricanes, the Oklahoma City-Norman Forecast Office, which does our forecasting and the Radar Operation Center, which manages and operates all the weather radars in the country. So you've got those 3 plus a training center that trains all weather forecasters and a research lab that is part of the federal government, part of NOAA, the National Severe Storms Lab, Laboratory. So here, Katherine Sullivan has 5 NOAA lab centers here at the National Weather Center.

>> Hmm.

>> So I think she feels like she's coming home almost to Oklahoma. And we're going to have this roundtable discussion on Friday morning at the Embassy Suites Hotel.

>> Well, that's fantastic. And, Gary, we certainly talk a lot about weather and, Dr. Moore, we talk a lot about weather and specifically severe weather in Oklahoma. A little known fact, if you watch the news every night in Oklahoma you actually qualify for a minor in meteorology. No, I'm kidding of course but Dr. Moore, tell us a little bit, if we could, just kind of shift gears. There's a big difference between weather and climate and could you talk a little bit about that?

>> Yes there is and it causes some confusion because a person might logically say well, gee, it's tough to predict the weather out 5 days, you know, in Oklahoma our people do pretty good at that but how about 8 or 9 days or 10 days or 12 days now it's getting very difficult.

>> Sure.

>> And we all know that. Then how in the world can we say anything about 10 years from now, 20 years from now? Well, I can say something that I'm pretty sure I'm right about and that is that July of 2040 will be warmer than December of 2040 [laughter]. There are broad patterns and that doesn't run into the same kind of problems that a weather forecasting and one could get into some very technical arguments about the difference between weather forecasting, which you begin with a, shall we say, knowing what the situation is right now and then trying to move outward, we call that an initial value problem, versus where you change the boundary, the amount of energy in versus the amount of energy out, change something at the boundary and then you see how the system will evolve under that change over a long period of time. And so those are very real different mathematical problems and they're very different problems in terms of how we approach them. But, what we here at the university are trying to do is we're trying to delve into that very difficult gray area between weather and climate.

>> Mmhmm.

>> Can we begin to penetrate the problem of 30-day forecasts, 90-day forecasts. Well, we do this in some ways, El-Nino.

>> Mmhmm.

>> We now are able to say something 18 months out about that. Now, is it perfect? No, but even our weather forecast for tomorrow is not perfect.

>> Yeah, sure. But we do know during like, we're in an El-Nino pattern right now-

>> Yes.

>> so we know what to expect like in Oklahoma, for example, it may be a wetter winter but it may be a milder temperature.

>> Right.

>> It won't be as cold.

>> And in fact, what's fascinating is when you look at the conditions that we have right now and we know what to expect and then when we don't see what we expect. For instance we should be seeing precipitation starting to increase in California. We're not seeing that.

>> Interesting.

>> Now, it probably will happen but we really, when the system doesn't exactly act like it should then we learn things.

>> I think the public's concerns, obviously, when you look at what's happened in the last 2 years between the extreme drought, extreme drought in California, and you look at the extreme winter weather then in the Northeast last year, the conditions are a little more unusual than what we've recorded in previous history but we also know that the Earth's atmosphere between climate and weather is cyclic. So what do you say to that question?

>> That's really a very good question and one of the hard problems is to look at the interaction between normal, whatever that means, normal climate variability, climate varies. We have El-Nino, La-Nina that we just spoke about.

>> Right.

>> We have other modes of climate, the North Atlantic Oscillation, the Pacific Decadal Oscillation and so forth, so there are these broad modes of climate variability and then there is a change on top of that because of the significant increase, 40% in the case of CO2, significant increase of greenhouse gases in the atmosphere. So how the climate variability and climate change play together is not an easy problem but it's a very important investigation.

>> We only have about a minute before we take our next break and we haven't touched the surface yet on the university as far as the research and the sciences going on behind the scenes. We've touched lightly about what your studies are but there's so many awesome programs going on here that we haven't had a chance to talk about in that, especially with the College of Atmospheric and Geographic Sciences with the labs and the types of research that's going on. We want to talk about the students here and the things that they're involved with. There's just so much we've got to try to cover in the next segment so I hope we can take time to get onto that. We talk a little bit about the National Weather Center but there's a lot more involved. By the way, if you've never been here, we encourage you to do that. They do tours at the National Weather Center and you should take advantage of that, bring the kids, the whole family.

>> Okay, Chad and I will be back in just a moment and talk with Dr. Berrien Moore when we return on Oklahoma Science Radio Magazine, *Oklahoma Innovations*.

[Music]

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[Music]

>> We're back at OU talking with Jana Smith and Dr. Berrien Moore and Jana you had another thing you wanted to share, you had another [inaudible] that you wanted to share with the audience at OU.

>> Yes, absolutely. I wanted to just mention that this is the University of Oklahoma's 125th anniversary and since the SEJ is celebrating their 25th anniversary it just seemed important to mention that we're, you know, doing kind of similar type things to celebrate. Also, I wanted to mention that in honor of that I wanted to mention the Galileo's World Project on the campus

located in various sites on the OU Norman Campus, the Bizzell Memorial Library, the Fred Jones Museum, Headington Hall, and then at the National Weather Center and Berrien Moore can talk about that if he would like.

>> Well, and then Gary had an opportunity to go through a couple of those exhibits at the [inaudible] and at the Bizzell and I'm looking forward to taking a tour of the one through here at the National Weather Center. It's a really great, if you love science and you like to see where we came from and how we got here, it's a great exhibit to do. So I'd encourage everyone to do it. Dr. Moore, I want to talk for a minute about some of the really kind of leading edge research that's happening here at the University of Oklahoma and the National Weather Center in collaboration and one of those things, and this is something that's near and dear to most Oklahomans is the prediction of tornados and tornadic paths and from my understanding, I've seen a couple of presentations where you guys are getting better at predicting where a tornado might track and you've actually, as much as an hour in advance is my understanding. So you can take shelter better, you can understand the impact better. Tell us a little bit about what's going on and the accomplishments you've had.

>> Well, I think that they range from 5-day forecasts down to 1-hour forecasts. We were so proud of the Storm Prediction Center and some of the OU teams that collaborate with the Storm Prediction Center. For instance, I believe it was 13, 2013, we had an outbreak in Illinois and Indiana in November.

>> Mmhmm.

>> Yeah, that was really bizarre.

>> That is very strange. The Storm Prediction Center started identifying that outbreak 5 days out.

>> Really?

>> Five days out. Now that's extraordinary. That weather pattern 5 days out is some place out over the Pacific.

>> Mmhmm.

>> And a lot is going to happen and we have seen the Storm Prediction Center time and time again begin to give those early warnings so that when the outbreak occurs people have already started to pay attention. We know that happened with the Moore outbreak. We were talking about that 2 days out.

>> Mmhmm.

>> And then as you get into that last, that last morning or that last couple of hours, particularly with the use of extensive radar capabilities that we have now, numerical weather forecasting, we're running suites of calculation. Not just 1 model but sets of models so that we can begin to almost give probabilistic information about where we think the track is going to occur. I think people now know that, they trust it, they're willing to grant us that we're not going to be perfect but they know to take shelter. And so that last 15 minutes, we all know, are so critical and that has been nailed, spot on, time and time again. And, consequently, lives are saved. No question about that.

>> Oh, absolutely. And, Gary, I've had an opportunity to see some of these predictions that they've made and they actually were able to, they had a, occasionally had a false positive so a tornado didn't materialize but no false negatives.

>> That's the important one.

>> And that's the important one so they [inaudible] you could determine that this tornado is going to cut through this side of town so you know now, if you're in Edmond and it's cutting through Moore, just stay in Edmond and you'll be safe and so it's really tremendous. Now, Dr. Moore, tell us a little bit about you and your team are involved in another really great collaboration called South Central, The South Central Climate Science Center. Tell us a little about that and.

>> Yes, the Department of Interior, through the U.S. Geological Survey, established these Climate Science Centers, actually it happened in the Bush Administration, and then they had a competition, there were going to be 8 in the country. And we came to the end of that competition, there were 3 to be selected. One of those was who was going to be the South Central Climate Science Center and the University of Oklahoma put in a proposal with teammates, which I'll mention, University of Texas and Texas A and M. So we had [inaudible] and it was then head-to-head with Texas A and M, University of Oklahoma team and we won. I think we won because we're OU and because we had a great team. Texas Tech, LSU, and Oklahoma State were on our team and then we did 2 things that were a bit different. One, we said well something as important as this to the South Central region you need the tribes engaged, so the Chickasaws and the Choctaws were partners at the beginning, not at the end but at the beginning.

>> Oh.

>> And then perhaps, because of my belief and interest and maybe with a slight redefinition of South Central, we invited the General Fluid Dynamics Laboratory in South Central New Jersey. It just gave a little bit different flair to it but we thought that this was important to really bring in the top flight federal agency in climate modeling and to be there, deeply engaged with them because we know there's uncertainty and we need to understand that uncertainty.

>> That is really quite amazing. We talk a lot about collaboration and that certainly is a very collaborative effort and it really, sounds like gives you quite an extension of your reach, of the ability to do research. Is that correct?

>> Absolutely and we're really trying to gauge or focus the research on practical issues. Decision makers, people deciding on policy, wildlife refuges, what do they do about water management? How do they handle their strategy for migration of wildlife? These are very practical issues and so we've tried to gauge our research towards the practical.

>> Well, Dr. Moore, we certainly heard today and heard before all the amazing advanced research that occurs here, the predictions, the private companies that have partnered with academia here, but tell us a little bit about the student experience. I mean, this is, I'm guessing, the number 1 place for a student of meteorology or earth sciences to come to school, or?

>> Yes, yes it is and the School of Meteorology is the largest, the oldest.

>> I was going to say, you're probably one of the most diversified.

>> Very diversified. We have, for instance, just our radar program, which is really quite unique.

>> Mmhmm.

>> It is a partnership between the School of Meteorology in the College of Atmospheric and Geographic Sciences and the School of Electrical and Computer Engineering in the Engineering College.

>> Mmhmm.

>> So 2 different colleges collaborating, 2 different schools collaborating, sharing our students and as a consequence we have the largest, the best program in radar in the country.

>> Give our audience an overview, if you could, about the laboratory experience and the types of projects that students are involved with, just a quick overview if you could.

>> Well, one of the exciting things is that we opened last year the Radar Innovations Laboratory.

>> Mmm.

>> And so here students are able to have hands on experience in building radars.

>> Wow.

>> In working the back end intelligence on the radars, in working with the software that controls the radars and working on the products, for instance, the Doppler products that we get that distinguish between rain and ice. All of these things, the students are directly engaged with that. In addition, because you have the Weather Center and NOAA in the Weather Center you also have private companies. Weather Decision Technologies, that's only about a 3-minute walk across the parking lot. So here on the south campus we have now a million square feet of space in which engages private sector companies, university organizations, the Weather Center so that our students can actually go from a classroom experience into a private sector or into a federal experience just by walking across the parking lot or by going from floor 3 to floor 2 in the Weather Center.

>> You know, we could have a little joke here and say OU isn't just about football, it's all about weather and earth sciences now.

>> Absolutely.

>> I mean, my gosh. So, we only have a minute left, anything you both would like to say here in the last minute? Jana, do you have any final comments?

>> Yes, I would just like to thank all of the OU colleges who supported this SEJ Conference.

>> Mmhmm.

>> And I also want to thank Berrien Moore and Kelvin Droegemeier for their support of this conference.

>> Cool. All right, well, next week, Dr. Moore it looks like the campus is going to be buzzing.

>> Yes, we're going to be beating Texas and having a great discussion on energy at the same time.

>> Yeah, absolutely. And, I tell you, you've certainly opened our eyes a little bit. Chad, I know, he's grinning over here because he's gotten to see a lot of things [inaudible], not that it's your alma mater [inaudible].

>> Yeah, proud of my university. They've done some great things so live strong.

>> That's right. So, we want to thank you so much for sharing this. We wish you the best of luck on this conference. We know that the world is going to shine, we're going to have a big spotlight on Oklahoma and we hope that this conference will also bring more attention on a more routine basis when it comes to the Weather Center and all the weather and earth sciences in Oklahoma. We thank you, our listeners, for joining us each week. We hope that we bring you some new insight each time we bring new guests to this program and we hope you have a great week. Talk to you next time on another edition of *Oklahoma Innovations*. Have a great week.

[Music]

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