**Oral History Interview**

**with**

**Renee McPherson**

Interview Conducted by

Tanya Finchum

June 13, 2013

Spotlighting Oklahoma

Oral History Project

**Oklahoma Oral History Research Program**

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**Interview History**

Interviewer: Tanya Finchum

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The recording and transcript of this interview were processed at the Oklahoma State University Library in Stillwater, Oklahoma.

**Project Detail**

The purpose of the *Spotlighting Oklahoma Oral History Project* is to document the development of the state by recording its cultural and intellectual history.

This project was approved by the Oklahoma State University Institutional Review Board on April 15, 2009.

**Legal Status**

Scholarly use of the recordings and transcripts of the interview with Renee McPherson is unrestricted. The interview agreement was signed on June 13, 2013.

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**About Renee McPherson…**

Dr. Renee McPherson was born in 1965 in Madison, Wisconsin. In 1987 she earned a bachelor’s degree from the University of Wisconsin-Madison in Mathematics and Meteorology and then entered the School of Meteorology at the University of Oklahoma (OU) from which she received a master’s degree in 1991 and a doctorate in 2003. In 1991 she began working with Dr. Ken Crawford, a faculty member in OU’s School of Meteorology at the time, on a National Science Foundation grant to bring weather data to classrooms across the state of Oklahoma. That particular grant enabled McPherson to begin working at the Oklahoma Climatological Survey and on the Oklahoma Mesonet Project. She developed, in a partnership with a number of other people, a program called EarthStorm. EarthStorm was a way to take Mesonet data into classrooms across Oklahoma.

McPherson is the Director of Research at the South Central Climate Science Center, is the

State Climatologist of Oklahoma, and is an adjunct associate professor at the University of Oklahoma. For much of her career, McPherson has directed activities at the Oklahoma Climatological Survey and has developed research programs that are important to both the climate history and climate future of Oklahoma.

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| **Renee McPherson**  Oral History Interview  Interviewed by Tanya Finchum  June 13, 2013  Norman, Oklahoma |  |

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| **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson**  **Finchum**  **McPherson** | *Today is June 13, 2013. My name is Tanya Finchum. I’m with Oklahoma State University’s oral history program located in the Library and today I’m in Norman, Oklahoma to speak with Dr. Renee McPherson. This is part of our Mesonet project, which is a subseries of our* Spotlighting Oklahoma*. So thank you very much for having me today.*  Thank you.  *Let’s start by learning a little about you. Can you tell us when and where you were born?*  I was born in Madison, Wisconsin in 1965.  *A long way from here.*  Yes, it was.  *What did your parents do?*  My mother was a bacteriologist before she had kids. When she had my brother, she left work and stayed at home, and then eventually with me, too. Then my father is a PhD physicist. He worked at the University of Wisconsin there as a research scientist at the Synchrotron Radiation Center.  *So science came naturally.*  Science came naturally. He had two brothers. His older brother, my Uncle John, is a physicist who worked at Indiana University and was actually part of the Manhattan Project. His younger brother, Frank, was a geologist who spent most of his career in the oil industry. My brother became a geologist and I became a meteorologist. So yes, very much science geeks all throughout. (Laughs)  *So at what point, like in high school, did you decide what your career path might be?*  I always knew that I was going to end up somewhere in science. Chemistry, in terms of my high school class, was the one that I just absolutely loved. So I thought I was going to be a chemist or a chemical engineer. When I entered the University of Wisconsin for my bachelor’s program, that’s where I was headed. I was going to major in chemistry.  I took two of the chemistry courses for majors. Through those courses, I spent eight hours a week in labs in a dungeon, and I just wanted to see the outside. I had also worked in the summer for my dad, for a couple of summers at his lab, which also, since it was a linear accelerator there, it was underground. I never saw the light for much of that time. So I missed that.  I am kind of an outdoors person. So I was looking for some science field where I could actually see the outdoors. (Laughs) I just happened to take a meteorology course for the fun of it after my sophomore year in college. By that time I had switched my major to mathematics because I knew I could do anything with that major. I fell in love with meteorology and have been in the field ever since.  *Once you graduated with your bachelor’s, where did you go from there?*  I got interested in severe storms during my bachelor’s work at Wisconsin. Of course, the place to go is University of Oklahoma. So I began my master’s work in the School of Meteorology here at the University of Oklahoma back in 1987. My master’s work was very much on severe thunderstorms and very short scale. I’ve progressed kind of through my career to longer scale and larger regions. I’ve moved into that field of climatology, now.  So I finished my master’s in 1991. During that year, I ended up working with Dr. Ken Crawford, who was on the faculty in the School of Meteorology at the time, on a National Science Foundation grant to bring weather data to classrooms across the state of Oklahoma. That’s the grant that then funded me to start working at the Oklahoma Climatological Survey and at the Oklahoma Mesonet Project. After several years working there full-time, I decided to go back for my PhD, so I worked part-time on my PhD, also in meteorology, while I worked on the Mesonet and other projects. So that’s where I’ve been.  *So the Mesonet, once you got involved with it, it just kind of created your path forward to some degree?*  The Mesonet is a very large part of my career. I actually never officially worked for the Oklahoma Mesonet. I was working for the Oklahoma Climatological Survey. My husband had been hired on at the Climate Survey several months before me as a software programmer and system administrator. He worked directly under Dr. Fred Brock as part of the Mesonet. So Mesonet became part of our lives together, and all of the data, or much of the data, I used in those three years that I was working on the National Science Foundation grant was Mesonet data.  I spent a lot of time just helping out in various areas with the Mesonet that were a little bit separate from the project that I worked on. My husband and I tended to work more than forty hours a week, so we’d play around with new products and new services that were related to the Mesonet as the Mesonet grew. So I feel like I was one of the people who helped birth the Mesonet.  *Did you do any particular programs with children? Describe what it was that you were doing.*  So the program I developed, in a partnership with a number of other people, was a program called EarthStorm. EarthStorm was to bring Mesonet data into the classroom—so, authentic science learning into classrooms across Oklahoma. The idea was that students would learn science better if they were provided opportunities to kind of learn as they were interested in something. And in Oklahoma, everybody is interested in the weather. So we would teach various aspects of science, scientific concepts using Oklahoma Mesonet data.  So we brought in teachers. It was a teacher enhancement program. So we would essentially train the trainers. We would educate the teachers and they would go back to the classroom and have an impact on a much broader community of students than we had time for, personally. We really focused primarily on rural schools.  At that time, in the early 1990s, schools didn’t have internet access like they do today and especially the rural schools. If there was a phone line that connected to a computer, it was in the principal’s office or it was in the library. Teachers didn’t have access in their classrooms to that type of technology.  We provided them all of the education and training—a three to four week institute during the summer where they would learn about meteorology and the Mesonet and a broad range of learning activities. They could only participate if their principal signed an agreement that they would provide a phone line in the classrooms. We would provide a computer that they would be able to then access the data and we provided them all the education and travel stipends and everything, but the school had to buy in in some way, and that was to provide a phone line. So for some of these teachers in very rural areas of Oklahoma, it was their first opportunity to kind of connect to what a lot of the larger schools were starting to— Oklahoma City and Tulsa schools already had connectivity at that time.  I remember I visited all these schools and some of them that were—it was just a trailer out in somewhere in rural Oklahoma. We would set up the modem and at that time, if we were lucky, we could maybe get 7200 baud and connect in to the University of Oklahoma through what was called a bulletin board system at that time—World Wide Web wasn’t up and running. They could then go through a menu of options and download live data and get that into their classrooms for the kids to use. So many of those teachers ended up teaching the kids how to go through data download. This was the first experience that those students had with accessing data.  We developed software—had a software development team at the Climate Survey and developed software where they could visualize a cold front moving through or storms coming in. Over the years, it got very, very sophisticated to the point that we had a classroom, as an example, we had a classroom in Enid, Oklahoma. Monroe Elementary—Lori Painter was the teacher of fifth grade or sixth grade, depending on the year. Her students got connected to the local emergency manager. At that time, it was a volunteer position in emergency management. He worked, I think it was at a shoe store so he couldn’t keep track of the weather during the day. He had a full-time job. So the students would keep track of the weather and a certain part of the day, they would fax him a map and they’ve hand drawn where the dry-line is and where they think the threat of thunderstorms might be. He ended up giving them a pager and so they could page him when storms started breaking out, or if a weather alert came up.  The students really felt empowered like they were really helping their community. There were just many, many stories like that. It also empowered a lot of the teachers. There were teachers from communities that probably wouldn’t have had opportunities to really get too involved in national science education projects. But because of their background with EarthStorm and the confidence that they gained, they started applying to some of these national and regional science education projects and became leaders in their communities. It was a very fulfilling experience that I had in those three years developing that project.  After that, I started overseeing all of our outreach projects that we had at the Oklahoma Climate Survey. That started to include outreach for the public safety community and a project we called OK-First. And we worked with the rural electric cooperatives across the state, again, for them to better prepare for severe weather during the spring, but mostly for winter storms, which is what most affects the electric utility community.  *So EarthStorm was the precursor to OK-First?*  Yeah, you could say EarthStorm was a precursor. We knew we wanted to reach into the public safety community when the Mesonet started developing, but we also knew that teachers were very, very patient. So working with the teachers—I mean, the first workshop that we had, we had no Mesonet data. My husband and I had to make up in our minds what we thought Mesonet data might look like so they had some example maps we could work with during the summer institute.  It was only later that year that the stations started going up and the data started moving through the system. So there was excitement in the process as we saw more and more stations going up. We knew the teachers would be very patient and very forgiving with mistakes we would make along the way. We would learn a lot from them about what they needed and how they needed to visualize data. They provided us a lot of feedback for our software development and our product development efforts.  At the same time, our colleagues at Oklahoma State University were bringing the data to the agriculture extension community, and another group of patient people who could provide us some feedback. So it was through those two communities that we kind of got our feet on the ground. We got some grassroots support so that they could talk to their legislators about how valuable of a program this is. We were able to develop products a lot better and faster when we all just jumped in together.  We warned them ahead of time, “Look we’re just doing this on the fly and we’re learning from ourselves and you and everybody else.” I think that’s one of the things that made it so successful. Scientists typically go in and they say, “Okay, this is the way it has to be done. Once we get to that level, we’ll open it up and let everybody use it.” This was a different way of doing things, but most of us were so young, we didn’t know what the usual way of doing things was. So this, to us, just seemed… well, it only makes sense that you would involve your stakeholders, the people who are going to use the data just from day one, and move forward from there. It was a highly successful model that I’ve been fortunate to be involved in because then it just followed me throughout my career. I’ve known nothing different other than working with others as projects are developing.  *Well, at the end of those three years, did the teachers still use the data or had you already made them aware enough for them to continue to use it? That transition, I guess, is the question.*  Well, EarthStorm still exists today, but it is just different than it was back then because obviously, the World Wide Web exists now. Teachers now have pressures on them for testing, so the program has had to evolve over time. Those teachers were able to keep their computers. A lot of them used their experience, then, and their interactions with us to write their own grants. There were teachers who were bringing in full computer classrooms because they were able to write grants. The local PTA would see what the teachers were able to do in the classroom with the students and said, “Oh, we need more of this.” So a lot of that happened. These teachers took it to a level that we never even really anticipated when we wrote the grant. Many of them have retired since then.  Many of the younger teachers are still out there teaching and using Mesonet data on a very regular basis. They’ve told their friends and the data is much more accessible being on the web than it was, being on cell phones and everything else. So there are a lot of additional activities that are going on statewide with the teachers that it has just blossomed into a great program.  *Seems like that’s part of it is selling the benefits of the Mesonet and what you can do with the data, to garner support financially.*  Right. I’m the state climatologist of Oklahoma, and once a year all the state climatologists around the country get together. In many of the state climate offices, they do work on their own state-observing systems. So many of them are struggling to get funding to maintain their instrumentation or to build their system to be something that more resembles the Oklahoma Mesonet. They always come to me and say, “How did you get so much permanent funding from the state of Oklahoma for the Mesonet?” I think one of the keys was getting these people all throughout the state at the grassroots level, working with the data early on in the process and contributing to building what is today the Oklahoma Mesonet. Their buy-in and their excitement about it would then be infused to their local legislator.  The other thing I think that was very beneficial was that since it is a partnership between the University of Oklahoma and Oklahoma State University, then when you went in and visited any particular legislator—depending on which of those two universities they graduated with—they could still cheer on the program. So everybody saw the value. Legislators are very weather-aware in Oklahoma. They had people in their district who were users of the data and very happy users of the data—so they could easily see the benefits. It became a program that was, could almost sell itself. So we benefitted very much from that large group of grassroots supporters.  *There are different types of users. Can you talk a little bit about that? Education is one, but are there others?*  Right. So, I mentioned real briefly, the community and the electric utility industry. One of the greatest uses of that data in the past ten years has been looking at our ice storms that we’ve had. In the 2000s we had about a dozen ice storms, which we really hadn’t seen that number in previous decades. Some of those were just absolutely devastating. So using the Mesonet data, and then forecast products from the National Weather Service that we would kind of package together. The electric utility industry was able to see what locations were under the heaviest threat of icing and how much icing might be occurring.  During an event, strangely enough, our wind sensors—because their propeller vane anemometers—the little propeller, as it starts getting ice loaded, slows down and slows down. It eventually freezes, so you start seeing all the winds decrease on the Mesonet. So you can start measuring very quickly during an ice storm where that icing is starting to occur by just looking at the Mesonet wind products. So things like that that we learned just as things happened, we would then teach customers—in this case, the electric utility industry. They would use those tools to start sending out their crews to the region.  So for them, it was very cost-saving to get their crews to the place where icing was occurring as quickly as possible because there is two things that hurt their industry. One is the amount of personnel time to recover from an ice storm. You have to bring in crews as quickly as possible, because if it is harder to get in or if they have to bring them in from Arkansas or other states, that’s a longer period of time that they don’t have those poles up, and it is more dangerous for the people who they have trying to fix things because they have to work longer hours. But also, they’re losing money when those poles are down and there is no electricity running through them, so it costs them in two ways. For the rural electric utility industry in particular—they’re out in very rural areas of the state, and there are a lot of poles that tend to be affected in these events. So the products that we would provide would help them better stage their response and get things back up and running faster.  In the summertime, the amount of electricity they can push through one of these large power lines was very much related to the temperature and the dissipation of the heat around the line. So if the winds were calm and it was very hot out, they couldn’t push as much electricity through the line as they could if they had some winds, some cross wind, that would help cool that line. So they would use our data to help them know how much electricity they could push through a line.  They would also use our data to get a better idea on the generation side, so Western farmers—electric cooperative also generates electricity down in Anadarko. They would use it because they’re distributing that energy across the state to multiple electric cooperatives. So they would be able to see if temperatures were cooling off in a part of the state, so they knew demand was going to go down. So they might know, “Oh, I don’t have to turn on another generator, which might cost 50,000 dollars,” or I don’t remember how much, but a large chunk of money to start up a new generator. They could use the data to kind of gauge whether there was going to be a demand for that electricity and they needed to start it up or if an area of the state might be cooling off because of cloud cover and the demand was going to go down. So they were one of our major users.  Obviously the emergency management community, in addition to the Mesonet data, by 1996, we started providing radar data. It was unique for an emergency management community, statewide, to have access to radar data. So it’s not like today where all the radar data is available on the World Wide Web. At that time, the National Weather Service had contracted with four private companies to distribute radar data. So those companies had a price on the data they distributed. A large city like Oklahoma City could afford that price, which…private companies and large government entities could afford the monthly data price, but the City of Moore, Oklahoma…Prague…these towns didn’t have that kind of budget, so they had no access to live radar data. So we worked a deal with one of the distributors that we, at the Oklahoma Climate Survey, would pay a fixed price and be able to redistribute data to all emergency managers who attended our workshops and learned about how to use radar data in the OK-First program. So that was, as far as we know, the first of a kind in the country to be able to do that, and do that redistribution.  So we were able to get that radar data in tandem with our Oklahoma Mesonet data out to, again, the rural parts of Oklahoma starting in 1996. This became very, very important on May 3rd of 1999 when we had a major tornado outbreak and flash flood event into May 4th. That tornado outbreak was devastating for the City of Moore, but the emergency manager there, Gayland Kitch, had gone through our workshop. He was actually in the first class of our workshops, so he had been using all the data we provided for years. So he could make his community as safe as humanly possible in that type of event.  But in the other rural areas, typically what would happen without access to weather data on their computers, which we were able to provide—without that access, what they would do was turn on whatever TV station they could get on the air and hope that somewhere in the weather programming, they would show for a period of time something that was over their area, where the storms were coming nearby. They had access to—they could talk on the HAM radio to the National Weather Service offices. So they weren’t without any type of communications at that time, but as the Moore event occurred and turned into a disaster event, as opposed to a weather event, the local TV stations were focused on the damages in Moore. Every now and then, they would update people on the storms that were still occurring across the state, but it wasn’t as live as it had been before the damages occurred.  These rural emergency managers, now they had access to live Mesonet data and live radar data at their location, and we provided them the visualization software so they could see this. So they had decision tools they never really had before. There were multiple very violent tornadoes that happened after the F-5 tornado that went through Moore. There was a lot of flash flooding in Northeast Oklahoma at that time, and many of these tornadoes were now going through at night. The decisions that those emergency managers, who’d gone through the OK-First program, were making at the local level to stop traffic on highways, and other local decisions, saved so many lives that year.  It was through their stories and the stories of teachers and others that really led to the full funding of the Oklahoma Mesonet the following year. We always believe that if you put the data in the hands of people who can make the decisions, as opposed to trying to do that from above, but give it to the local people so that they can make those decisions—it’ll benefit the state substantially more than if any of us tried to go make those decisions ourselves.  Some of the data has been used in very unusual circumstances. We had a homicide that was solved because of Oklahoma Mesonet data. I don’t remember all the details of the case, but apparently the perpetrator of a crime indicated that he was out in a certain area and his shoes were wet or something like that, and he indicated that it hadn’t been raining, and our data was able to prove that it was. There have been a number of police cases that have been solved with our data used as backup.  Of course, the agricultural community is a huge user of our data and products. Our colleagues at Oklahoma State have developed a lot of products that have benefitted specific agricultural producers, whether it be pecans or watermelons or wheat, or whatever the crop is. These crops are very much sensitive to the changes in the weather and amount of precipitation. So there have been a number of models that have been developed that kind of go right to the heart of decisions that agricultural producers have to make.  We have also, led by Oklahoma State, we’ve worked with fire managers across the state. So fire conditions, very much weather dependent. Another case where we brought multiple sources of data together—so we actually used satellite observations in concert with Oklahoma Mesonet data to build models of how dangerous it might be, what the fire conditions could be like, and if a fire were ignited, how fast it might move and how hot it might be. A lot of these fire managers just rely day by day on those products.  A lot of those resulted from an incident. It was in the early ‘90s… Actually, it was before the…it was after the Mesonet was funded, but before the Mesonet sites went online. Somebody was doing a prescribed burn east of Enid. It was north of a major highway. At the time, the winds were coming from the south and they were doing a prescribed burn, but there was a wind-shift that the National Weather Service weather network at that time, which they didn’t have a lot of stations in Oklahoma, that network couldn’t measure the wind-shift. It shifted the fire—it then burned back to the south after the winds shifted from the north and burned down a hay barn. All the smoke from that hay then went over the road, and there was a multiple car accident, and I think two fatalities from that. If we had had the Oklahoma Mesonet at that time, if we had the high resolution spatial data, we would have been able to detect that wind-shift and fire officials would not have allowed a prescribed burn to occur. There have been a number of fire officials who said one of the things they do watch when they are working wildfires is where the wind-shifts are. They’ll redeploy their units ahead of the wind-shift so they’re in the right position and such that when the wind shifts, it keeps their personnel safe and they’re in the right position to better fight the fire.  Certainly, the research community, not only weather research and climate research, but agricultural engineering and civil engineering and hydrology and just a wide variety of research communities use the Oklahoma Mesonet data for their research projects. Because we’ve had the Oklahoma Mesonet, we’ve been able to bring in multiple national and international field projects to the state of Oklahoma that we wouldn’t have had an opportunity to bring in before. Nobody else has as dense of a network as we have. So it provides a set of data that is very hard to match anywhere else. So we have been involved in all kinds of field campaigns that have come in and investigated some sort of phenomenon for a period of time, whether it be six weeks or a full year. The data have been used to validate satellite observations. So satellites out there trying to measure different types of variables like soil moisture, from space. So having a soil moisture network like we have with the Oklahoma Mesonet allows them to compare directly to observations.  I would say that we established the Oklahoma Mesonet as a multipurpose network. That was part of the focus of developing it, so that it wouldn’t be just an Ag network or a weather forecasting network or some more narrow focus. We wanted to develop it to be multipurpose, but we really had no clue on all of the things it really could be used for until we were well into it.  *Sure not with a detective case.*  (Laughter) No.  *Did the steering committee have much input in all of this?*  Into the development of the network itself?  *With the various uses for it.*  So the steering committee certainly had certain audiences that they wanted—with the Ag audience being one of the main focuses. Most of these kind of outreach activities were not officially part of the Oklahoma Mesonet at the time. The Mesonet was really focused on building a network with high quality data and being able to provide products that people could use easily. Most of these other education programs that would then bring in users to a class and learn about how to use the data, those were funded separately from the Mesonet and were either part of our outreach activities at the Oklahoma Climate Survey—like the EarthStorm project was funded through the National Science Foundation and through the Department of Energy. The OK-First project was funded through the Department of Commerce. The rural electric cooperatives, themselves, through the Oklahoma Association for Electric Cooperatives provided funding for their folks to go and learn about the Mesonet. So these were very, very related activities, but we looked at other sources of funding to provide that.  *It has been a long twenty years and a short twenty years, I guess.*  (Laughter) Yes.  *Were you involved when it got approval from the legislature to fund it and Governor Bellmon said, “Let’s go”?*  Yes, in fact, the funding was initiated in the Senate Appropriations Committee—Education Appropriations Committee—that was chaired at that time by Senator Cal Hobson of the Norman area. So Senator Hobson had been a staunch supporter for years, as were many other legislators. I and Ken Crawford and Ron Elliott went to present to the Appropriations Subcommittee about funding the Oklahoma Mesonet.  I remember, pretty clearly, that meeting that they had where the funding was initiated. As a group of scientists, the most typical thing is you go up there and you start bringing all of your bells and whistles and charts and talk science language. But we just kind of introduced ourselves and then we stepped back and we brought three of the users with us. For the bulk of the time that we were provided, which was about a half hour in front of the committee, the bulk of the time was spent by those three users talking about how they used Oklahoma Mesonet data and the differences that it made in their lives.  We had one teacher, one emergency manager and a line manager from an electric cooperative who spoke. The teacher made the most stubborn legislator in the room cry because of the stories that she would talk about in terms of some of the students who had come into her classroom who had learning disabilities or had kind of emotional problems and had hard times engaging with their peers. She would put those people in charge of working with Oklahoma Mesonet data and teaching the other students how to use it. So they became kind of the local hero in the classroom. So she told a story of a particular student who had gone through that program and continued to come back here year in and year out to the classroom after school and continued to work with the data. He had just recently gotten his ACT score back and it was outstanding and he was going to go on to college. Just success stories like that kind of sold it to the committee. So they put in full funding for everything we had asked for, they fully supported. It went through the house committee and the governor’s office.  Governor Bellmon had always been a fantastic supporter of the Mesonet. He had a site near where his farm was in Red Rock, Oklahoma. Being from a farm background, he understood very clearly how important having weather data was to the farmers of the state. At that time, many of the leaders in the legislature were from the rural parts of the state. They were very agriculture-focused. So it was very clear to them what the benefits were. So we had no opposition that we knew of as things progressed, other than, obviously state budgets are tight, but… It was a team effort, I would say. A big part of that team were the people who were using the data.  *Pretty good tactic to sell.*  Yeah. And we still, today, have a lot of supporters in the legislature. Even at the congressional level, Congressman Lucas checks Mesonet data on a daily basis while he’s in DC, so he knows what is going on back in Western Oklahoma. A number of the legislators, especially these past couple years, have been very concerned about the drought conditions. Mesonet data has been crucial to better defining where the drought is either better or worse across the state of Oklahoma.  Every week there is a couple of climatologists at the Climate Survey who provide input to the National Drought Monitor on where all of those lines are drawn on the weekly drought maps. Those lines make a lot of difference. If you get in a certain category of drought, all of a sudden, federal assistance is available to the agricultural community. So if you don’t have knowledge of how bad it is because you don’t have a Mesonet like we have, with soil moisture sensors at multiple levels, then you might be missing out on federal assistance to citizens of your state because you just don’t have any proof that it is as bad as it is.  *Is there a state that has something similar?*  There are a number of states that have networks that are like ours in many respects. The things that are most different are that they don’t have as high spatial resolution—so they have fewer stations for the size of an area that they’re in. Kentucky has a very good network. Georgia used to have one, but the funding wasn’t continued. Iowa. Illinois had a network for even longer than the Oklahoma Mesonet, but again, it just doesn’t have as many stations for the area.  There’s a lot of states that are out there. It used to be that we would, at least a couple times a year, there would be a different group that would come in and meet with us about how we set up the Mesonet and what we did, how we made decisions and how we got funding. All the how-to questions so they could try to go emulate that somewhere else. Probably the place that emulated it the most closely is out of Texas Tech University. So the West Texas Mesonet has developed. In fact, they brought some of our Mesonet employees down when they were first setting it up to show how to do maintenance to a station, and how to install a station and all of those things.  We’ve had people from different countries come. The province of Quebec in Canada still works directly with the Oklahoma Mesonet on…mostly on the software development side, providing products and services to their largely agricultural based, and fire managers, in the province of Quebec. But we’ve worked with numerous either states or countries across the world to talk about the process that we went through. In some cases, they can emulate it. In some cases, it’s hard to emulate. I think there is a lot of networks that are out there and are in better condition than they were as a result of the work here.  *As you look forward, do you have a vision for the next twenty years?*  (Laughs) Well, so we’ve been around for twenty years, and that starts to make a good basis for a solid climate record. There’s a lot of our customers across the state who are asking about changes in climate and variations in the climate and how to build more resilient communities or build an infrastructure that will last through some of the really intense rainfall events that we’ve now been measuring. So I think one of our key visions is to see the development of the network in a way that helps provide people some better information about how they can be more resistant to drought, more resistant to changes in climate, changes in the environment that they’re around.  I would certainly see Mesonet data becoming more mobile than it is today, products and services on smart phones and iPads and all that, to become essentially ingrained in how people interact. I would also hope the private sector community would take advantage of the data that is available on the Oklahoma Mesonet to try out new things that they may not have thought of before, or may have thought of and didn’t have the data to test it out. I think Oklahoma is a perfect place to do some really innovative product development because of the data that we have here.  You can imagine that you’re driving down an interstate and maybe there is some weather hazard that is ahead of you. You’ve got intense rainfall that’s been measured by the Oklahoma Mesonet and your car alerts you and tells you where to pull off and, ‘Here, stop at this restaurant and have a meal and wait two hours until it is safe to go on…’ So I just think there are a lot of things that could be done with the data that aren’t being done because it really does rely on the private sector community to get fully engaged with the data that are available.  I think for the science community—one of the things that was just recently announced by the National Science Foundation is, I and a colleague of mine—Duncan Wilson—at Oklahoma State University have been helping a broad group of social scientists, ecosystem scientists and physical scientists to lead an effort to develop what is called Couple Human and Natural Systems. So let’s couple the data we get from the Oklahoma Mesonet and from the satellite observations and radar observations and other of these physical systems, to social science data. So measurements of people’s attitudes, perceptions and behaviors. There is a twenty-million dollar National Science Foundation project that has just been funded for the state of Oklahoma. Oklahoma State University, University of Oklahoma, Sam Noble Research Foundation and Tulsa University are all involved in that, as well as all the tribal colleges across Oklahoma. It is to look at adapting socioecological systems to climate variability.  The idea is that people make decisions on how they use water, how they respond to severe weather events and just all kinds of decisions related to weather and climate and their environment as events occur. So if we can measure people’s perceptions and attitudes and the decisions they’re making on how they’re using resources or whether they respond to a tornado by sheltering or by fleeing on the interstate, we can link that to the physical data to know what actually happened in that location and how these decisions are being directly influenced by what they experienced in the environment.  We’ll be building kind of the social science equivalent of the Oklahoma Mesonet over the next five years, and have a survey system where on a quarterly basis, we’ll be able to ask these types of questions across the state of Oklahoma, but do it in a way where it is what they call geo-referenced. We won’t know exactly what household, per se, the respondent is in, but we’ll know, in general, the area or region they’re in, and what their closest Mesonet site is.  So for example, we’ve gone through these two years of severe drought in the state. So had we had that system in at that time, we could have seen the evolution of how people made changes and how they used water based on how drought conditions progressed, or maybe they had a couple weeks of rainfall and they changed their water decisions in a different way. So it will help us understand that linkage between what is happening in the physical environment and decisions that people are making so that we can hopefully better use the resources we have in the state. If conservation methods are needed because of drought conditions in a certain region, we have a way to communicate that need because we understand…well, I don’t. (Laughs) The social scientists know how to do that work to better understand what type of messaging needs to be made so people realize the dire conditions that are occurring.  I think that project, in itself, again this social science network observatory across the state of Oklahoma—it will be one of a kind. It will be world unique like the Oklahoma Mesonet was world unique. The hope is that that will, again, bring in more research into the state, more funding opportunities for our research community, and better products and services to the people in Oklahoma, because we’ll better understand what decisions they want products and services for, and how they’re interpreting the products and services that we’re providing such that we can tune them to better serve their needs. So I think that’s a really exciting opportunity.  *I’ll have to come back in five years to see how it went.*  (Laughs) Yes.  *You’ll have to find an angle for K-12 for that particular project?*  Yes. This has been funded under what is called the EPSCoR program, Experimental Program to Stimulate Competitive Research. The National Science Foundation has money set aside for certain states that traditionally don’t get as much National Science Foundation funding as other states. There’s a swath of states, for example, in the Great Plains, excluding Texas, that traditionally don’t get as much funding. There is Idaho and New Mexico and Delaware. Some of these other states that traditionally don’t get as much funding, so they have access to this funding provided through the EPSCoR program.  The five-year program that the state of Oklahoma just won, the twenty-million dollars—60 percent of that is for research and the other 40 percent is for education and workforce development and diversity initiatives. So part of that funding will go into better education in our K-12 schools, for our science, technology, engineering and mathematics, or what is called STEM education—provide opportunities for the K-12 students, it will provide opportunities for students in tribal colleges in Oklahoma, actually providing resources for them to build parts of their science curriculum better, including actual people to teach that, as well as equipment that might go into a classroom based on the needs of that college. It will work on a number of diversity initiatives to broaden the STEM field, the science, technology, engineering and mathematics fields, so bringing more women and minorities into those fields.  I think that will be a pretty exciting program because so many people in Oklahoma are interested in weather and climate that I think for this five-year project, that’ll kind of infuse some excitement into that. Not saying that the previous ones…the previous one was on bioenergy. Not saying that that isn’t exciting, but I think the people in the state are just naturally tuned to what is going on in the weather and climate that I think it provides a lot of opportunities for people to get excited about science.  *Seems like it has been a very good fit for you to come to Oklahoma.*  It has. It has. So I’ve been very honored to work with the Mesonet and their team. I think more than anything, just the process from starting from scratch and then seeing it in fruition has been, for me, career-wise, just outstanding because it gave me confidence to start some very major programs from scratch. Not necessarily knowing where they’re going or what they might end up being in ten or twenty years, but knowing that if you work with the people who are going to use the products and services, it will evolve in a direction that will be of more benefit than you could actually imagine in your own little mind. I’m excited about some of that, too.  *Thank you so much for sharing your Mesonet story with us.*  Well thank you, Tanya.  **------- *End of interview*** *------* |