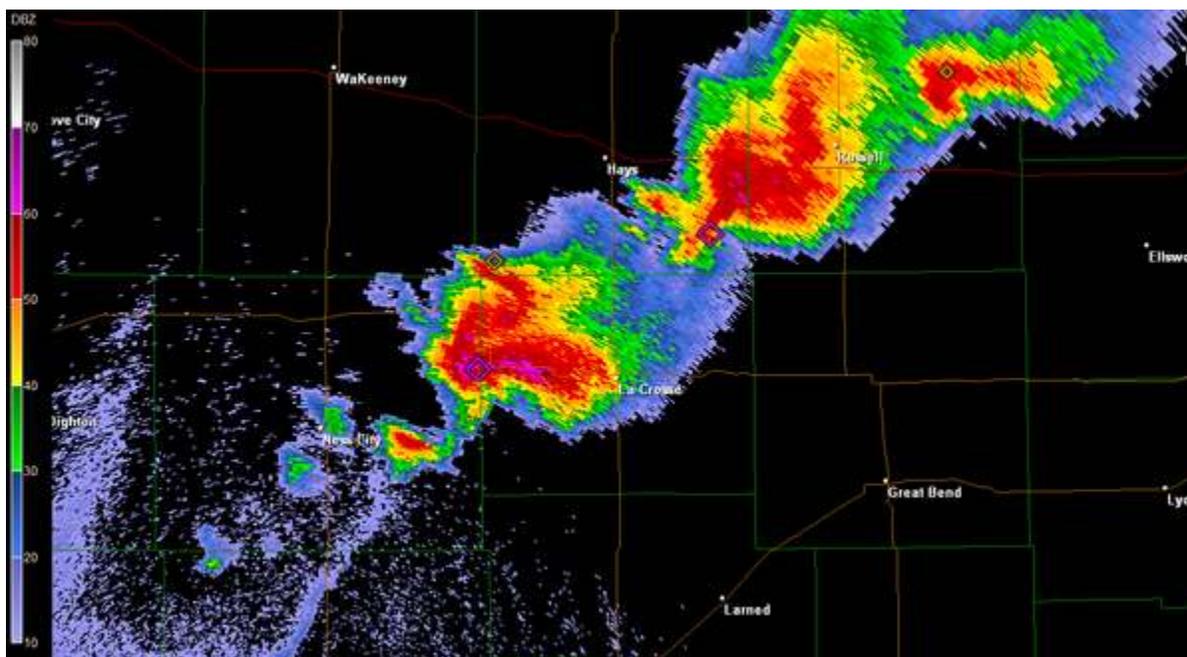


I-70 Corridor Tornadoic Storm Events on May 25th, 2012

TORNADO 2012 | JUNE 28, 2012 | BY: CHRIS HILL |

11 photos

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Here's a thought for vacation travelers, or anyone road tripping across our Great Plains. In spring and summer it might be valuable to understand a little more about the kinds of storms that produce tornadoes, how they develop and common characteristics of them. It can be pretty easy to be caught unaware in a situation that could prove dangerous. I know, because while I happen to be a

professional storm tracker, I can tell you that there are times when Mother Nature has the upper hand.

At 7:30 in the morning of the 25th of May, 2012, I got a call from John Hallen, director of Severe Warning Systems (SWS). He let me know that his updated forecast for the day indicated there were favorable conditions for a tornadoic outbreak along the I-70 corridor in western Kansas. John could see that a low pressure trough had advanced a bit eastward, so he was heading off early to Burlington, Colorado, from his Colorado Springs base. On the Storm Prediction Center (SPC) mesoscale analysis page, I noticed a warm front boundary likely to be bulging upward towards I-70. I thought such a boundary could anchor a tornadoic storm, as convective storms tend to ride along frontal boundaries and once the storms have matured they can take a right turn and ride the front. There were other indicators too that we would see slower storm motions, increased potential for cyclic

tornadoes, and possible late firing storms. Shear is a good tornadic storm ingredient. It means there is turbulence in the air; wind may move in several directions and it could also mean the winds will increase as you go higher in the atmosphere. Studies show that most tornadoes occur when you have high CAPE, (Convective Available Potential, Energy)- high shear environments; however, tornadoes can, and do occur, in some instances with low CAPE - low shear. So you watch for speed shear and directional shear. Finally there was a little bit of cap. Think of cap as a lid on a pot of boiling water and if the lid comes off, storms will build rapidly. However, if your lid is too strong, and it doesn't come off, you don't have a storm. A slow moving storm, as this one seemed likely to be, is a chaser's dream as it is much easier to keep pace. The SPC forecast had bracketed central Kansas, at a 5% risk. I realize that 5% does not sound all that probable, especially when you think of all that potential open space. This is probably an issue meteorological sciences should work at clarifying to the public. Five percent means we think it is likely enough to head out with our equipment and take a look. Two percent is sometimes a good gamble. So don't be fooled by the numbers. I loaded my car with GR Level 3- a program weather people need on their computers that gives you a nice radar display; Threat Net a satellite based radar system; my cell phone with Radar Scope, a few bottles of water, some food, and headed off to work.

View slideshow: Tornadoes Heading towards I-70 near Russel, Kansas on May 25th, 2012

(<http://www.examiner.com/slideshow/tornadoes-heading-towards-i-70-near-russel-kansas-on-may-25th-2012-1>)



(http://cdn2-b.examiner.com/sites/default/files/styles/large_lightbox/hash/a1/50/1340938634_3630_am2.jpg)

Tornadic wall cloud, strong rotation, and forming tornado by Amanda Lindquist

Photo credit: Amanda Lindquist

Unfortunately I had office work to take care of first and did not have the luxury to take off early that morning. John was going to get a head start and said "too bad you have to work today, I'll be sitting in the field of dreams." In this case the field of dreams is the warm moisture axis ahead of a triple point boundary where a front intersects with a dry line boundary and where low dew points increase to higher dew points (usually ahead to the east), and cumulus cloud tower (cu) formation becomes explosive when afternoon heating erodes the convective inhibition (CIN).

At noon, I was off and headed straight east on I-70. I set my cruise control, hoping I would make it in time to my investigation area. When I left Denver, no storms had formed, and I thought I just might have time to position, before convective storms developed. I had originally planned to call Ling, Dr. Josh Wurman's wife, to see if team ROTATE needed me to take any equipment into the field, as the ROTATE scientific research team was also investigating the same area.

However, I did not have time to head to Boulder first. Instead I drove to Goodland, Kansas, and gassed up. I started seeing a few cells pop up on my laptop radar and on satellite imagery, and then I saw anvil clouds forming ahead of me. Good, I thought, I was in range.

Twenty minutes after passing east of Colby, Kansas, I got a call from John Hallen, saying: "Chris, I am on a fast developing mesocyclone with a big rotating wall cloud. This thing is going to put down a tornado!" I wanted to know where, but unfortunately he was on a dirt road with no mile markers, north of Russell. He texted me a picture of a well-defined mesocyclone base.

A few minutes later, I got another picture from John of a cone funnel with an enormous ground circulation below, a tornado! I called my daughter Lauren and her boyfriend Colt Forney, as Lauren and Colt were on the ROTATE

tornado project research team, and they were in the general area. I told her what John had seen. Like me, she wished she had specific coordinates of John's position.

ROTATE is an interesting project, made up of a smaller version of the original Vortex II crew with some new additional staff. The ROTATE vans and probe trucks carry tornado PODs in the back, which can be deployed, if ROTATE drivers can safely get ahead of a tornado. Otherwise ROTATE probe and scout vehicles are designed to drive into the hook echo region of a tornado (and are tracked by GPS from the DOW7 command vehicle). ROTATE vehicles are looking to scan versus intercept a tornado. In the meteorological research community, Reid Timmer has a special vehicle- the Dominator, and Sean Casey has a Tornado Intercept Vehicle (TIV), made to drive into medium-to-low strength tornadoes, and these vehicles do have operating limits. This day, TIV2 was traveling along with team ROTATE.

The weather activity that afternoon started changing quickly. Just before I drove eastward under the anvil shadow, I saw huge overshooting tops above enormous updraft cumulus cloud towers of a pair of supercells heading toward I-70. With that view, and John's new report, I knew I didn't have much time. Still as I hustled to be at the right place at the right time, I had time to think about the fact that Mother Nature was into twins that afternoon. We had two asteroids flying past earth, and this weather set up was producing two tornadic storms, next to each other. Appreciating noticing things were coming in pairs, I smiled when a second chaser friend, John Merga, of the Merga Foudation, who was also driving his probe vehicle M1, as an independent part of the ROTATE team, wanted to know where I was, and what I was seeing at the time. We chatted for a few minutes.

The SPC then issued a meso-scale discussion (MD) watch box for the area I was now driving towards and they posted a significantly increased possibility for tornadoes. This news, if you are going to professionally chase storms, requires staying calm and going into business mode. I surveyed my options and decided to investigate the southern-most cell, as I could easily catch that newly 'tornado warned' storm. I was heading south from Wakeeney toward Ness City, Kansas, and my convective storm was not far to the east, about half way between. It was getting darker, but as lightning struck and illuminated the eastern sky, I saw a very big tornado. According to my base reflectivity (BR) screen, with a storm motion indicator, it was heading east-north-east at about 10 miles an hour. I was in range and could slow down, take a few pictures, and call-in this tornado to the National Weather Service (NWS). At the intersection to take a road to La Crosse, Kansas, I pulled over and started taking pictures. As soon as I reached for my phone, Lauren called me. "Dad, don't get any closer; that tornado is dangerous." I had a moment to appreciate that our modern day communications makes it feel as if we are all somehow connected. What she said next though, was a far bigger deal than the fact we had just shared a daddy-daughter moment of her reading my mind. The tornado seemed to be moving away from me at a speed of ten miles per hour, but she wanted me to know that outer flow from a rope tornado, had hit DOW 8 and Scout 1 somewhere near Russell. That had me worried, and I asked if everyone was okay.

So far, all she heard was that DOW 8 had just lost a side window. She didn't think anyone on the team was hurt, but some houses near DOW 8 had been destroyed. The DOW 8 and Scout 1 crew including: Ronan Nagle, Amanda Lindquist, Dr. Josh Wurman and others were promptly searching the rubble for survivors. I knew one of the crew members of DOW 8 was Eddie Smith, a great medic, and I was glad he'd be a first responder.

DOW 6, DOW 7, and rapid scan DOW 8 were scanning when the tornado went through Russell, Kansas and Scout 1 got mesonet data when the storm passed overhead. This would likely be an apex tornado data collecting event, but while on the phone with Lauren, my mind was on its victims. As I was asking her how badly the nearby homes were damaged, my cell phone lost the connection, before I could hear her response.

News like this, and then dead silence, is unsettling. I decided to pull back from my fairly close position and travel a bit northward, and survey my next route options. I began looking again at my lap top's GR base reflectivity and base velocity screens, and my heart sank. That big tornado, that I could still see through lightning flashes, appeared to be heading toward the town of La Crosse, Kansas. If at its current strength, that tornado hit such a populated town, it could be catastrophic. In the distance I thought I heard tornado sirens, and the hair on the back of my neck went straight up. I picked up my cell phone to call-in a tornado report, and was glad to hear multiple tornado reports had been received.

I drove back north toward I-70, and headed eastward on the interstate, in the slow lane. I certainly didn't want to intercept the tornado. A white van, with a vacationing family, passed me on the left. The parents were in the front, appearing relaxed as they watched the lightning. In back, three young kids were engrossed in what looked to be a Disney movie, mounted on a console of the interior roof.

This was one of those moments in life where you wish you could yell 'Cut!' Like a director can, and the cars heading east towards the powerful tornado, would somehow stop and you could inform them of the danger ahead, and have them stop, or turn around at a safe exit. We could not see the tornado, but my lap top beside me was clearly showing the image of tornado warned cells. I honked my horn as a warning, and just got an alarmed look back from a woman in her passenger seat. She turned towards the driver, and their van just sped up, moving faster towards oncoming tornadoes. I got a sinking feeling again as other cars passed me following the van, oblivious to the dangers that lurked just ahead. Thankfully the La Crosse tornado outflowed, that is engulfed rain cooled air, and the storm pretty much collapsed just before passing over the interstate in front of us. It was a very lucky break for all of us.

As I headed back to Colorado, I reflected how good technology might be someday, when the National Weather Service (NWS) is able to issue threat warnings to travelers, and not just from randomly listening to alerts on their radios, but when the GPS on a traveler's cell phone comes with a threat warning box, and their track warns them they are heading for a tornado, damaging hail, flood, or other serious road hazard. After my experience chasing powerful tornadoes on I-70 that day, I realized the day such technology is available and working, cannot come soon enough.

Tornado storm tracking is done by trained professionals, for more information about tornado safety and training, I suggest using Google and searching for SkyWarn or Spotter Net training.



Chris Hill, Denver Extreme Weather Examiner

Chris has written a number of medical manuals, including a highly regarded "Beryllium Health Surveillance" Medical Management Manual, while working in an occupational medicine office. Before that, he was on the Alpine Rescue team for half a decade, and has written a number of procedures and...