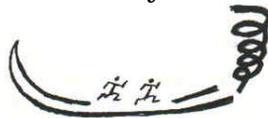


January 31, 1987
 Tim Marshall, Editor
 Phil Sherman, Assistant Editor
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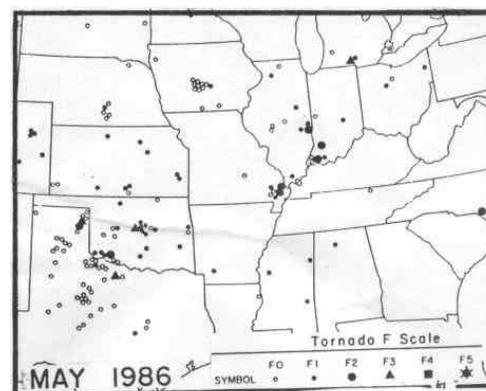
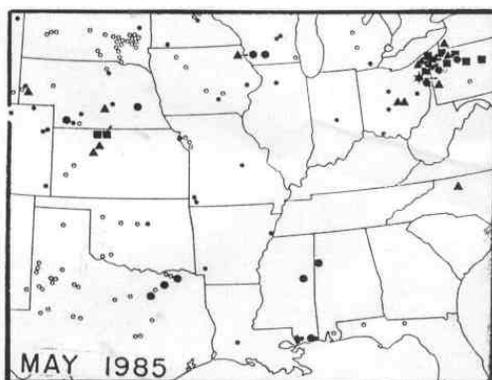
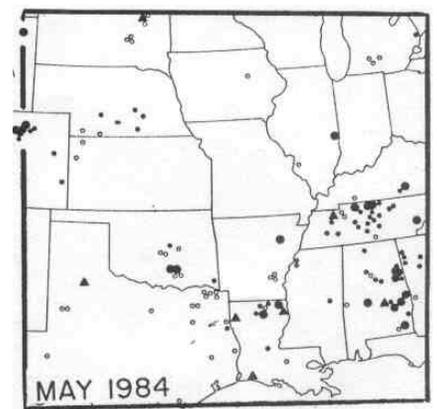
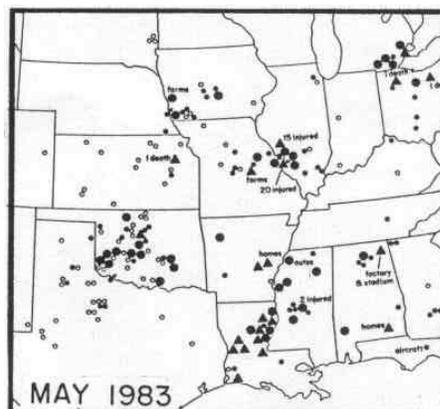


Vol. 10, No. 2
 (Bi-monthly
 address orders
 and letters to
 Tim Marshall)

I. COMMENTARY

As the spring thaw arrives, it is the dawn of another chase season. A time to check the camera batteries, order film, and make sure the car is tuned up and reliable. What will the chase season be like this year? Will your wall be decorated with wall clouds by the end of the season or dust? Is there any way to forecast how the season will behave?

The editor has sought out those who are willing to stick their necks out and forecast the spring chase season. There is a consensus of opinion and the news is not good. Many forecasters say this year will be a below average year for catching tornadoes. Blame it on El Nino, a warm pacific ocean current which causes subtle weather changes, most notably droughts. Spring jet streams over the U.S. head southward for the winter causing more storminess over the Gulf. An increase in clouds over the Gulf causes cooler ocean surface temperatures which reduces evaporation. As El Nino weakens, a warm, high pressure system builds over the western states causing a rapid seasonal change into summer. Whether or not the effects of El Nino correlates to tornado frequency is still being debated, however, since El Nino strengthened during the spring of 1983 and continued, a drop in U.S. tornado frequency has occurred. Note the following maps from STORM DATA.

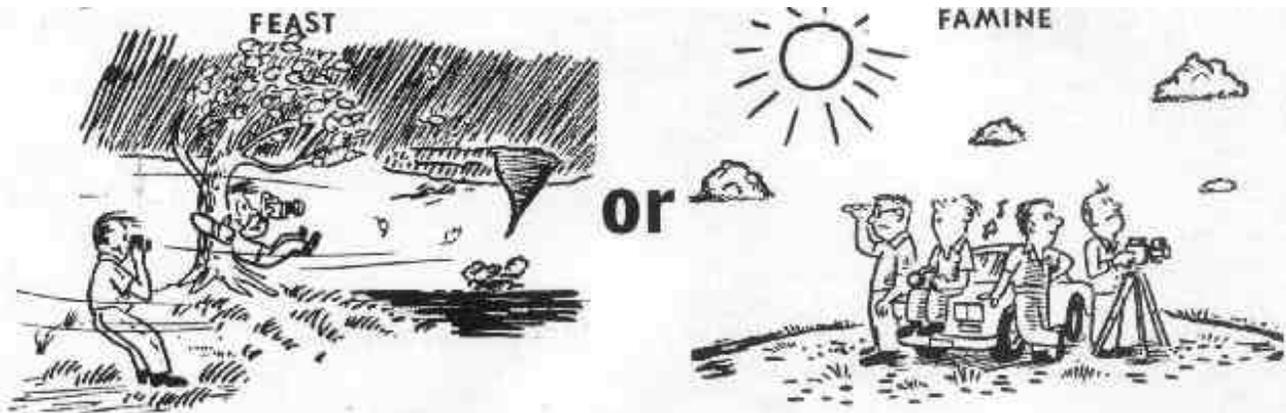


TORNADO STATISTICS

YEAR	F0	F1	F2	F3	F4	F5	TOTAL
1982	152	92	34	15	1	0	294
1983	75	64	43	29	0	0	211
1984	62	71	27	9	0	0	169
1985	94	46	17	13	10	1	181
1986	101	58	10	4	0	0	173

May, 1982, was an above average tornado season for Oklahoma and Texas. Every other day there seemed to be tornadic storms in this area. Note several tornadoes also occurred in Missouri, Iowa, Nebraska, and Colorado. May, 1983, showed a shift in tornado frequency toward the east. The Gulf Coast States had a remarkable increase in the number of tornadoes, whereas the frequency in the Northern Plains decreased substantially from the previous year.

May, 1984, revealed fewer tornadoes across the U.S. The plain states were "void" of tornadoes making this one of the worst chase seasons in recent history. However, Alabama and Tennessee saw an increase in the number of tornadoes reported. Tornadoes were also few and far between in May, 1985. The Northern Plains seemed to have an average year, but Oklahoma and West Texas had few tornadoes. Note the Ohio and Pennsylvania outbreak shows up as a large cluster. Only in May, 1986, did the tornado frequency return to near normal in Oklahoma and West Texas. Was the reduction and shifting of the tornado maximum due to El Nino or was it just a statistical perturbation? Hmm. What will be remains to be seen. It could be:



II. CHASER NEWS

The American Meteorological Society will sponsor the 17th Conference on Hurricanes and Tropical Meteorology on April 7-10, 1987, in Miami, Florida. Also, the 15th Conference on Severe Local Storms is slated sometime in February, 1988, in Baltimore, MD. Details can be obtained by writing the American Meteorology Society, 45 Beacon St., Boston, MA, 02108. Preprint volumes are published for many conferences which make good reading for those interested in the meteorology behind chasing.

Back issues of STORM TRACK are available for last year, as well as all the way back to the first issue. Any missing past issues? Spring is a good time to complete your ST library. Write to the editor for further info.

III. LETTERS/PHONE CALLS TO THE EDITOR

Tom Johnson writes about a severe storm which hit southern portions of Kansas City, September 23, 1986. "I was working that day and could only watch and listen as the whole spectacular scene passed overhead. My lips were chewed raw by the end of the day. I interviewed several people who witnessed the storm from various directions. Along the southeast-east flank of the storm were these incredible cloud striations numbering four or six. As the elongated cloud passed, the sky became extremely dark, then hail up to golfball- size fell accompanied by a downpour of extreme intensity. A large dark cloud, about a half mile wide, dropped out of the southwest corner of the storm and moved northeastward. No rotation in the cloud was noted. However, many people got in their cars and drove away. The storm moved southeastward under northwest flow aloft and produced a microburst which tore the roof off a shopping center in Prairie Village, KS. I went out the next day to inspect the damage and saw mostly downed power lines, and missing roof tiles. Trees up to six feet in diameter were snapped like twigs and downed in the northeast direction. "

Editors note: The editor spent about a week in Kansas City surveying the storm damage. This was a typical downburst, as the damage had a straight-line, diverging pattern. I stopped by the Severe Storms Forecast Center and Dr. Fred Ostby said he had wind gusts to near 70 mph from the northwest at his house in Leawood, Kansas with hail over an inch in diameter.

Charles Vlcek was flying from Washington to Oregon with a stop over in Minneapolis. "The plane had to detour a thunderstorm inbound which proceeded to go over us while we were on the ground delaying our takeoff. When we did take off, we had to detour again around the south edge of the thunderstorms now illuminated by the setting sun. The view was spectacular! The southern-most cell, I later learned, produced 2" diameter hail and 65 kt winds near Rochester, MN at the time of our flyby. I had a super 8 camera in hand; the towers were on my side of the plane, but I was in the middle seat. Between me and the window was a 10 year old girl reading a paperback entitled 'Crash Landing'. She was very nonchalant about it all and was nice enough to lean back when I wanted to shoot out the window. Occasionally she looked out the window too, engaging the view, making me think of Dave Hoadley's daughter Sarah. As we flew around the towers to the DARK SIDE, I could see lightning flashing within the tower at a modest height, about eye level, in streaks of electric blue. "

Dan Mummert doesn't want his subscription canceled. So he sent his renewal check and a poem:

No rain will fall, no funnels will form,
My mail box a "high", no convective storm,
Bi-monthly despair, no hope in sight,
I must renew, six bucks of mite,
Lightning flashes, I reach for a check,
I scribble in panic, I'm not out yet,
Here's my payment, for another great year,
OK, STORM TRACK, the air is clear.

IV. ROSTER

The ST Roster lists names, addresses, and brief bibliographies of those persons interested in or willing to correspond with others about storms. Normally, only recent entries since the last issue are included. Now is the time to choose your chase partner!

Name	Address	Chase country-range
John van Duyl	343 Colusa Ave. Kensington, CA 94707	Texas, Oklahoma, Kansas

Bibliography: Age 35, single and planning to spend the month of May, 1987, chasing tornadoes in Texas, Oklahoma, and Kansas. I'm interested in either sharing or subletting an apartment in Norman, Oklahoma and would like to hear from any of you with information on that. I have a VW Jetta; I plan to use it on my chasing ventures and would like to share such trips with interested individuals.

Dennis Ratzlaff	513 Horizon Dr. Altus, OR 73521	West Oklahoma
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Bibliography: Age 36, single, has been a state trooper with the Oklahoma Highway Patrol for 13 years. I'm communications coordinator for the Altus-Jackson County Civil Defense Spotter Network, 10 years now. I'm an Amateur Radio Operator. My weather interests include tornado photography, videoing, and weather instruments. My home looks like a National Weather Service with OKC weather wire and Altus CD wire. Weather feeds onto my floor daily. I've seen 14 tornadoes in 11 years including two just recently on October 1, northwest of Hollis.

Will Shaw	Route 1, Box 46 Venus, Texas 76084	North Texas
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Bibliography: I began amateur radio activities in July, 1922, and have tried to stay as active as possible during the last 60+ years. My family consists of my wife of more than 50 years, Cora, formerly W5JPF, our daughter, Judy, K5LCQ, and our son Bill, K5PCW. We live on a small ranch between Venus and Grandview where we raise cattle, poultry, hay, small grains, and some garden produce. I'm an attorney and CPA. I take an active interest in Fort Worth-Tarrant County and Ellis County RACES activities.

Terry Kern	308 27th St. Boulder, CO 80303	
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Bibliography: Age 28, I've had an interest in tornadoes since I was a kid growing up in Connecticut. I saw my first tornado when I was 14, in Boston on August 9, 1972. My next encounter with tornadic storms was during the spring of 1981 when I was stationed at Altus AFB, OK. On April 11, a severe storm with a wall cloud moved over the the city. Then on May 22, I watched the convective towers develop to my north which produced the Clinton and Binger tornadoes. I'll never forget listening to the Clinton radio station giving a play by play description of the tornadoes in progress then getting knocked off the air. That was the day I should have gone AWOL.

By David Hoadley

Dave Hoadley began Storm Track. His tale of storm chasing is truly remarkable. The man has an uncanny ability to describe his emotions in nature like no one else - a man with so much chase experience. Come to think of it, he was roaming the plains for tornadoes when this editor was in diapers. Here is Dave's personal account.

"My interest in storms began in June, 1956 in Bismarck, ND. A severe thunderstorm knocked over trees and power lines in town. I spent the next day driving around town taking 8 mm movies of the damage. I was hooked with the power and fascination of mother nature. I chased several spring seasons across Kansas and Oklahoma photographing thunderstorms, then went on to graduate school. After a couple of years, I volunteered for the obligatory ROTC army tour at Fort Riley, in KANSAS of course, where I served as a lieutenant from May, 1963 to November, 1964. The best year was 1964, when I saw one gustnado, and several funnel clouds. However, I was still looking for the 'big one'.

During the interim, while I was in Kansas, my parents moved to Washington D. C. After my service tour ended, I returned home, and began applying to several Federal agencies. Responses were slow in coming, so I enrolled for a semester of Saturday classes at the Concoran Art Gallery. I did mostly charcoal sketches (no nudes) and soon grew tired of it. Now that spring was in the air, I looked westward, and with my parents consent, drove to Kansas to chase for two months. April and May.

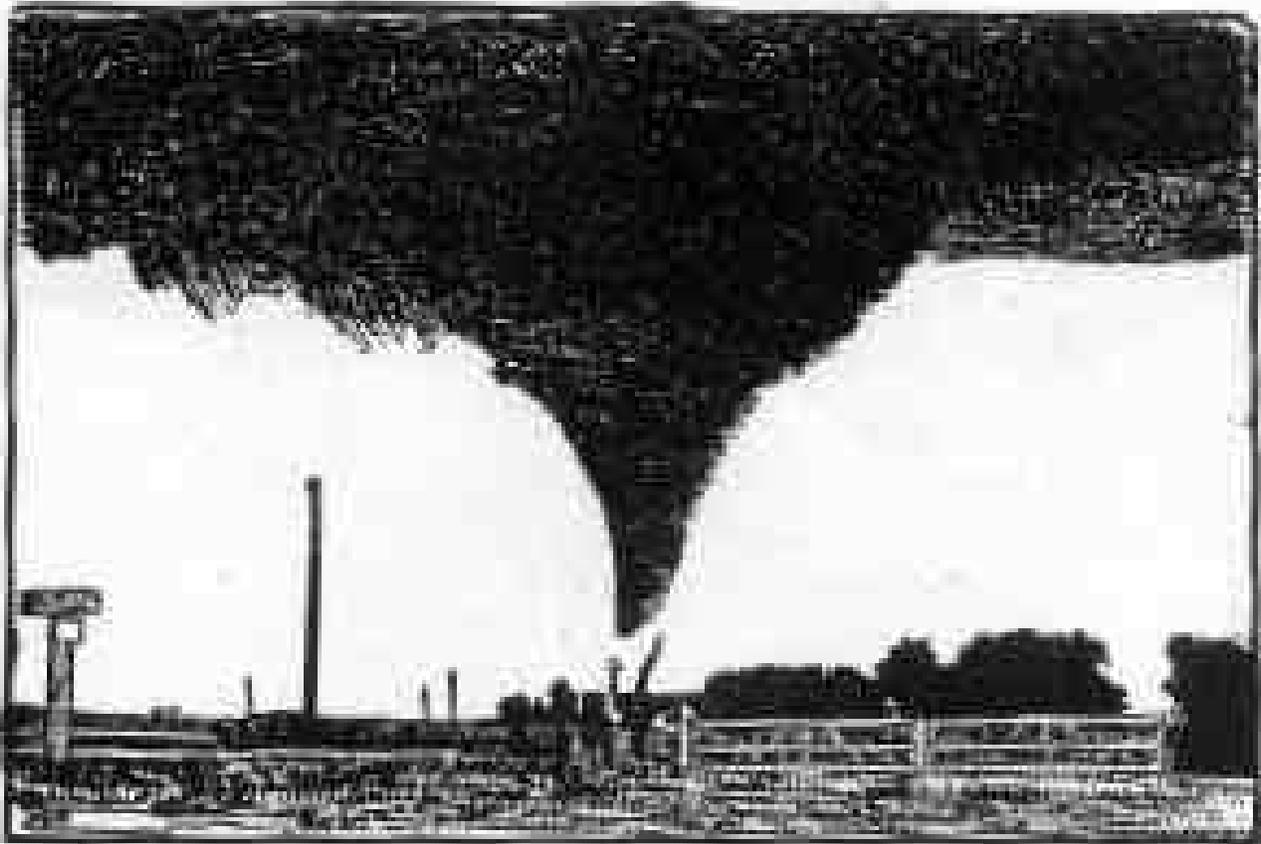
I quartered each day at the Top Hat Motel on the west side of Wichita, Kansas, just west of the airport. I was still considerably on the downhill side of the learning curve, so that the long trip was not nearly as productive as it should of been. My big day came on May 25, 1965, when I drove west of Wichita, after plotting several surface maps that pointed to western Kansas. Approaching Dodge City around 1 p. m., the local radio began interrupting it's regular broadcasts with tornado warnings. I was ecstatic." (Dave recalls this chase with remarkable clarity. We all seem to remember the sights, sounds, and emotions of our first really successful chase.)

Heavy Cb's were building rapidly and well defined mammatus covered the sky surrounding Dodge City. I bolted southward toward Minneola, catching a glimpse of a small rope tornado about 20 miles distant. A squall line was approaching from the west that looked too well organized for further near-activity, so I turned east. On towards Pratt, I parked under a flanking line, and asked a local resident what was going on. The man pointed to a large pendant shaped cloud almost overhead and said incredulously to me, like I was a dunce, that it was a tornado. I didn't believe it but decided to stay and look around for awhile. The local police monitor crackled away, as several people gathered to look around.

To the southwest, frequent lightning activity was evident some 30 miles distant. Just west of me, cumulus fractus could be seen condensing and rising along the western edge of a cloud base. Deep, occasional rolling

thunder rumbled overhead. Little rain was evident to the immediate north. The scene was set. About 3.5 miles to my north, a symmetrical conical funnel took shape, graceful and silent, with slowly rippling waves moving up and down the sides. A policeman next to me pumped out, and with a hand mike, described the descent and movement of the vortex. Several distant sirens in Pratt began wailing eerily and out of sync with each other in a spooky refrain. The locals just stood and looked in silent awe, as the tornado moved off to the northeast.

Once, I saw a suction vortex writhe slowly around the base, but I didn't know what it was at the time, only that it was a part of the vortex action. I took one quick picture with my 2" x 1/4" slide, large format Mamiyaflex, but then realized I was shaking like a leaf and had probably ruined the picture. I then set the camera on my car hood and took another photograph, which is the one good picture that I made. I didn't take many pictures of those early storms, as I do now, so only carried away one slide of the scene, but it was enough.



I charged into town and turned north. The normally two way, four lane street had become one way northbound, as local residents piled out of their homes into cars, charging northward with me to see the storm. People, with bibs still under their chins and fresh from dinner were taking the whole family. I got in the left-most lane and joined the throng. Several more pictures were taken of the tornado and damage to the local airport, but none that compared with that one I got on the west side of town. It was a moment

I'll always remember, the police monitor, the policeman describing some unreal, hypnotic event, the ghostly sirens moaning in the wind, and that classically shaped tornado, so close and deceptively graceful as it descended to touch a moment of history in the life of a small town.

I skipped chasing in 1966, to save annual leave for my impending honeymoon in January, 1967, so I missed the tornado which struck Topeka (ugh!). Nancy, my new bride, chased with me in 1967 for a few days around one weekend, but quickly tired of the long, hot, dusty miles of repeat driving (went through the same little Kansas town three times in one day). We didn't see anything rotate, but did get some inch diameter hail from a rapidly advancing squall line. Most frustrating were the four long hours we spent in hot Quanah, Texas, waiting for storms to develop in my forecast area. We sat in a service station parking lot sipping Cokes, while Lubbock was being pounded with several tornadoes and large hail. Frustrated, she flew back to her job and I lingered on. She hasn't chased with me since, although I invite her often.

From 1968 to 1973, I steadily acquired experience and perfected my forecasting technique. I saw two funnels in 1968, but 1969 proved more interesting. On May 10, I was on a road westbound in Indiana on a cool and partly cloudy day. The temperature locally was in the low to mid 60's and dew points in the upper 40's. Going around Indianapolis, I began hearing reports of tornadoes and funnels near Terra Haute and points west. A darkening sky approached from the west, so I stopped on I-70, about 7 miles southwest of the Indianapolis beltway, near Plainfield. As the squall approached, a smooth rounded lowering began to develop under the cloud base to my northwest. Suddenly, I realized that there wasn't any film in my camera, since I was waiting to do that when I "got out west" to where tornado country was. Frantically, I dumped my camera case upside down, tore open a box of film and loaded just in time. I recorded one of my more interesting series as a tornado lowered from the edge of the squall line, moving at 50 mph, and tore up some trees and trailers in Plainfield. This line of cells continued into central Indiana, where a Zaire's roof collapsed, causing serious injury to some, and into southwestern Ohio, where one person was killed. In all, 17 tornadoes occurred on this day spawned from a very deep low (950mb) in central Illinois. Weatherwise magazine later wrote the day up with a diagram showing a split jet over the state.

1970 and 1972 were not too spectacular or novel, with squall tornadoes and funnels here and there. I did pick up my first detached tornadic tubes in western Kansas, which were fun. 1971 was a good year for one nice sequence near Grand Island, Nebraska. I drove west to Oakley, Kansas and then northward into Nebraska, past McCook and Imperial. A dry line was moving into the state, just ahead of a deep low, and I caught up to the cold front gust west of North Platte. With heavy cumulus building rapidly about 100 miles to my east, I turned onto I-80 and drove southeast. I stopped several times, and recorded two classic CB's as they formed with beautiful backsheared anvils. Just southwest of Grand Island, I caught a nice rope tornado that came down in a small river valley and tore up a few farms causing about \$50,000 in damage. It lingered between 5 and 7 minutes and I took many slides. Noteworthy, was the absence of static on the radio. Over that evening, there were six more tornadoes in south central Nebraska, but I got mine."

By Greg Story

A supercell thunderstorm passed through eastern Iowa on September 28, 1986, a Sunday afternoon. We were blessed with a southwesterly upper air flow, so we were in heaven for a while here in Iowa. This particular day, we had an unusually unstable air mass. In fact, the air mass had been unstable for several days leading up to the 28th. On Friday, September 26th, a small gustnado hit Mt. Vernon, IA about 4 am. Winds 80 mph or better broke window glass and downed signs. Later that day, a few small tornadoes moved across North Central Iowa.

On September 28th, a line of thunderstorms formed right over Cedar Rapids around 1:30 pm and tracked northeastward. When they reached northern Illinois and southeast Wisconsin, the storms dumped heavy rains, hail, and a few tornadoes. After the storms passed, East Iowa cleared, the sun came out, and we went back to ambient flow. A cold front was still located in Northern and Western Iowa, so I figured we would get more thunderstorms. In fact, the NSSFC in Kansas City had boxed all or part of the frontal zone over the state.

About 5 pm, a lone thunderstorm popped up on its own well ahead of the surface front just east-northeast of Des Moines. The storm continued to grow and grow, as there were no other storms in the area to share the available energy and moisture. Around 5:30 pm, large hail was reported northwest of Colfax, IA accompanied by strong gust winds. The Des Moines Weather Service was right on top of the storm and I got a phone call at the radio station just after a severe thunderstorm warning was issued. The storm was about 90 miles west-southwest of where I was in Cedar Rapids, and already the cirrus anvil was over my head moving northeastward. Looking toward the southwest horizon, I could see the sharp southern back edge of the thunderstorm. I thought this would be a good storm to chase but I'm the person who has to relay severe weather information to our spotters and radio listeners, so I sat in my office and drooled on the radar screen.

The storm produced 3 maybe 4 tornadoes with a total path length of 55 miles. One of the tornadoes was near Baxter, IA in northern Jasper County and was photographed on a VCR by a state trooper. The tornado was a large cone with multiple vortices moving rapidly through corn fields and crossing a road before going into the rope stage. Some people said the tornado was visible for 45 minutes lasting from 5:45 to about 6:30 pm. In southern Tama county, listeners called me to say there were 4 funnels dangling from a low cloud south of Tama and then formed one big tornado (multi-vortex for sure). Path width was about 1/2 mile. The storm collapsed about 8 pm and dropped golfball-size hail. By the time the storm hit us in Cedar Rapids, it was down to levels 1 and 2 on radar. Boooo.



The storm was impressive on the GOES satellite, but was more impressive on radar. There was a V-notch hook for almost an hour, from 6 to 7 pm, as the storm moved across northern Jasper County. It was a great storm; the best of the season for Eastern Iowa. Later that evening, another tornado hit Colwell, IA about 40 miles north of Waterloo.



The following is a listing of severe weather reports from the Des Moines weather service for September 28, 1986.

Time (CDT) Event

5:35 pm Tree and structural damage reported in NE Polk Co. A barn and corn crib were damaged near Bondurant.

5:41 pm A tornado was reported on the ground NE of Mingo in NE Jasper Co (about 20 miles northeast of Des Moines).

5:49 pm Polk County sheriff reports a tornado in extreme SW Marshall Co.

5:58 pm Tornado west of Baxter in Jasper Co.

6:20 pm Tornado is 5 miles north of Newton near Hwy. 14.. The storm was moving east at 35 mph.

6:53 pm Tornado is 6 miles south of Tama near Hwy 63 in Tama Co.

7:03 pm Funnel clouds reported at Royal, just west of Spencer in Clay Co.

7:05 pm Tornado damaged a farm building 1 mile east and south of Everly in Clay Co.

7:10 pm Police report funnel south of Fort Dodge in Webster Ca.

You folks in the south should remember that when the Texas chase season is over in late May, Iowa's season is just getting started. If anyone is planning to chase in Iowa, please listen to me on WMT-AM radio 600 for updated weather information. When severe weather is in the area, we go to an ALL WEATHER format.

By Stan Benjamin

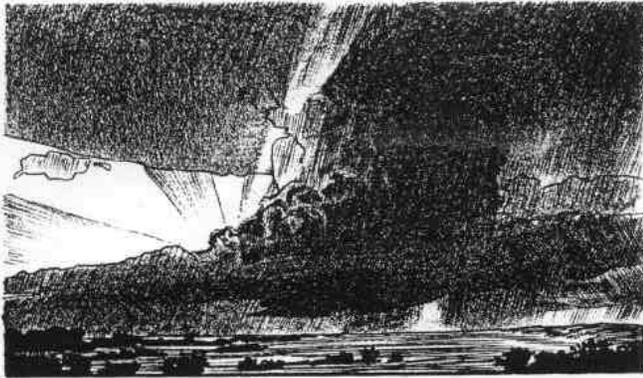
On the afternoon of August 2, 1986, I was torn between the list of catch-up work on my desk in Boulder, CO and the mushroom cloud out the window. Not only did this storm look very organized, showing up to 60 dBz on the Limon radar, but it was chaseable for a soft-core chaser like me who only gets out once or twice a year. So, I shoot for close-in, high probability events. At 4 pm, it seemed like the perfect time to share with my wife, and two sons (4 years and 1 year) the electric atmosphere of a storm chase. We also brought along another 1 year old we were watching for the weekend. I was already thinking of how much fun it might be to tell the parents of this 1 year old that she had seen her first tornado.

I dashed home and loaded up our Dodge Caravan with the essentials for family chasing, a camera, mega-rolls of film, binoculars, Sesame Street books, and lots and lots of crackers. We headed southeast toward Denver, trying to catch up and get out ahead of the storm. By the time we got just east of Denver, we had caught up with the rain and it seemed foolhardy to go after the storm anymore.

By this time, the kids were getting a little surly and my wife was spending all of her energy trying to keep them occupied. So we decided to reward their patience so far with a round of Happy Meals from the slowest serving McDonalds I've ever seen. While the attendants were trying to find another bag of plastic granules for the chocolate milk shake machine, I noticed another explosively developing storm to the distant north. But by this time, all the McNuggets and french fries were eaten or on the floor, and it was 6:30 pm. I grimly headed the car for home.

While driving through north Denver, all of a sudden, I felt a spark of hope as I spotted a new anvil to the northwest over the foothills. The radio reported a new storm in that vicinity. Why not go for it. Everyone else was clearly tired of being in the car, but I was obsessed with peering further under the huge cloud base which covered the entire northwest quadrant of the sky. As we drove west on Route 52, a large precipitation shaft became apparent only a few miles to the northwest. Instinct took over and I knew we had to get closer. About five miles from Longmont, near 7 pm, large slushballs began falling on down the road. At least, I thought they were slushballs, because of the way they were spreading out as they hit the pavement. Then, WHAM, the first "slushball" hailstone hit the car. Within seconds, it sounded like several hundred very angry Juveniles were throwing rocks at the car. The only escape route to the south was closed for construction.

Meanwhile, the one year olds in the back seat began screaming. My wife's fear was exceeded only by her anger at me for getting us into the situation. I turned the car around and we sought shelter under a cottonwood tree about a mile down the road. The road was covered with white walnut size hailstones, some up to 2 inches in diameter. My four year old wanted to get out of the car to look at them. I commended him for his healthy scientific curiosity but suggested he wait until the hail stopped talking.

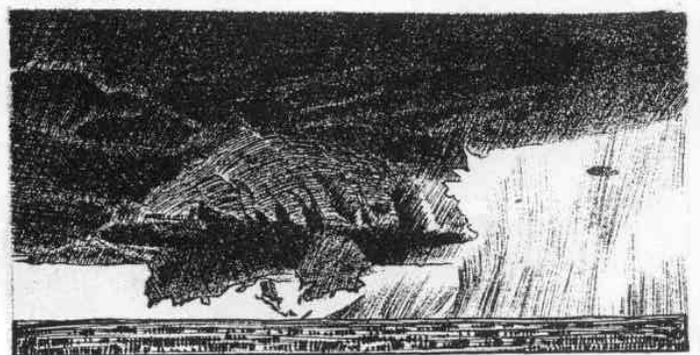


Second hailstorm near Longmont, CO. 8-2-86. View looking NW from Brighton at 6:30 pm (MDT). Sketched from photo taken by Steve Albers.

Leaves and small branches from the cottonwood covered our car. When we left, about 15 minutes later, a fog layer about 6 feet deep formed from mixing over the hailfall. This storm caused minor home and automobile damage than a storm earlier in the day, but more crop damage in the Longmont and Niwot area.

When we arrived home, I was reminded, and have been many times since, of my souvenir dings on the hood and roof of the car. I was grateful we didn't lose the windshield. My wife diligently promised me, as she swept cracker crumbs from the floor, that there would be no more family chasing. But hey, we have changed our minds before, and I'm hopeful that someday we will have another one of those bonding family experiences such as those of August 2nd."

Wall cloud with patches of scud rising to meet it. No condensation to the ground was seen. Storm produced extensive hailswath est. 2 mi. wide. View looks NW from 15 mi. S of LAST CHANCE, CO at 6:20 pm (MDT). Sketched from photo taken by Keith Brewster.



VIII. FUNNEL FUNNIES: Family Storm Chasing (Fact)

Family storm chasing can be an eye opening, teeth gritting experience.

