

2009 CONVECTIVE FIELD STUDY A

May 18th-28th, 2009

Day 1, May 18th, 2009

Plan: No convection slated for today. We are going to get into position for convection in Montana on Tuesday. Driving a measly 800 miles to Mitchell, South Dakota to get in place for possible convection in Montana. There is a freeze watch for tonight in Billings, MT with lows in the low 30's but highs Tuesday in the 90's!

Leave at 1305Z

- Oh wait, Liz needs to sign papers, depart at 1317Z.

1334Z- Get on I-80 W.

1337Z- Realize that the Pilot's wheels are running low due to the weight of the helium tanks on the back. Need to eventually stop and eradicate the problem by adding air.

1342Z- Car 2 blows a fuse in their car. Excellent start to the trip. My log is in jeopardy as my computer quickly loses power.

1353Z- We decide to play the license plate game. I have the exciting job of keeping track of them all. These are the ones we've seen through the entire trip:

- Indiana
- Wisconsin
- Michigan
- Maryland
- Oklahoma
- California
- Illinois
- Maine
- Florida
- Nebraska
- Colorado
- Tennessee
- Quebec
- Virginia
- Iowa
- Texas
- New Jersey
- Arizona
- Ontario
- Washington
- Massachusetts
- South Dakota
- Minnesota
- Mississippi
- Montana
- Idaho
- Ohio

- North Dakota
- Wyoming
- New York
- Missouri
- North Carolina
- Oregon
- Saskatchewan
- Alaska
- Utah
- Alabama
- Pennsylvania
- New Mexico
- British Columbia
- Alberta
- Georgia
- Nevada
- Louisiana
- South Carolina
- Maine
- Nova Scotia
- Arkansas
- Kentucky

1413Z- Car 2's engine and traction stability lights come on. Not the best of news considering we're only 50 miles into the trip.

1434Z- Car 2 succeeds in finding an Advanced Auto Parts in Princeton, IL. Make plans to stop there.

1540Z- Stop at AutoZone to get a tire gauge for the pilot and to figure out why Car 2's instrument panel is "lit up like a Christmas Tree."

- Figure out Car 2's engine and traction lights are just a glitch.
- Pilot gets much needed air in its stressed back tires.

1607Z- The B.I.G.A.R.S.E. (helium tanks container) hatch looks open. Oh wait that's how it's supposed to be. Waste of 5 precious minutes.

1613Z- Get back on I-80 W.

1703Z- Enter lovely Iowa. My stomach begins to inform me its hungry.

1722Z- Stop at the world's largest truck station for gas and lunch.

1803Z- Depart from truck stop. Stomach thanks me for its satisfaction. Enter back on to I-80 W.

1848Z- Enter onto I-380 N towards Cedar Rapids.

1905Z- Drive through downtown Cedar Rapids.

1909Z- Stop for gas at a Kwik Shop. Only \$2.15/gallon.

1934Z- Leave gas station, hop back onto I-380 N towards Waterloo.

2019Z- I-380 turns into a city street unexpectedly. Car 2 somehow survives. This city street turns out to be state route 218. We take it heading north toward Waverly, IA.

2104Z- Pass a wind turbine farm in Northern Iowa. The length of the blades on the windmills astounds Tom.

2138Z- Get on I-35 N towards Minnesota and I-90.

2201Z- Welcome to Minnesota.

2207Z- In Car 2, Dan drops a complete bag of sunflower seeds onto the clean rental van floor. Dan gets quite depressed.

2212Z- Enter onto I-90 W toward Sioux Falls

2247Z- Get off at Blue Earth, MN to check out the green giant statue. Consensus is it looks like Will.

- Teams split up and eat.
- Cars get gasoline at \$2.17/gallon. Our first successful multi-task stop.

2354Z- Back onto I-90 W.

0133Z- Enter South Dakota. Looks kind of like Minnesota and Iowa.

- Massive bug massacre on cars' windshields as the sun sets.

0243Z- Arrive at Quality Inn in Mitchell, SD.

Day 1 Mileage- 725.4

Car Mileage Estimates Guesses: Pilot- 6,165.4 Car 2- 6,113.2 Car 3- 5,669

Car 4- 5,750 Car 5- 5,999 Day 2, May 19th, 2009 Plan: A depressingly big area of high pressure continues to dominate the central United States, cutting off the Gulf of Mexico. However, an impressive shortwave is moving through western Montana and Idaho. This will be the focus for scattered thunderstorm development this afternoon. The main concern is the limited moisture. Most soundings near Billings, MT show an inverted V sounding, with cloud bases upwards of 14,000 feet!

Therefore, we need to make the decision if we go to Montana, eight hours away, will we see anything and will it put us out of position for tomorrow. We will make this decision on the road as we drive west. 1320Z- Leave the Quality Inn after a good night's stay.

1323Z- Stop at Sinclair to get gas and check the pilot's transmission fluid as a warning light briefly came on last night. Gas at \$2.25/gallon.

1342Z- Enter onto I-90 W heading toward Rapid City, SD.

1426Z- With the 12Z NAM and RUC models in, the team decides to head to eastern Montana to chase. These models seem to be a bit more bullish in their output compared to the 6Z runs, giving the team some hope and reason to head to Montana.

1445Z- South Dakota decides to go from ridiculously flat terrain to beautiful rolling hills. Everyone busts out the cameras.

1454Z- South Dakota gets flat again.

1508Z- Pull over to the side of the road as the Pilot's transmission overheating light comes back on again. Give it time to cool off.

1518Z- Pull off at a Sinclair station. Remove luggage from the Pilot in order to minimize weight load in it. Team says a Hail Mary for the pilot.

1533Z- Leave gas station and get back onto I-90 W.

1611Z- Decide to scratch the chase for now, and take the Pilot into a Honda dealer and see what is wrong. Closest dealer is in Rapid City about 120 miles from our current location.

1620Z- We pass into the Mountain Time zone in western South Dakota. Car 3 repeats its music from the past hour and Bart sees the sun drop in the horizon.

1718Z- Drive past Wall Drug. The countless billboards finally end.

1735Z- Pilot's light comes on again. Quick pull off the highway to let it cool. Continue back on I-90 W.

1803Z- Take exit and enter Rapid City. Proceed to the Rushmore Honda dealership.

1810Z- Arrive at the dealership. Drop Pilot off and head to lunch.

0000Z- Leave the Honda dealership after a short six-hour stay. The Pilot is still being repaired, the engine was overheating and the sensor was completely fried so a new thermostat and sensor are installed.

0006Z- Arrive at hotel.

0119Z- Entire team eats a meal at The Millstone. Adam's mood takes a turn for the worst as he's informed the Blackhawks lost in overtime.

0230Z- Team turns in for the night. Pilot: 1031.2 Day 2 Mileage: 308.2 Day 3, May 20th, 2009 Plan: The shortwave trough in Montana yesterday continues its trek southeastward around the blocking high still in place in the south central plains. Trailing the trough is a cold front that will be our focus for storm initiation today in the panhandle of Nebraska. SPC has issued a slight risk that has us very excited, as it might be our only slight risk of the trip. Moisture with this system is still quite marginal, causing very high LFC heights and a low threat of tornadoes. However, the upper level forcing and moderate unidirectional shear may support isolated severe cells and a hail threat that will be fun to chase. 1417Z- Leave the Comfort Inn and Suites to head for Alliance, NE.

1430Z- Enter onto State Route 79 S, heading out of Rapid City, SD toward Nebraska.

1447Z- Stop at Flying J for gas and windshield bug removal.

1520Z- Leave the gas station and return to 79 S.

1550Z- 79 S becomes 385 S.

1610Z- Pass a hitch-hiker "literally in the middle of nowhere" according to Andy.

1619Z- Enter Nebraska.

1729Z- Arrive in Alliance, NE. Stop at Pizza Hut for some lunch buffet action. While at Pizza Hut, eighth grade girls turn giddy in storm chasers' presence.

1821Z- Leave Pizza Hut.

1824Z- Stop at Fresh Start for "fuel-age". Gas at \$2.33/gallon.

1849Z- Leave gas station and head to the Alliance Municipal Airport to launch our first mobile sounding. We will be making Valparaiso history with this launch as it'll be the first field launch ever performed on a chase.

1858Z- Pull into the airport and set up for a potential launch.

2124Z- Leave airport after a successful launch! There is a cell to our west that we are going to go after, our first storm of the chase. We head east to put ourselves near a north-south road.

2156Z- Severe thunderstorm warning issued for the storm we are on.

2216Z- Pull off and assess which storm to chase as convection is starting to fire.

2223Z- Decide to keep on the same cell and get to the south side of it.

2233Z- We pass Vortex 2.

2249Z- Stop quickly for gas at Sinclair at \$2.19/gallon.

2258Z- Leave station and head toward the north-south road near Hyannis, NE. Sit here and watch the cell approach from the West.

2318Z- Leave spot and head back a bit north to get rolled by the cell.

2343Z- Sit and get rolled by the storm. Pea size hail pelts us. Storm shows reflectivity of up to 70 dbz, but the main hail shaft passes over the road to our south. Continue heading south.

2347Z- Pull off for rainbow pictures behind the storm.

2350Z- The cell that just moved through is issued another severe thunderstorm warning.

2353Z- Leave beautiful rainbow and head south to Arthur, NE.

0017Z- Arrive in booming Arthur, NE. Take a state route east to get back in front of the cold front.

0030Z- Severe thunderstorm warning on the cell continues, with 73 dbz reflectivity. Mid-level rotation now being reported in the warning text and we spot a very high-based wall cloud.

0116Z- Go through Stapleton, NE and turn to head north to try and get in front of the cell.

0128Z- Head northeast on a gravel road that adds adventure to an already adventurous day.

0130Z- Realize the road is private and we cannot continue. This ends our chances of getting in front of the main storm. Head back north on the road we were on. However, development is occurring to our southwest so as we head north, these new storms will creep closer.

0157Z- Pull into Sinclair gas station in Thedford, NE allowing the remaining storms to roll us.

- Get dinner here as well. Surprisingly good food for a gas station.

0247Z- Leave gas station and head north on state route 83 to Valentine, NE for the night.

- On the drive Bart tells us about his troubled college roommates and his friend Dan.
- Beautiful lightning lights the sky as we make the drive.

0256Z- Arrive at Comfort Inn in Valentine, NE after a great chase. Got a sounding off just before the front and saw some very nice convection.

Pilot Total: 1461.1 Day 3 total: 429.9

Day 4 May 21st, 2009 Plan: The front from yesterday has moved south into a more stable and less sheared air mass. The high continues to dominate the central and southern plains. Therefore, today is a sightseeing day. We currently are in Valentine, NE and plan to see things in Nebraska today. 1528Z- Leave Comfort Inn and walk to the Western Store in downtown Valentine.

1613Z- Leave Valentine and begin heading east on state route 12 towards Smith Falls State Park, home of Nebraska's tallest waterfall.

1638Z- Arrive at Smith Falls.

- Luis falls in waterfall.
- Luis ruins no climbing sign.
- Luis forgets camera.
- Luis fixes no climbing sign.
- Team shakes their heads.

1740Z- Leave the waterfall and head back to Valentine, NE for stomach refueling.

1808Z- Pull into the Comfort Inn we stayed last night. The Pilot and Car 4 head to RadioShack to try and fix car 4's CB radio.

1832Z- Leave Comfort Inn parking lot and head to lunch.

1835Z- Arrive at the Bunk House local restaurant.

1953Z- Leave the restaurant and go refuel at Shell. \$2.49/gallon.

2000Z- Leave and head west on state route 20.

- Chasers call into a radio station in Winter, SD and receive a shout out from the station and two great meteorology songs: "Rider on the Storm" and "Rock you Like a Hurricane."

2138Z- Stop at the Twister radio studio.

- Team receives free t-shirts, making the stop completely worthwhile.

2151Z- Leave the radio station and continue west on 20.

2232Z- Enter Chadrin, NE.

2236Z- Pull over to assess current synoptic situation and where to stay for the night. Decide to head to Hot Springs, SD and have a weather discussion tonight.

2244Z- Leave and turn onto 385 N to Hot Springs.

2306Z- Enter South Dakota.

2338Z- Arrive at Holiday Inn Express in Hot Springs, SD. Members of Vortex 2 are here as well.

0330Z- Have a weather discussion to set target for tomorrow.

- Heading north does not look good, as there will be no instability and no real strong forcing mechanism.
- Therefore, team decides to play a very weak, quasi-stationary front drifting slightly north toward the northern panhandle of Nebraska tomorrow, near the Chadrin area. Although lift with the front is not great, the upslope might enhance vertical motion and with sufficient upper level winds, what does develop may be able to sustain itself in the form of multi-cellular activity. Cape values will be around 1300 J/kg, and mid-level lapse rates will be fairly steep. Obviously not a great setup, but it is something the team plans to give a shot!

0415Z- Members of Vortex 2 show the team around one of the DOWs and TIV II. Pilot Total: 1704.1 Day 4 Mileage: 253.4 Day 5, May 22, 2009 Plan: We are thinking the same thing as we were last night. SPC is also as they have issued a "see text" with a 5% hail chance in our target area. With upslope flow, and the quasi-stationary front lifting north, storms should fire in eastern Wyoming and the western panhandle of Nebraska. There is ample shear and moisture for thunderstorm sustenance. Any further south than east central Wyoming, the upper level flow goes to about 20 knots, so we must stay north to keep in the better flow aloft. The main limiting factor will be if enough convergence along the stationary front can create vertical motion for the storms to initiate. It is quite a weak front so convergence at the surface will be an issue. Also, the instability in the area is not great so that will also be a secondary limiting factor. 1552Z- Leave hotel and head to Conoco for gas. Gas at \$2.16/gallon.

1610Z- Leave gas station and head to state route 18 W.

1647Z- Welcome to Wyoming! A mid-level stratus deck is still present in the area, but we are hopeful it continues mixing out.

1657Z- Stop at a rest stop to ascertain the situation and look at the latest RUC data.

- Fake-out: No internet data so the team just uses the lovely port-o-potties located inside the rest stop.

1707Z- Leave the rest stop and head south on U.S. 18/85 toward Lusk, WY.

1728Z- Pass by dried up Old Woman Creek and Boner Ranch. This is an interesting part of Wyoming to say the least.

1757Z- Enter Lusk, WY and stop for lunch. Teams split up for lunch.

1843Z- Leave lunch and head to Fresh Start for "fuel-age". Gas at \$2.35/gallon.

1905Z- Leave the gas station and head a bit east on state route 20 to the Lusk airport for a launch.

- Airport is not accessible, so we head to a lonely road to wait. Launch is scratched.

1917Z- Arrive at road.

2030Z- Leave and head back west on 20. Storms have not fired anywhere north near us. There are storms south but we do not anticipate these to go severe, as the flow aloft is really weak. However, since there is not anything forming north we decide to head southwest where storms have developed.

2116Z- Break the one-mile mark in elevation! 5,300 ft in west-central Wyoming.

2240Z- Get onto I-25 S heading toward the healthiest storm. At this time it is showing a reflectivity of 62 dbz and 1.5' hail.

2252Z- Turn around and head back north onto I-25. The southern cell has drifted into the very weak flow aloft and is falling apart. New cell development is now occurring just north of Lusk, where flow aloft did look a bit more favorable for updraft sustenance.

2306Z- Get back onto state route 20, heading east back toward Lusk, WY.

2308Z- Stop at a rest stop to assess which cell to go after now. Every cell seems to just be pulsing and dying due to the very weak flow aloft.

2314Z- Leave rest area and head back east to Lusk on 20 to intercept cells that are finally developing north in the more favorable 300-millibar flow.

2328Z- Pass for a second time, Lost Springs, WY, which has a booming population of one.

2351Z- Storm begins to show an impressive lowering as we drive into Lusk from the west. There's very good structure with it as well.

2353Z- Pull over in Lusk gas station to get slammed by quarter-sized hail.

- Hail lasts for about fifteen minutes!
- We call the hail into the NWS and they issue a warning on the storm.

0029Z- Head south on U.S. 85 back into the core that just passed through to core punch this cell again!

0041Z- Have to pull over as the main core crosses the road. Marble-size hail pounds us again as we core punch a second time!

- Hail again lasts about twelve minutes.

0051Z- Leave from the side of the road and head back north on 85 back to Lusk.

0104Z- Arrive back in Lusk for about the 300th time today. Continue north on U.S. 85 towards Newcastle, WY where some weaker convection has started to develop.

0108Z- Pass through about a half inch of melting hail covering the ground just north of Lusk.

0141Z- Pass through another convective cell. Heavy rain and very tiny hail with this one. A "convective dessert" to a good chase day.

0217Z- Arrive in Newcastle, WY. Stop at Sinclair for gasoline. \$2.37/gallon.

0235Z- Leave Sinclair and head to dinner for much needed grub.

0238Z- Arrive at Taco John's.

0334Z- Leave Taco John's after many people's first times' there! I must say I approve. Head northwest on U.S. 16 toward I-90.

- Bart tells story of how he met his wife.
- I lied. Car 2's CB goes out and ruins the story for everyone. Bart promises to tell it later.

0431Z- Enter onto I-90 W to Gillette, WY.

0459Z- Pull into Holiday Inn Express in Gillette. Pilot Total: 2113.6 Day 5 Mileage: 409.5 Day 6: May 23rd, 2009 Plan: There are two areas of potential today, neither of which look promising. In the panhandle of Nebraska, that pesky quasi-stationary front is still lingering around. It will be the focus for scattered thunderstorm development this afternoon. There will be sufficient instability, but the upper-level winds will not at all support long-lasting updrafts. The other area of focus is in central to western Montana. The upper-level flow here will be sufficient to sustain storm structure, however, there is a lack of lift. A very weak shortwave was progged to cross Montana today. But recent analysis suggests it will not make it far enough east to fire storms east of the Rocky Mountains. Therefore, we have to remain hopeful that some storms are able to initiate just with the upslope flow with almost no synoptic forcing and weak instability. SPC has issued "see text" areas for both of these regions in Nebraska and Montana, with hail being the 5% threat. However, even if storms do not form in Montana during the daylight hours, it looks as if a line will develop as we head east toward Billings, MT. This will provide us with a nice lightning show if things go to plan. 1605Z-Leave Holiday Inn Express. By far the nicest hotel we have stayed at.

1609Z- Arrive at Wal-Mart for electronic supplies.

1635Z- Leave Wal-Mart and go to Flying J for fuel.

1657Z- Leave Flying J and head west on I-90

- Bart grows angry as he is informed that Jen was handed a box of Holiday Inn cinnamon rolls and he received none.

1710Z- New Day 1 comes in, and the "see text" is now removed from Montana. A lack of lift and instability warrants this removal. CAPE values in the new RUC run are only about 500 J/kg in our target area, compared to about 1,000 J/kg in the 12Z NAM. 1757Z- Pull over on I-90 W for a photo opportunity looking over the beautiful Big Horn Mountain range. Snow capped mountains, with a rain shower just in front makes this view spectacular.

1807Z- Leave and head back onto I-90.

1809Z- Hop onto U.S. 16 W in Buffalo, WY to head a bit closer to the mountains for more photos.

1828Z- Pull over for amazing pictures. Some of the most beautiful mountains we've ever seen. Our elevation is at 7,134 ft with pressure at 786.5 millibars!

1841Z- Leave and head back east on 16 into Buffalo, WY for some "lunch-age."

1859Z- Arrive at McDonald's, America's best place for food.

1925Z- Leave Buffalo, WY and get onto I-90 W toward Sheridan, WY.

1952Z- Team rocks out to Louis Armstrong. He sounds like Justin.

1958Z- Pass through Sheridan, WY. The highway overlooks the small town making for a picturesque moment.

2020Z- Enter into Montana! Andy notices the "sky gets quite a bit bigger."

2104Z- Get off in Hardin, MT for gas at Exxon. Gas at \$2.38.

2128Z- Leave the gas station, and get back on I-90 W toward Billings, MT.

2150Z- Pull off the highway to observe some updrafts trying to develop far off in the distance.

2203Z- Leave as these updrafts have all fallen apart. Get back on I-90 W toward Billings.

2220Z- Cells of about 40 dbz have began to pop up just north of the Big Horn mountain range. Therefore we plan to drop our stuff at the hotel and go try and catch these storms by heading southwest.

2232Z- Get off of I-90 and head to Comfort Inn in Billings, MT.

2243Z- Arrive at Comfort Inn. Drop our stuff off and get ready to go chase!

- Decide after evaluating radar, that the storms seem to be weakening. Therefore, we go into the hotel for an hour then we will re-evaluate the situation.

0031Z- Leave hotel to chase a storm that has developed in a more favorable environment east of Billings.

0116Z- Storm has lost its strength. It just pulsed and died like the storms have been doing all day.

0208Z- Arrive back at hotel and teams split up for dinner. Teams turn in for the night after dinner. Pilot Total: 2487.7 Day 6 Mileage: 374.1 Day 7, May 24, 2009

Plan: A shortwave trough is progged to move through Montana, Wyoming, and Nebraska today. Lee cyclogenesis at the surface will take place, creating a warm front that will lift northward into the northeastern Wyoming and western South Dakota area by 0Z (Rapid City). This will be the focus for thunderstorm development this afternoon. Soundings show an impressive hodograph along the front, with 850 flow at about 35 knots providing a nice hump. Winds aloft are a bit weaker but still will be sufficient for sustaining updrafts. With this in mind the SPC has issued a "see text" for the area with a 2% tornado probability. The main limiting factor, however, is instability. Early morning satellite shows a thick cloud layer moving into the area. At best, forecasted CAPE looks to be around 750 J/kg. Therefore, we need to remain hopeful that some sun is able to break. With 0-1 helicity at about $150 \text{ m}^2/\text{s}^2$ and a sufficient veering profile, some tornadoes could be possible given enough instability. 1434Z- Leave Comfort Inn and head east on I-90.

1532Z- Enter onto state route 212 E, heading toward Broadus. Stop at Exxon for gas. Gas at \$2.49/gallon.

1551Z- Leave the gas station and start heading east on 212 again.

- Pass by a very poverty-stricken area with houses that look like they are barely even standing. An upsetting sight to see.
- Great discussion occurs about maybe getting a group together that comes out and help these people. I urge met-majors to come back in the fall and try to get some kind of program together to help these people out.

1645Z- Bladders in Car 5 need to be emptied. Stop at Café in Ashland, MT.

1654Z- Leave and get back on 212 E.

1737Z- Stop at an IGA to pick up sandwiches for lunch!

1800Z- Leave after we get some snacks. Head back onto 212 E toward Gillette, WY.

- Miss our turn for Gillette so we continue southeastward toward Belle Fourche, MT.
- Again miss our turn to the south.

1854Z- After missing our turn for the second time on this road, we must turn around. Now heading south on State Route 323 toward Devil's Tower.

1902Z- Welcome to Wyoming! State route 323 turns to Wyoming state route 112. Continue to head south.

1925Z- Get onto Wyoming state route 24, and head east toward Devil's Tower.

1935Z- Stop quickly at Devil's Tower for some beautiful pictures.

1958Z- Leave Devil's Tower and head west on U.S.14 toward Moorcroft.

2031Z- Enter Moorcroft, WY and get gas at Cenex. Gas at \$2.31/gallon.

2100Z- Leave gas station and get onto U.S 16 east.

2113Z- Turn around again. Almost run into wild steer, a battle which I'd doubt our van would win. Go back onto 16 west.

2123Z- Back in Moorcroft, WY. Team is having trouble deciding which storms to go after as things are starting to develop rapidly now.

2128Z- Head back southeast on 16 W Upton, WY. Plan to sit at a rest stop here and monitor more data to decide which storm to chase.

2148Z- Pull over near Upton to observe storm, monitor data.

- Observe a possible lowering far to our southwest as we sit on top of a hill.
- Storms are currently out of Rapid City Doppler range; therefore it is hard to tell the intensity of the cells. We decide to keep waiting to see which cells can sustain themselves.

2234Z- Leave and head southeast toward Newcastle, WY. There is a cell rapidly intensifying north of the boundary just east of the Black Hills. The current cell we were observing has lost its lowering and its potency. Get onto 16 E to Newcastle and from there we will head back northwest.

2250Z- Hit heavy rain from the cell we were watching in Upton. Observe another impressive lowering as we drive toward Newcastle.

2308Z- Turn onto 85 in Newcastle to head northeast to get back in front of this current cell and head back up towards the boundary where new cells are starting to develop. Heading back toward the city of Belle Fourche, SD.

2341Z- Drive back into lovely South Dakota. The cells we are after still look pretty impressive just north of the Black Hills. Currently we are in the Black Hills at an elevation of 6,600 ft.

2350Z- Cells are now starting to cluster into a linear MCS, unfortunately for us. We still head northeast because that is still where the best chance of any rotation lies.

- See snow at an elevation of about 6,600 ft in the Black Hills!

2354Z- Bladder warning issued for Jackie.

0004Z- Stop at a store still in the Black Hills to allow Jackie to go to the bathroom.

0010Z- Leave and continue northeastward toward Belle Foursche.

0017Z- Very close encounter with a deer crossing the road. Brackett shows excellent driving as he brakes and avoids the deer. Well done.

0029Z- Turn onto state route 85 north.

0035Z- Storms begin to turn to mush as we lose daytime heating. Team decides to abandon the chase and head towards the hotel.

0037Z- Turn right on 14 east, heading toward I-90 E into Rapid City.

0042Z- Get onto I-90 E.

0048Z- Get gas at Conoco at \$2.45/gallon.

0101Z- Leave gas station and head north on U.S. 79 to get rolled by the MCS that has developed.

0112Z- Pull over in a gravel road to get rolled by the MCS.

0122Z- Leave the gravel road and adjust our position by heading just a bit more north.

0145Z- Turn left on third street in Newell, SD to head just a bit west and get rolled by the stronger cell in the line of storms.

- Cell falls apart as it creeps closer towards us. However, team takes pride in knowing they "did everything right."

0200Z- Team decides to go to the hotel. Head back south on U.S. 79.

0238Z- Get on I-90 east toward Rapid City.

310Z- Arrive at Holiday Inn Express in Rapid City, SD. Teams immediately split up for dinner. After dinner, teams go straight to bed as we have to get up very early tomorrow to make a long drive. Pilot Total: 3030.1 Day 7 Mileage: 542.4 Day 8, May 25th, 2009 Plan: Today we are headed south. There is a low-pressure system in Colorado that will eject eastward dragging a cold front through Kansas and Oklahoma. Unfortunately, in this area there is no upper-level flow, only 15 knots.

However, with CAPE values around 1,000 J/kg and dew points in the upper 50's and low 60's, convection should fire along the cold front. Helicity values around $150 \text{ m}^2/\text{s}^2$ may support some stronger convection, but the upper-level flow is not going to support long-lasting rotating updrafts. We just need to get as far south to day as we can to put us in position for convection in Texas on Tuesday. 1300Z- Leave Holiday Inn Express. Another beautiful hotel with extremely comfortable beds (Except Bart and Adam).

1309Z- Head south on U.S. 79 towards Hot Springs, SD.

1345Z- Enter Hot Springs, SD. 79 S becomes U.S. 385. Continue heading south toward Chadron, NE.

1420Z- Enter Nebraska! Stop at Shell, when we realize that quite a few things have gone bad. Car 4's tire is cut on the sidewall and not repairable. Car 3's electrical system is fried so have to buy two new fuses.

1530Z- Decide to fill car 4's tire, and just hope it does not leak out very fast. Car 3 bought new fuses and they are now okay. Team prays nothing more goes wrong with this trip. Leave and continue south on 385 toward Alliance, NE.

1600Z- Turn onto 7E Link in Nebraska toward Carhenge.

1605Z- Turn onto state route 87 south.

1617Z- Arrive at Carhenge for some pictures!

1625Z- Adam unexpectedly gets his feet washed as his air conditioner condenser leaks through the glove box.

1627Z- Leave Carhenge and continue south on 87 toward Alliance, NE.

1630Z- Enter Alliance, NE and get on state route 2 W toward 385 S.

1634Z- Get onto 385 S toward Bridgeport, NE.

- Some cells are developing around North Platte, NE that may go over the highway

1708Z- Enter Bridgeport, NE. Keep going south on 385 toward Sidney, NE.

1747Z- Enter Sidney. Get onto I-80 East toward North Platte. Car 3's bladders begin to ache. View some convection to our south as we head east.

1827Z- Pull off at a scenic overlook 10 miles west of Big Springs, NE and observe 6 land spouts!! Amazing, best stuff of the trip!! We call it into the North Platte office.

1842Z- Leave the pull off and continue east on I-80.

1901Z- Get off I-80 at Ogallala, NE. Stop here for quick lunch and gasoline in order to chase new cell development further south!

1920Z- Meet at Conoco for gas. Gas at \$2.59/gallon.

1951Z- Get back onto I-80 east toward North Platte.

- Observe another storm to our east which is just northeast of North Platte.
- North Platte is home to the largest railroad switching yard in the world! Every U.S. soldier would pass through on railroad here during WWII!

2030Z- Get off I-80 E and head onto US 83 south toward McCook, NE to get us just out ahead of the line of convection that has now formed just southwest of North Platte, NE.

- As we head south, the storms begin to turn into mush.

2120Z- Begin to head into the convection crossing the road. It looks quite dark ahead so there will definitely be some heavy rain!

2133Z- Enter into McCook, NE. Continue south on 83 toward Oberlin, KS. Still raining heavily with lightning around us. Also realize that we have now entered back into central time! It is nice to be back on the same time as Valpo.

2150Z- Break out of the rain and convection. Clearing skies spotted ahead as we creep closer to the Kansas border.

2153Z- Welcome to Kansas everyone! Team notices pop-up reflectors that come out in the middle of the road when it is dark. Team is highly impressed with technology these days.

2204Z- Enter into Oberlin, KS. Continue our long trek southward on U.S 83 this time toward Oakley, KS.

- A storm southwest of Oakley shows a shear marker on it. Our first one of the day. But it looks like we will not be able to get to this particular cell as we are still 40 miles from Oakley.

2247Z- As we drive south on U.S. 83 we notice a shelf cloud forming to the west.

2254Z- Pull onto a gravel road and observe the storm coming in to roll us!

2302Z- Leave and head back a bit more south to get better rollage.

2313Z- Get onto I-70 E to get back ahead of the storm. A new cell seems to be exploding in front of this line that we're trying to get ahead of.

2322Z- Pull off the interstate and watch storm again. Some dirt is being kicked up signifying some outflow.

- As we sit we see a brief land spout again! Very, very neat as storms just explode around us!

2352Z- Get back onto I-70 east.

0030Z- Get off at Wakeeney, KS. Get onto U.S. 283 south toward Jetmore, KS.

- Stop for gas at 24/7. Gas at \$2.48/gallon.

0047Z- Leave gas station and head south on 283 to keep in front of the MCS that has developed to our west. Not severe, but we look to be in for a lightning show at the very least.

0114Z- 91 miles to our hotel! Car 3 starts the game, "who can run over the most road kill."

0122Z- Enter into Ness City, KS. Continue on U.S. 283 S heading toward Jetmore, KS. We realize that the Dodge City WFO has not posted our tornado report. Andy points out that they do not want to post the report because there was not a warning associated with it, making them look bad.

0137Z- Car 4's CB radio gets stuck in the on position. Rest of team listens very carefully, but hears nothing incriminating from the members in Car 4.

0147Z- Turn onto Kansas state route 56 heading west toward Garden City, our home for the night.

0202Z- Pull over to watch approaching line of storms. Some really cool lightning!

0219Z- Leave after seeing some sweet lightning, and head into town to get rolled!

0233Z- Decide to leave the small town and just head to Garden City as it looks like we will not hit too much heavy rain.

0307Z- Arrive in Garden City, KS at Comfort Inn. Teams split up for dinner and then the teams head to bed to get up early tomorrow. Overall, it was a very successful chase day. We saw six or seven small vortices that were very well defined. The storms were much more intense than we expected today! Hopefully the same thing happens tomorrow since it is our last day to chase. Pilot Total: 3723.5 Day 8 Mileage: 693.4 Day 9, May 26, 2009 Plan: A bit of a complex forecast today. The MCS from last night has dipped into the panhandles of Texas and Oklahoma. This has created an outflow boundary that has allowed a cold pool of air to flow ahead of the advancing cold front from last night. Therefore, the question is if the MCS and remnant cloud cover will dissipate ahead of the front. If it does dissipate, then sufficient destabilization should occur and give us CAPE values of around 1,500 J/kg. However, if the MCS sticks around then we will have trouble getting clearing. Upper-level flow is sufficient for strong storms, with 300 mb flow southwesterly at 45 to 50 knots over west-central Texas. But unfortunately, the winds back above 500 mb with westerly flow at this level. Therefore, we definitely do not have our classic supercell setup. The mode of storms we are most likely to see today, if we can get destabilization, is multi-cell clusters capable of producing large hail and some stronger winds as we do have drier air in place today above 500 mb. Bart then gives his input and decides on a different area. A bit farther west on the New Mexico and Texas border there is an 850 mb shortwave moving in. This shortwave along with upslope flow will provide the lift necessary for some discrete convection along the Texas and New Mexico border instead of the multicell line progged to form in central Texas. Therefore, our target area is the Texas and New Mexico border. 1300Z- Leave Comfort Inn in Garden City. Head south on U.S. 83 toward Liberal, KS.

1404Z- Enter into lovely Liberal, KS. Turn onto U.S. 54 heading southwest toward Hooker, OK. Team gets excited to go through Hooker.

1414Z- Enter into Oklahoma! Unfortunately, just passing through. No chasing in the tornado state on this trip!

1436Z- Enter Hooker, OK. Continue southwest on 54 towards Guymon, OK.

1453Z- Enter into Guymon, OK. Stop at Shell for gasoline at \$2.39/gallon.

1533Z- Leave gas station and keep going southwest on U.S. 54 toward Stratford, TX.

1558Z- Pass through Texahoma, and enter Texas!

1615Z- Enter Stratford, TX. Get onto U.S. 287, heading south toward Dumas, TX. Pronunciation: Dum-is. Get your heads out of the gutter.

1645Z- Enter Dumas. Continue southward toward Amarillo.

- Team plays trivia over the CB radios.

1730Z- Enter into Amarillo, TX. Get onto I-27 South. Car 3 starts a contest as to which crack will reach all the way across their window first.

1743Z- Get off the highway and grab some lunch. Teams split up again for lunch.

1830Z- Leave our lunch destinations, and continue heading south on I-27 towards Canyon, TX.

1838Z- Get off at Canyon and take U.S. 60 southwest towards Hereford, TX.

1906Z- Enter into Hereford, TX, the beef capital of the world! Continue on U.S. 60 toward Clovis, NM.

- Here locals on CB's talking about us!

1955Z- Welcome to New Mexico, the land of enchantment.

2002Z- Arrive in Clovis, NM and stop to get some gas at Love's. Gas at \$2.39/gallon.

2037Z- Pull off and sit and wait for convection to fire.

2119Z- Leave pull off and head northwest toward a cell rapidly developing taking on supercellular characteristics!!

2126Z- Severe thunderstorm warning issued for the cell we are heading towards!

2127Z- Turn onto U.S. 60 east.

2150Z- Head north on Texas 214.

2210Z- Reach the storm that has about a 62 dbz. Decide to pull off and take a look as it is intensifying.

2214Z- Storm rapidly dying. We are now able to see through its rain shaft.

2223Z- Take a few pictures and then we head back west on Texas 1058.

2233Z- Pull off the road and observe a new cell. See a snake as we pull off the road!

2250Z- Leave again to head a bit more west. Cell is now showing a nice wall cloud.

2300Z- Pull over to take a look at this wall cloud now that we are closer. Also we are back in New Mexico!

- Very picturesque. Very high rain free base due to how dry it is, but the cell does have decent structure with it and we spot anti-cyclonic rotation in the wall.

2307Z- Leave and head back west on New Mexico 241.

2320Z- Head south onto New Mexico state route 209 toward Clovis, NM.

2330Z- Pull off again for more pictures of this persistent wall cloud.

2336Z- Wall cloud has dissipated, but still was very impressive for a while. Now continue heading south to get ahead of developing linear MCS. Turn south on state route 209 toward Clovis, NM.

0003Z- Stop for a quick bathroom break at Phillips 66.

0013Z- Leave gas station and bust southeast on U.S. 84 to try and catch new development along an outflow boundary pushing to our southeast.

0021Z- Turn left onto U.S. 84 and head southeast.

- Storms are firing but then rapidly weakening as the outflow boundary pushes southeast. The cold air behind the outflow boundary is creeping in so quickly that the storms get engulfed in it and just weaken as the boundary pushes to their south.

0031Z- Back into Texas!

0034Z- Get onto Texas State Route 145

- Observe an amazing shelf/wall cloud pass almost directly over our heads! Observe a couple dust swirl-ups as we drive past the updraft base.
- This gets an “uh-oh” from Adam, so you know it’s impressive.

0045Z- Get rolled by this storm. Very heavy rain begins.

0051Z- Turn south onto U.S. 214 to head back toward U.S. 84. Still raining very heavily but visually the storm looks like it is decaying.

0057Z- Finally break out of the heavy rain.

0104Z- Turn onto U.S. 70 heading west.

0105Z- Now we turn left onto U.S. 84 heading southeast toward Lubbock, TX. A nice line of storms has developed and will follow us right along the road as we head southeast toward our hotel destination for the night.

0154Z- Storm just off to our left is issued a severe thunderstorm warning!

- Very nice inflow band just keeps feeding it. This is due to the increase in the low-level jet.

0205Z- Get onto U.S. 289 east, looping around Lubbock, TX. We all undergo the impossible task of trying to catch lightning on camera.

0216Z- Get off at U.S. 331, heading southeast to cut out part of the loop around Lubbock.

0219Z- Get back onto U.S. 84 heading southeast.

0251Z- Enter into Post, TX. Teams split up for dinner here. It’s actually closer to a midnight snack.

0319Z- Leave from dinner and continue southeastward on U.S. 84.

- The cell with the severe thunderstorm warning has kept its intensity. The low-level jet is definitely feeding it. Hopefully it makes it into our hotel area tonight for a good lightning show.
- The bird in the microwave story is told. Great story.

0400Z- Pass through Snyder, TX. Continue our southeast trek toward Abilene, TX.

0522Z- Pull into Holiday Inn Express right off U.S. 84/I-20 in Abilene, TX. The storms seemed to have weakened quite a bit, but there is still pretty lightning strikes going on all around us. Makes for a good ending to a very long, but highly successful chasing day. Pilot Mileage: 4456.4 Day 9 Mileage: 732.9 Day 10, May 27th, 2009

Plan: Our chase is officially over today as we are just beginning to head towards Valpo. However, the second half of our drive today will be through a slight risk. We will not chase any of it, but we are hopeful that we have to drive through some cool stuff! Also, just for frustration purposes, SPC days 4,5, and 6 all have severe risks already outlined for them. 1412Z- Leave Holiday Inn Express in Abilene, TX. Get onto I-20 E towards Dallas/Forth Worth, TX.

1503Z- Pull off in Eastland, TX for some “fuel-age.” Stop at Exxon where gas is \$2.46/gallon.

1521Z- Leave the gas station and keep heading toward lovely Dallas/Fort Worth.

1627Z- Merge onto I-30 E heading toward the Forth Worth metroplex.

1639Z- Pass by downtown Forth Worth. It's nice to see a big city.

1706Z- Pass by the Dallas metroplex.

1707Z- Miss our exit to continue on I-30 E. Therefore we have to cut through the middle of Dallas to get back onto I-30.

1709Z- Get onto I-45 N.

1711Z- Merge onto I-30 E our original highway that we missed. Now heading toward Texarkana, right at the border of TX and AR.

1818Z- Get off in Surphur Springs, TX. Teams split up for lunch and then get gas at Shell for \$2.39/gallon.

1902Z- Leave the gas station and continue on I-30 E.

1940Z- Stop to put air in Car 4's tire as their pressure light has come on.

1947Z- Leave the gas station and head back onto I-30 E.

- Play trivia on the highway
- Team Names:
- Pilot=Justin
- Car 2= The Boss
- Car 3=Boner Ranch
- Car 4=Flat Tire
- Car 5=Adam is Cool

2039Z- Pass through Texarkana. Continue on I-30 E toward Little Rock, AR.

2041Z- Welcome to Arkansas! Breaking records as no chase has ever been to Arkansas.

2210Z- Car 4's tire pressure light comes on again. Pull off into Fina for air. Also gas up here with gas at \$2.39/gallon.

2231Z- Leave station after we are gassed and tires are filled. Continue on I-30 E.

2241Z- Car 4's tire pops! We pull off to the side of the road on Arkansas state route 5.

2303Z- Car 4's team does an amazing job of changing the tire in less than ten minutes. Now we head to Wal-Mart to get it changed and replaced before they close.

2314Z- Heading to dinner. Trying to enjoy our last dinner as a group despite knowing our car has a flat tire.

2321Z- Get to dinner.

0055Z- Leave dinner and head to Wal-Mart to retrieve our car back.

0110Z- Get the car and finally get back onto I-30 E toward Little Rock, AR.

0129Z- Get onto I-440 E to head around Little Rock.

0136Z- Pass over the Arkansas River, which we actually passed over in Kansas as well. It was bone dry in Kansas, but here it is looking quite healthy.

0139Z- Get onto I-40 E heading toward Memphis, TN.

- Trivia is played again.

0307Z- Get gas at Citgo at \$2.36/gallon.

0322Z- Leave the gas station and continue northeast on I-40 toward Memphis.

- Valentine, NE story is told.

0337Z- Just west of Memphis, TN, enter onto I-55 north toward Missouri.

0434Z- Welcome to Missouri! Getting closer to home!

0530Z- Get onto I-57 N heading toward our hotel.

0539Z- Pull off in Charleston, MO. Our Comfort Inn awaits us for the night.

Pilot Total: 5245.5 Day 10 Mileage: 789.1

Day 11, May 28th, 2009

Plan: Today we are headed back to school. It looks as if stratiform clouds and drizzle will be in place the entire trip up, so it will be quite boring. There will be no chasing on our last day and we hope to be back in Valpo by 4 p.m. 1315Z- Leave Comfort Inn and continue on I-57 N toward Mt. Vernon, IL.

1326Z- Cross the Mississippi River and enter into Illinois, the Land of Lincoln.

1413Z- Pass through damage in southern Illinois from the derecho that came through a couple of weeks ago.

1422Z- Pass by West Frankfurt, IL. This town was completely devastated by the tri-state tornado in 1925.

1451Z- Drive through Mount Vernon, IL. Continue on I-57 N to Effingham, IL.

1546Z- Enter into Effingham, IL and observe the huge white cross. Pull off for gas at BP for \$2.59/gallon.

1603Z- Leave and get back onto I-57 N toward Champaign, IL.

1715Z- Pull off just north of Champaign, IL for lunch at McDonald's.

1740Z- Leave lunch and head back onto I-57 N toward Kankakee, IL.

1844Z- Get off in Kankakee, IL on Illinois 17 E.

1901Z- Turn onto Illinois 114 E. Enter back into Indiana!

1914Z- Turn onto U.S. 41 N.

1945Z- Turn onto U.S. 30 E.

2022Z- Arrive back at Valparaiso University.

Summary: Although we did not have a favorable weather pattern by any stretch of the imagination, we managed to see some awesome weather phenomenon. This trip very easily could have been a huge bust with all of our car and weather problems, but it definitely was not. Everyone remained positive and did very well in their forecasting and understanding of what was going on. Bart of course worked his magic by putting us in all the right spots, and we all helped him along by giving our input. Thanks to everyone for making this a fun time and most of all thanks to everyone for making it a great learning experience.

Places we stayed: Night 1: Mitchell, SD Night 2: Rapid City, SD Night 3: Valentine, NE Night 4: Hot Springs, SD Night 5: Gillette, WY Night 6: Billings, MT Night 7:

Rapid City, SD Night 8: Garden City, KS Night 9: Abilene, TX Night 10: Charleston, MO Records: - B.I.G.A.R.S.E. put to use as we launched the first field radiosonde in Valpo history. - We went through 14 states, a Valpo record. - We went through Arkansas for the first time on a trip. - Saw six land spouts from one storm. Quotes - "Our instrument panel is lit up like a Christmas Tree." -Brackett - "We are in boating country."-Dan - "Stop looking at my A.R.S.E."-Andy/Bart - "We're hauling A.R.S.E."-Bart - "Well, at least there's a humplet on that hodograph."- Bart - "The setup looks SPECKtacular."- Bart - "Do you feel LUSky punk?" - "Those cows are on their way to the southwestern corner of their field."-Andy - "You should never drink and Derive."- Bart - "It's nothing to write home about."- Adam - "If given the opportunity."- Bart - "uh-oh. UH-OH."- Adam - "J.R. Towing: We don't cost an arm and a leg, all we need is your tows."-Justin - "Richard's Vacuum Cleaner: Our business sucks." - "Aaron's plumbing: A good flush beats a full house." - "The National Weather Service: Where weather is our middle name and service comes last." - "7% of trucks drive on triangles."- Dan - "This storm needs to man up."- Dan - "Boom goes the dynamite...and...and...and..." Shirt: Isn't the air and space museum just a big empty room? Do you feel LUSky punk? Well do ya? We're going to haul some A.R.S.E. Boom goes the dynamite...and...and... It's nothing to write home about Uh oh. UHH-OHHH (in question) This storm needs to man up. This trivia brought to you by Brackett's Plumbing: A Good flush beats a full house. 7% of all trucks drive on triangles Uh Bart...Our instrument panel just lit up like a Christmas tree.

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