



MESO's Storm Chasing Handbook

Storm chasing. In *MESO*, there is nothing we would rather do. There is no part of chasing we do not love. We've got the best bunch of people in the world to chase with. Our team: *MESO*. However, the one primary thing that binds us is that we love the process, not just the end result. You don't ride the merry-go-round because you like brass rings. You ride the merry-go-round because you like the ride. We like the ride. We live for gypsying around the plains, sun in our eyes, wind in our faces, gathering data, learning, chasing, and every so often, scoring. Every day we chase holds the potential for great adventure. We love the stopovers at the rest areas, watching clouds, hoping. We love the food runs, the card games, the seeing new places and meeting new people. We are severe weather watchers and researchers, and we enjoy it so much that we can't wait for it to come our way; we must pursue it. There is nothing more beautiful or awe-inspiring than a full-blown storm. Nothing. There are few things more dangerous than a full-blown storm, either. However, there are definitely ways to minimize the risk factor.



1. Pursuing severe weather just because it looks fun is ludicrous. Storms are dangerous. Some are killers. Chasing storms without adequate preparation in terms of knowledge and experience is like hunting a tiger with a popgun. Serve a few years in your local Skywarn chapter, take a tour with one of the commercial chase groups.... but until you acquire a strong knowledge of severe weather and how it behaves, don't even think about chasing.



MESO's Alpha team is what remains of the original 7 chasers that formed MESO. Each year they go out a week ahead of the main team to relive old memories and chase together for old times sake. Alpha is kept small and sleek, and replacements to Alpha are according to experience. Different styles of chasing require different types of chasers, and Alpha is about as different as they come.

2. It is generally not a good idea to chase alone. At the very least, there should be two of you. At least one should have experience. Recently, there was a film where one guy was chasing by himself. He was driving, watching the sky, talking on a cell phone, glancing at his monitor, and had a camera on the seat. One can't be sure if he was a genius or an idiot, but from our experience, the only things the driver should do is drive and make sure his coffee doesn't spill on the scanner. We have also found that chasing as a team enhances the entire experience. Friendships between people who share the same passion can be the most enduring of all.



Team chasing allows for varied input, shared knowledge, and shared memories.

3. Don't chase at night. Very dangerous and just outright stupid. It's easy to become disoriented at night, particularly in blinding rain, even on familiar turf. Most of the stuff you would watch for (rotation, wall cloud, funnel cloud) only becomes visible when backlit by lightning. We honestly like a slightly larger window of observation than a half a second every few minutes. At night, it's difficult to see downed power lines, or other obstacles or debris in the road. Your photo opts are not good, unless you are shooting lightning. If you weigh the risks against the gains, you'll stay home.

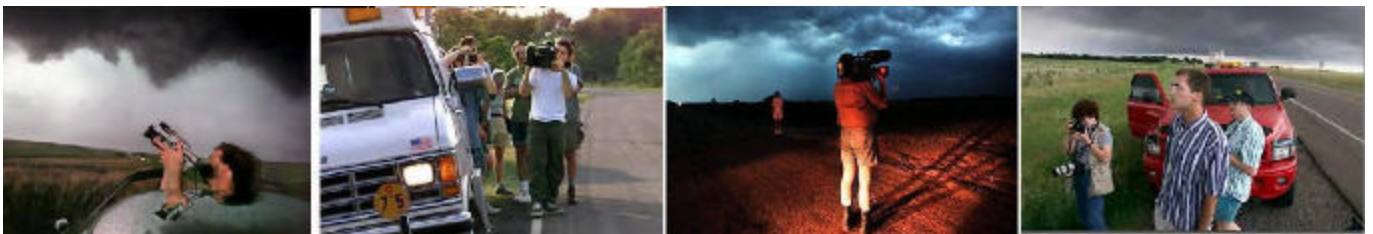


4. Core punching - driving right into the heart of the mesocyclone. The risks are extremely high. Even seasoned chasers avoid core punching unless all other options are exhausted. It's nothing to brag about; it's not heroic. It generally means that you have screwed up your angle of approach, and you have to go through an extremely dangerous portion of the storm to get to an even MORE dangerous portion of the storm. You can look forward to blinding rain and hail that can get up to 4 or 5 inches in diameter. We have all done it, and we all say its nuts and NOT to do it and we'll all probably do it again. We will go on the books as saying, "avoid core punching." If you are new to the game, and/or don't have high tech electronics and tracking devices, etc., don't even think about it. AT ALL.



A MESO member who's very glad that we aborted a core punch before the hail got much bigger surveys the damage to his truck.

5. Newbies. There are PLENTY of experienced chasers who are more than happy to share that experience, and are looking for people to chase with. Find one. Expect to share expenses, talents, and life-long memories. Learn all you can, and after a few years, remember that someone taught you and return the favor. Humility, hard work, and preparation go a long way in establishing yourself in the community of Storm Chasers.



MESO initiating visiting photographers to the greater joys of storm chasing.

6. Substances. You would think such a topic would be too ridiculous to mention, but it's being mentioned anyway. If you think there is even a remote possibility that you will chase - don't drink. Not even a little. We have a "no substance" rule when we chase. Of course, we are all adults, and a few of us appreciate a cold beer at the end of a hot day. However, once the can is popped, there will be NO DRIVING.
7. Speeding. A very lame thing to do. First of all, every little town has this ONE SPECIAL COP whose personal mission is to ticket out-of-towners. We know from whence we speak. Being stopped by that one special cop pretty well assures that whatever it is you were rushing to get to is going to be REALLY out of range when he's done with you. Secondly, it is only courteous to respect the laws of the communities in which you are a visitor, let alone those in the community in which you are a resident. Speeding gives all chasers a bad name, and disregard for the rules of the road has made chasers unwelcome in many communities already. Third, storms are not good conditions for

speed in the first place. If you don't hydroplane, you might just drive off the road from limited visibility or round a turn to see a downed tree in your path. If you have to risk your life and the lives of fellow motorists to catch up to a storm, it isn't your storm.



Though only going 43mph in a 35mph zone, this *MESO* member has learned her lesson.

8. Teams. It's so important that you find good people to chase with. Any one of us would trust our life (and have) to any member on the chase team. Whether you have a team of two people or one of 12, be able to count on each one of them 150%. Everyone should know what to do, where to be, and each unwavering certainty they should "be there." Singularly, we at *MESO* are all strong-willed, independent people. Together, we are one unit, and operate like a finely tuned machine. The reason being is that we leave our egos at home and work as a TEAM. We discuss where to go, when to go, where to stay, where to observe from, where to eat, where to sleep... but the team leader decides when to retreat, and where to retreat. A severe weather event is not the time to hold a conference on what to do. The guy in charge should be someone who has knowledge, experience, instincts, responsibility, the ability to lead, and the intestinal fortitude to make and stand behind what may be an unpopular decision. Also, make sure you like the people you chase with. If you are "not sure" about someone at the start of a chase, darned sure you'll be at each other's throats very quickly. So get to know people before you chase with them. Make sure everyone has their own jobs and responsibilities, and that they know what they are.



1998 - Before we were MESO



The MESO 1999 Chase Team



The MESO 2000 Chase Team



The MESO 2001 Chase Team - minus a few

9. The locals. Respect them. It's their home. Know the local FCC rules and frequencies, and obey them. Know the local laws and obey them. Respect people's private property and private moments. When someone has lost everything due to severe weather, and their private possessions and personal memories are strewn all over the countryside, it's no time to jump around with a camera yelling, "Oh, Wow!". What might you do instead? Well, maybe help. You'll feel better. There is not, to my knowledge, one picture ever taken by our press corps that was without the permission of the people in it. Also, be a tad cool with your enthusiasm. You may want to see a storm, hoping that the wall cloud just ahead may drop a tube, but the guy whose farm is underneath it probably feels differently. Don't create the impression that you want something bad to happen. There's a big difference between wishing to see a tornado and wishing to see a tornado destroy lives and property.



The people we meet along the way are always anxious to share a tale, and we treasure the acquaintances we have made over the years.

10. Lodging. Make forecasts early and plan ahead (tentatively) by at least 12 hours. Try to find a safe and structurally sound motel as early as possible in the day close to where you plan on ending the day. When storms start to develop in the afternoon and evening, you don't want to have to think about finding a place to sleep and making reservations. It's a very good idea to ask to see the rooms before you sign for them, and to make sure that the rooms have compatible phone lines for data. Also make sure that 800 numbers and local calls are free. They aren't everywhere. (There's nothing like getting a \$278 phone bill attached to your \$35 room bill). We also like to find lodging that has restaurants within walking distance, laundry facilities, free continental breakfast, and sheltered parking. The emphasis here is on the word "like". We also "like" lodging that offers sheltered parking, a storm shelter, and a hot tub. We have "settled for" much less; to the point where we have had to post sentries against the bugs, plug holes in the walls of the showers, rewire phones, and explain to some of our younger members what a television antenna is. However, "any port in a storm", as the saying goes. Three lesser-known variables in storm chasing are sleep, restrooms, and food. There may be quite a while between any of them, so grab them all while you can.
11. The Vehicles. Any one bringing their personal vehicle on a chase has got to be prepared for the possibility of sustaining at least some damage. HOT TIP: change the deductible on your auto policy to the minimum every spring. Take it back to normal in the

fall. Also, we HIGHLY recommend the product Rain-X for keeping the windshield clear. In 60 mph winds, wiper blades are kind of something you use from habit, of no real value. RainX makes the water fly off the windshield. It must be used only on a meticulously clean windshield. All vehicles should have more than one means of communication between them. We use radios, walkies, and cell phones. When we're traveling, we keep at least within radio signal of each other, but when we're in active mode, we stay within visual range.



McWAR is our mobile lab. McWAR was funded entirely out of our membership, and we don't think there's another like it anywhere.

12. Streamlining. Gas up all vehicles whenever possible, and last thing at night, make sure the tanks are full. "Down time" can be used to check things like tire-pressure, wiper blades, belts, hoses, fluid levels, etc. Preprint maps the night before of where you think you might be the next day, and distribute them to everyone. Stay in readiness, with everything you ready to be loaded into the vehicles at a moment's notice. The average life span of a tornado is what, 6 to 8 minutes? From the time you decide to go to the time you are on the road should be no more than 5 minutes. It can make a difference. That extra bowl of cereal you down before heading out really repeats on you when you hear from someone down the road, "Man, you JUST MISSED it."



The MESO Fleet, ready to roll.

13. Down days. They are inevitable. In addition to catching up on sleep, laundry, shopping, reading, vehicle maintenance, battery charging, and phone calls to those at home, we have found that sometimes it's best to leave down days for NON-weather-related pursuits, like a movie, or catching some of the local color and attractions. You may never have the opportunity to see the world's deepest hand-dug well or the world's largest ball of twine again! Though there may be vastly varying levels of expertise and experience in chasing on your team, a non-chase-related activity puts people on an equal ground and is a great team builder and confidence booster.



MESO members in inactive mode. Don't they look happy?

14. The Planning. Those of us with meteorological backgrounds form our convective outlooks independently of each other, so as not to influence each other. Then we compare, discuss, and commit. To date, we have almost *always* come to the same conclusions. After the weather people decide on the projected "hot spots", we have a group discussion that involves everyone. There are other things to consider than probabilities. We consider if the areas under consideration are in good terrain for observation and if the road network provides safe and sure access into and out of the zone. We decide the guidelines of what's "in range." A tiny pocket of convection with possibilities is "interesting" if it's about 100 miles away. That same tiny pocket of convection isn't quite as interesting if it's 300 miles away. A "near darned-near sure thing" 300 miles away is irritatingly interesting, particularly if you decide to go for it and find out after you get there that everything is happening back where you just left hours before. Weigh probability with distance and time. Also, never lack the humility to change your plans. We do everything possible to be where we should be when we should be there. However, despite our successes, we're humble enough to modify our plans in the face of new evidence; such as we're heading south on Route 35 and we spot the D.O.W. (Doppler On Wheels) truck heading north. Now there's an automatic roadside summit conference for ya.

15. Everyone's opinion has value. With all the scientific and technical data we gather and analyze, there's nothing that gets our attention more than when someone on the team says, "Ya know, guys, I just have a gut feeling that..." Experience and knowledge are great tools and given enough time and work, we can all acquire them. However, don't discount hunches, feelings, and instincts. Don't live by them either.
16. On the road. Having the entire team looking at radar or the entire team looking at maps is a waste of manpower. We each have duties and responsibilities while on the road. We have a Forecasting Team, whose work is the basis of deciding when we go active and where we head. Once in pursuit, these people also monitor developing conditions that may effect the developing weather events. We have a Chief Navigator, who is responsible for seeing that each car has an identical map of the area. Each vehicle has a communications person, who maintains radio contact with the Chief Navigator. The Forecast Team and Chief Navigator track the vector and development of the storms. We have a Safety Marshall, whose job it is to be mindful of potential shelters should one become necessary. We have a Lead Photographer, who we can count on to get the pictures. Sure, we all snap away when our duties are fulfilled, but it's the Lead Photographer's *responsibility* to properly document the storm. Jobs overlap, and everyone helps out everyone else, but what is fundamental is that areas of responsibility are clearly defined.



Forecasting, photography, sheltering (in this case from hail) and navigation are just a few of the areas of responsibility on a MESO chase.

Tips on the road. These are a few things we've picked up on over the years.

- a. We do our tracking of storms via cell phone connection to the Internet. This is far from a perfect system, as signal varies as we move. We have come to know what areas have good signal for the systems we use. In areas where signal strength varies, we find one good spot and STOP to get an image. It is then saved, so it can be compared to the next image we are able to get. In areas where signal is impossible, we will ask to use a landline in a hotel lobby or local business. We often have rented one cheap hotel room, only to use the phone line. Extravagant? Not when compared to staying on the cell for an hour or two. Some folks have used acoustic couplers to gain Internet connections via pay phones. If you have tried this system without success, you are not alone... but our specialists tell us that sometimes cleaning the pay-phone receiver or hitting it sharply to activate the carbon crystals can improve your success. Some chasers carry their own satellite dishes for connectivity. May truck stops now feature modem lines as well. Whatever method you use, if you use one, have a backup. Nothing works all the time, and sometimes nothing works at all. There's always The Weather Channel.



Each vehicle in the MESO fleet has GPS as well as storm tracking capabilities. We use cell connectivity to the Internet to gather. Sometimes, it's as easy as hitting "DIAL UP"



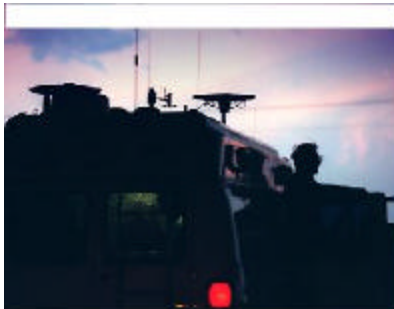
However. Cellular connection to the Internet is not without it's problems. Poor line-of-sight, weak signal, no service, and terminal problems are some of the many challenges. After trying for over an hour to connect up on the road, a pit stop is called for a systems check, and a call to Verizon Data support.

- b. There are special hotels, memorable eateries, and roads that we "will never EVER go down again". It's good to keep a journal of these. Keep a list of people you meet along the way. Chance encounter can grow into good friendships...and it never hurts to have friends.



Those "friends you meet along the way" come in real handy when you absolutely need a landline. On the left, the guys connect from a hotel lobby; on the right, they connect from a train station. As they say, any port in a storm...data ports included.

- c. If you're on a team, remember that there are times best spent together, and times best spent alone. As great as the team experience is, remember that people need their "alone moments".

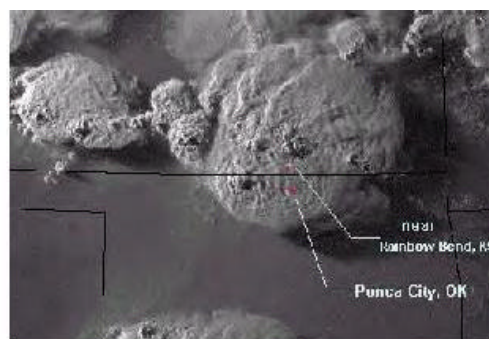
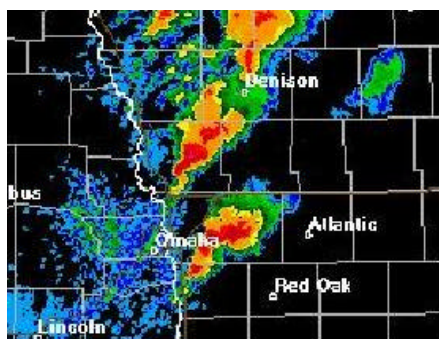


- d. Keep a list of the various frequencies used by weather observers and emergency services in various communities.
- e. Everyone that chases with us signs a waiver. It's a good idea. Everyone that chases with us has an emergency contact form and an emergency medical form, listing blood types, medications, allergies, etc. This is just good practice anytime you're going to be traveling with folks for an extended period of time.
- f. Pick up small emergency lights for each chaser in your group. They attach to a pocket, and flash for a good 4 hours and cost a few bucks each.
- g. At night, try to find a parking place for your car that would provide shelter from hail.
- h. Familiarize yourself with the entrances, exits and available shelters (if any) of the place you are staying. In a power outage, this could be valuable information.

- i. Share your knowledge. Many people who are "just passing through" are staying at the same hotel and motel you are, or stopped at the same truck stop or restaurant.. If severe weather threatens, don't be shy. Apprise them of the situation and tell them what the best thing to do is, keeping elements of panic, crisis, or extreme excitement out of your voice.
- j. Bring only the essentials, and bring clothes that are lightweight and dry quickly. Though it's hard to imagine needing a sweatshirt or jacket when you're standing in 98-degree heat, bring one anyway. Extremes in weather can bring extremes in temperature change.
- k. There are other things to shoot pictures of besides tornadoes. Capture ALL the memories.



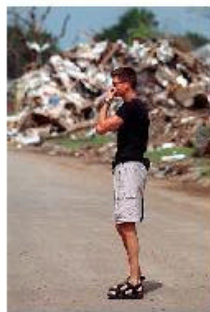
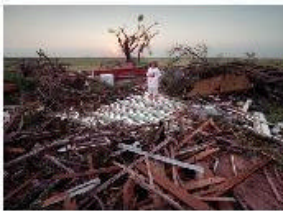
17. In the zone. OK, you've caught your storm. **KNOW THY STORM.** To the best of your ability, know where it is, where it's been, where it's going, what its history is... everything you can. Watch from a safe place, **OUT** of the path, and report any significant weather events to local authorities. The greatest danger to weather observers is lightning. When possible, stay in the vehicles, but at all times, be aware that if you can see lightning, it can "see" you. Don't stand near high points and don't **BE** a high point. If there is a tornado, and it appears to be standing still, it could actually be moving right for you. When you park for observation, park all vehicles backed into the wind, emergency flashers on, and all vehicles running. Don't park anywhere near power lines, or large trees (particularly dead ones). The first thing we do at a site is to determine the possibilities for sheltering should the need arise. Everyone should have maps with exits from the area in all directions highlighted, and everyone should be made aware of how far back or ahead the nearest crossroads are. Know where everyone is, and make sure everyone knows the game plan. Huge storms are mesmerizing, hypnotic... and often bring friends. Don't get so strung out on what's developing ahead that you forget to look **UP!!!** Or behind you. Don't let your last word on this great planet be "Duh"!



Some of the things we are usually capable of checking via the Internet while we're mobile.

18. Stuff to carry. In addition to the obvious (your tech gear; radios, cell phones, computers, satellite dishes, etc.)
- a. Bring a good piece of rope. The secret to any to any great adventure is a strong piece of rope.
 - b. First aid kit, trauma pack(s)
 - c. Water. Lots of water. In all the excitement, a few of us let ourselves get dehydrated. It was horrible. Hydrate, hydrate, and hydrate. Then refer to section h.
 - d. Duct tape and clear packing tape... good for windshields and a million other things.
 - e. Compass. And everywhere we stop, we draw a compass on the ground, too.
 - f. In a safe place, medical info on everyone. Allergies, medications, etc.
 - g. An old guy, so you can get hotel rooms at the senior discount rate. Otherwise, AAA.
 - h. Plastic bottles with screw on tops. Don't ask. Refer to section c.
 - i. A clothes line (or that good piece of rope.)
 - j. A good book (on weather?) and a deck of cards.
 - k. Many extra batteries, extra film, etc.
 - l. Jumper cables.
 - m. "Rain-X" and an extra set of wiper blades. Clear vision is critical in adverse conditions.
 - n. "Fix-A-Flat" or some other emergency tire repair kit... you don't want to be changing a tire when you're being chased down by a tornado!

With us, the chase is the thing. However, chasing ALWAYS takes a back seat if there is a public emergency. If we should come across a disaster scene, we report to whoever is in charge and offer whatever assistance we can. If no one is in charge, we take charge till an authority gets there, and then offer to help.



Some of the disaster sites *MESO* members have assisted at. That assistance sometimes takes the form of shared resources and supplies, damage assessment, passing the hat, or offering an ear to talk to, a shoulder to cry on, or a reassuring hug.

We have been blessed with the ability time and time again, to observe nature's fury up close and personal. We will continue to chase the wind, both singularly and as a team. And every May, as long as warm, moist air drifts up from the Gulf to meet the dry air from the Rockies, and the cold air from the north, *MESO* will be in the Great Plains. As we drift in from all over the continent to share that wonderful, crazy thing we do together, we will carry with us the hearts, souls, dreams, and memories of all whose lives we've shared along the way.



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