

# RECAP

July 2005

For People Who Monitor the Weather. From the Manufacturers of Capricorn™ Reliable Weather Stations.

## ▼ New Innovative Weather Monitoring System from CWS Orion Weather Stations™ Offer All-in-One Met Sensor Technology



Utilizing cutting-edge ultrasonic technology at an amazingly affordable price, Orion Weather Station Systems is a new line of innovative weather monitoring equipment from Columbia Weather Systems, Inc.

Orion provides ultrasonic wind direction and speed measurements, a highly-accurate impact rain sensor, capacitive relative humidity, temperature and barometric pressure readings — all in a single sensor module.

- The all-in-one sensor transmitter is compact and lightweight for easy installation.
- Low-power consumption improves reliability and longevity for battery-powered installations and mobile systems.
- With no moving parts, the Orion sensor module is exceptionally durable and virtually maintenance-free.

High resolution and accuracy make this new weather station ideal for high-precision weather monitoring. Orion's sensors meet FAA and WMO specifications for aviation operations, as well as EPA standards for scientific environmental monitoring applications.

The Orion comes in three configurations: fixed-mount, vehicle-mount, and the Orion Nomad portable weather station. It can be used with Columbia Weather Systems' proprietary Weather Display Console and/or WeatherMaster Software, as well as with third-party software.

For more information and detailed specifications, visit [www.columbiaweather.com](http://www.columbiaweather.com). For a price quote, contact John Gerrish:

*Toll-free in the U.S. and Canada*

1 888-508-7375

Phone 503-629-0887

Email [jgerrish@columbiaweather.com](mailto:jgerrish@columbiaweather.com)

## Capricorn to be Featured in Spike Lee Movie

The Capricorn weather station has been cast in its second media production. It is due to be featured in the upcoming Spike Lee movie *Inside Man* along with stars Jodie Foster and Denzel Washington. The movie will be about a bank robber who is trying to complete the perfect job but finds himself in a hostage situation after a cop tries to foil his plans.

The set includes a mobile command vehicle by LDV outfitted with a Capricorn Vehicle Mount weather station. In recreating the interior of the vehicle, the set designer purchased an authentic Capricorn 2000 Weather Display.

The movie is slated for a March 2006 release.

The Capricorn's media debut was in an episode of the acclaimed television series "Touched by an Angel" involving a tornado chaser.



### INSIDE ReCap

- ▶ TORNADO CHASING GIVES ADRENALINE RUSH
- ▶ OREGON DEPT OF AGRICULTURE
- ▶ COMMET WEATHER NETWORK SOFTWARE

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## Oregon Department of Agriculture: *Weather network helps manage CAFO waste and field burning*

Weather is a crucial factor in agricultural operations in Oregon's fertile Willamette Valley. The Oregon Department of Agriculture (ODA) purchased ten Capricorn 2000EX™ weather stations with a grant from the Environmental Protection Agency to supplement information from existing AWOS stations at local airports (which are few and far between).

Scattered at diverse locations including the Oregon Gardens, Basket Slough National Wildlife Refuge, municipal fire stations, and a high school, the Capricorn weather stations have provided important information for specific programs in both the livestock and grass seed industries.

### CAFO

The first program was a demonstration project for Confined Animal Feeding Operations (CAFO). Large-scale livestock and dairy operations are regulated to prevent environmental pollution. The animal waste is stored in ponds and then sprayed on fields as fertilizers. If the ground is already saturated, the runoff can pollute local bodies of water.

The CAFO project combined rainfall measurements with National Weather Service digital forecast data to develop a Manure Spreading Index to provide farmers with decision-making information to help protect local waterways.

While the CAFO project is completed, the weather stations are now being used to help regulate field burning.

### Field Burning

Grass seed is a \$380 million business, the fourth largest agricultural product in the State of Oregon. General operating practices include field burning in this major transportation corridor of the Willamette Valley. When winds reach 15 knots the smoke will not rise and disperse away from populated areas. The goal of the program is to allow the growers to use this important field management tool, while protecting the general public from smoke impacts.



*Jim Little, meteorologist for ODA, helps install the wind sensor at the Basket Slough National Wildlife Refuge.*

*Photo courtesy of ODA.*

“Our smoke management program is very sophisticated,” says Jim Little, meteorologist for the ODA. “What we conduct here is a close met watch – real-time, short-range, operational micro-scale forecasts.”

The weather stations are polled from his central office and the information is radioed to seasonal field workers monitoring the burns. “We use radio communications so the farmers can listen in,” Little says.

Especially closely monitored are the sea breezes that reach the valley almost every afternoon through the Van Duzer Corridor of the Coast Mountain Range. “At the onset of the sea breeze we can shut down field burning from west to east as it reaches across the valley,” Little explains.



*Jim Little checks the installation at Brownsville City Hall.*

*Photo courtesy of ODA.*

# Product Update: ComMet Weather Network™ Software

**ANNA SCHOOL DISTRICT**

204 N. Second St. PH. (937) 394-2011  
 Anna, OH 45302

Elevation: 1025' Latitude: 40° 23.825' Longitude: 84° 10.550'  
 Last Update: 4/1/2005 7:21:51 PM

Temperature	Humidity	Feels Like	Comfort Index
45°	53%	45°	Cool

Barometer	Tendency	Dew Point
29.82"	↓ -0.02/hr	29°

0"  
 0"  
 0"

▲ Pop-up screen displays individual station parameters.

ComMet Weather Network™ provides multi-station, real-time weather network monitoring over the Internet. Developed for Shelby County (Ohio) Emergency Management, this software is now available for anyone wanting to establish a regional weather network.

Operational since 2003, this technology is tested, yet cutting edge. The software works with weather stations connected to computers running the ComMet Weather Pump software. These “pump” real-time weather data via the Internet to an SQL Database server operating the ComMet Network software.

The screenshot shows the Shelby County WeatherWeb interface in a Mozilla Firefox browser window. The main content area features a map of the county with several weather stations marked by yellow dots and their current temperatures: The Way Int'l (45°), Botkins (45°), Jackson Center (45°), Anna (45°), Ft. Loramie (45°), Lehman Catholic (46°), Christian Academy (45°), Sidney HS (43°), Fairlawn (43°), Houston (46°), and Russia (46°). The left sidebar contains navigation options like 'WEATHER VARIABLES', 'STATION LOCATIONS', 'WEATHER ALERT SIGN-UP', and 'WEATHER CAM'. The right sidebar displays a '2 Day Forecast' with details for 'THIS AFTERNOON', 'TONIGHT', and 'SATURDAY'.

► Site visitors can register to receive email alerts for severe weather events.

ComMet Weather Network Software sells for \$1200, plus \$100 per station for the Weather Pump Software.

Would you like to automatically be notified when severe weather comes to Shelby County? Just follow the below steps to be alpha paged or emailed.

1. Choose an option(s) by placing a check mark.
2. Enter your e-mail or you alpha page e-mail address.

Description
<input type="checkbox"/> Blizzard Warning
<input type="checkbox"/> Flash Flood Warning
<input type="checkbox"/> Flood Warning
<input type="checkbox"/> Severe Thunderstorm Warning
<input type="checkbox"/> Severe Thunderstorm Watch
<input type="checkbox"/> Tornado Warning
<input type="checkbox"/> Tornado Watch
<input type="checkbox"/> Winter Storm Warning

email/alpha page address:

The number of stations is limited only by the database capability — “A hundred plus,” states CWS president Nader Khoury.

The software includes a website template for users to display a map of their network pinpointing the station locations. Individual parameters can be shown on the map at station locations, or click on a station and a pop-up screen displays all its parameters.

The web site displays National Weather Service two-day and extended forecasts for the coverage area, as well as user-generated announcements. The software allows website visitors to register to receive email alerts for severe weather events including blizzard, flash flood, thunderstorm and tornado warnings.

Sophisticated users can take advantage of the template’s capability for weather cams, sponsors, links and other features.

## ► Weather Watching: Storm Chasing Provides Dose of Excitement



by John Gerrish,  
Sales Manager,  
certified  
meteorologist

One of the first tornado chasers was Pecos Bill. The legend tells that he lassoed and rode a Kansas twister all the way to Texas. My experiences haven't been quite that exciting, but modern-day tornado chasing is big business.

Why is this? Why do people risk danger to experience these potentially deadly storms? For some, it's the adrenaline rush. For others, it's encountering the awesome forces of nature up close, and sometimes very personal. For me, it's a little of both.

Meteorologists see weather through different eyes than most. Sure, we see clouds, rain, thunder, and lightning, but we also see the atmospheric dynamics — nature's physics in perpetual motion — and the awesome power of Mother Nature in mathematical terms. We also speak our own language — jargon such as mesoscale cyclones (or Meso for short), Super Cells, Helicity, Vorticity, CAPE (Convective Atmospheric Potential Energy), and Vertical Velocities are all part of our vernacular. We salivate when a Hook Echoes, Line Echo Wave Patterns (LEWPs), or Outflow Boundaries develop. We get excited when Squall Lines trigger massive thunderstorms that generate funnels and tornadoes. It's in the blood.

Approximately 96 percent of the world's tornadoes occur in the American Midwest. Springtime brings warm subtropical breezes from the Gulf of Mexico. These south-

erly winds sometimes become a strong gale, transporting Gulf warmth and moisture to the northern-most Plains. While winter has not totally relinquished its grip over the Midwest, hot dry air masses from the desert Southwest expand and extend into the Plains to set the stage for some of the most violent weather on the face of the planet.

I chase with F5 Tornado Chasing Safaris. Our guide Gregg Potter is the senior meteorologist and an experienced storm chaser. Our chase tours start in Oklahoma City. The number of chase vehicles depends on the number of clients for any particular week.

A regular passenger is Geoff Mackley, a well-renowned free-lance photographer/videographer who documents our chase season. Geoff's work has been shown on the Discovery, National Geographic, and Travel Channels. Geoff is a weather junkie, like the rest of us, only with an eye for the spectacular. (To see his work visit [www.rambocam.com](http://www.rambocam.com).)

### Setting the Stage

Most mornings start with a conference call to meteorologists in the forecast office. Logging onto several weather websites, we discuss the day's potential and possibilities for severe weather. After arriving at a consensus "target-city" where the potential is the greatest, the meteorologists discuss the day's game plan with the clients, and we set out on the road.

Some days have little to no potential, and so become either tour days or travel days to position ourselves for predicted storms. Other days, the game is on and travel could be as short as 30 minutes to several hours. Travel time is used to conduct mini-Weather 101 classes, discuss atmospheric conditions, familiarize clients with weather jargon, and answer questions.

Our on-board laptop computer utilizes an XM-Satellite weather program called Baron's™, which provides realtime weather radar, GPS tracking, wind profiles, satellite imagery, time-lapse looping, and "on-the-fly" severe thunderstorm/tornado warnings and advisories — all in the vehicle and at 70mph! Baron's radar dissects a storm both horizontally and vertically, to help us position ourselves close to the most severe weather and be in place to observe pure, raw nature at it's worst, er uh, best.

### Positioning

This season, we caught up with a series of severe storms in the Texas panhandle. We'd driven south from Nebraska and engaged the thunderstorms near Quitaque, TX, a small village east of Plainview. As we positioned ourselves near Caprock Canyons State Park, we came across other tornado-chasers, including a large radar truck from the University of Oklahoma. We were watching storms in the distance develop funnels, but nothing became noteworthy. The storm was known as an "HP" storm (High Precipitation), which are not typically good storms to chase. HP storms usually have low ceilings, heavy rain-shields, and/or hailshafts that obscure visibility and often hide tornadoes.

We repositioned ourselves about half a mile south of Quitaque to pick the storms up from a different perspective. This put us on the storm's right-rear quadrant and in prime position to observe any severe

The red Texas soil  
creates a colorful  
debrisfield.

Photo courtesy of  
Anything Weather.



## Storm Chasing Continued...

weather. A warm humid southerly wind was blowing at our back as the storm grew. The black sky smelled pungent with rain as the clouds swirled overhead. Occasionally the sun shone through to illuminate a brilliant foreground on the ominous sky. We could hear the tornado sirens wailing in the distance as we watched and waited. Nothing.

Outflow boundaries formed and swirled dust and dirt into the air. Rain started and stopped. Golf-ball-sized hail sprinkled around us, but nothing more. As the sun set, the sky drew dark quickly. Continuous lightning filled the air, but no tornadoes. The wind shifted from a warm breeze to a cold northwest wind, an indicator that the storm cell was collapsing and then regenerating.

As the sirens subsided, we headed towards our next town, staging ourselves for the next day's chase. In this remote section of Texas, paved roads are at a premium. Our only route was through the storm we had been chasing, so we ducked our heads and headed through the belly of the storm. Golf-ball-sized hail pounded the vehicle so hard it made our ears ring. It was quiet inside the Suburban as we drove through the hail and rain, except the bleating from the XM satellite radar, "You are approaching a twisting storm, please exercise caution."

At one point, five "twisting storms" on the radar surrounded us. Rain fell so hard we couldn't see the road and had to slow to a crawl. Large hail littered the highway. Nonstop lightning lit the sky and several bolts hit telephone poles and trees very near us. We finally made it to Childress and got to our hotel. It was late and we were exhausted, but we were still riding the adrenaline rush from what we just experienced.

### Debris field on the ground!

The next morning, our target city was Paducah, TX – about 30 minutes south. It was noon and the storms were already building. The day promised to be explosive. We headed east of town and ran into the usual crowd of storm chasers and tour vehicles. Most had entrenched themselves and were waiting for the fireworks to begin. Our radar indicated that some of the cells were "right-movers" — a clear sign of potentially severe storms.

We repositioned south of town on a lonely rural county road. We spotted a Super Cell, with its signature rotating cloud base. Strong storms such as Super Cells rotate counterclockwise throughout the entire storm column. As the storm rotates, the dynamics spawning tornadoes are already in motion and are manifested in the rotating structure.

Funnels appeared, then retracted, then developed again. Debris field on the ground! One of the funnels had touched down. Tornadoes are often transparent until the debris field sucks dirt and debris up into the funnel cone, giving it the classic dark shape.

We were less than a mile away and the only chase team around. We called 911 and reported the twister, which immediately set off the National Weather Service's Tornado Warning alert system for the county. The funnel was only on the ground for a minute or two before it rescinded and disappeared. A TV crew from Dallas was out filming the storms and stopped to talk with us as we watched this storm collapse.



### Too close for comfort

We repositioned ourselves on the storm's right-rear quadrant and picked up Super Cell developing and spawning "fingers" – or multiple funnel clouds. We stopped about a half-mile away and watched as a strong funnel developed about halfway to the ground. Cameras were rolling. Debris field on the ground, but it was much closer than the funnel appeared. The debris field quickly expanded and we had a tornado on the ground within several hundred yards of us!

We grabbed our gear and scampered toward the Suburban. The wind hit, wrenching the door and sucking everything loose right out of the vehicle. As we took off, the tornado passed behind us, right where we'd been. That was close, but what a rush!

Several miles down the road, we stopped to regroup and inventory our maps and papers when another funnel dropped about a quarter-mile in front of us. An ominous black sky as the backdrop, the bright-green countryside with red plowed dirt backlit by the sun, and a magnificent red tornado looming in front of us! What a spectacular site!

This is what we chase for — to stand in awe of Mother Nature where words can hardly describe what our eyes see. We watched in silence as the twister meandered away from us, then quietly vanished back into the clouds. We savored the vision.

We had been up close and very personal with Mother Nature, and we had been satisfied.

For more info: [www.F5TornadoSafari.com](http://www.F5TornadoSafari.com)

*CWS's John Gerrish shoots a couple of funnel clouds. Photo courtesy of Anything Weather.*



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