NEWSLETTER

National Weather Association

No. 10 – 12 December 2010

Tracking the Storms the PLOWS Way

Adverse road conditions associated with winter storms are responsible for a large portion of the nearly 7000 deaths, 600,000 injuries and 1.4 million accidents that occur in the United States each year. Improving cool season quantitative precipitation forecasting depends largely on developing a greater understanding of the mesoscale structure and dynamics of cyclonic weather systems. The Profiling of Winter Storms (PLOWS) project is aimed at doing just that. During the 2008-2009 and 2009-2010 winter seasons, the University of Illinois (UI), the University of Alabama at Huntsville (UAH) and the University of Missouri (UM) placed teams of researchers in the field to study winter cyclones across the Midwestern United States as part of the PLOWS project.

This C-130 Hercules Aircraft flies PLOWS missions.

PLOWS was designed to be a comprehensive field campaign, with complementary numerical modeling studies, that will address outstanding scientific questions targeted at improving our understanding of precipitation substructures in the northwest and warm frontal quadrants of continental extratropical cyclones. The field strategy was designed to answer questions about the mesoscale structure of winter storms including:

- What are the predominant spatial patterns of organized precipitation substructures, such as bands and generating cells, in these quadrants and how do they evolve?

See PLOWS, page 6

Inside This Edition

Happy 35th Anniversary

The National Weather Association is 35! It was incorporated on Dec. 15, 1975. The first NWA Newsletter was issued in September of 1976, and the first National Weather Digest, under the direction of Editor Fran Holt, followed that November. The first Digest article, "Operational Diagnostic Applications of Isentropic Analysis" was written by Louis Uccellini. Articles published in the first volume are available online at http://nwas.org/digest/index.php#1976.

In August of 1976, before any publications were issued or any meetings were held, 644 people had become members of this new all inclusive, member-led, non-profit professional association created to support and promote excellence in operational meteorology and related activities. Read more about the history of the NWA at http://nwas.org/history/index.php.

The first NWA officers (in 1976):

Jerry LaRue – President

Tony Tancreto – President-Elect

Joe Vazzo – Secretary/Treasurer

CDR Joseph Ford – Vice President and first military NWA officer

Peter Leavett – NWA Councilor and first private sector officer

Internet Based GIS Remote Sensing and Storm Chasing

On May 22, 2010, multiple tornadoes swept across the Northern Plains near Bowdle, S.D. These storms produced upwards of six tornadoes, the most destructive receiving an EF-4 rating. Real-time forecasting through Internet based geographic information systems (GIS) remote sensing data integrated with a Windows® based radar program contributed greatly to a successful intercept of these tornadoes by the author. This article will illustrate the special uses of Internet based GIS data for use in real-time forecasting and applications while storm chasing.

GRLevel3, or Gibson Ridge Level 3 (www.grlevelx.com), is a Windows® based software program that is used for National Weather Service (NWS) level 3 radar and Terminal Doppler Weather Radar (TDWR) data interpretation. This program also allows users to perform customized data integrations utilizing third party remote sensing GIS data obtained through the Internet. With the increasing availability and speed of cell tower based Internet services, storm chasers are now able to quickly get the most current weather data overlayed in the program. Some third party remote sensing GIS data providers are now providing users with current Automated Surface Observing System (ASOS) data, various mesonet station data, Storm Prediction Center (SPC) products, NWS warnings, NWS local storm reports, high resolution Geostationary Operational Environmental Satellite (GOES) image overlays, basic RUC model data, and many other tools needed for more successful storm chasing. These overlays update automatically and immediately in the radar program as data are received. This is particularly of use to storm spotters and storm chasers in the field who need hands-off data collection and display capabilities.

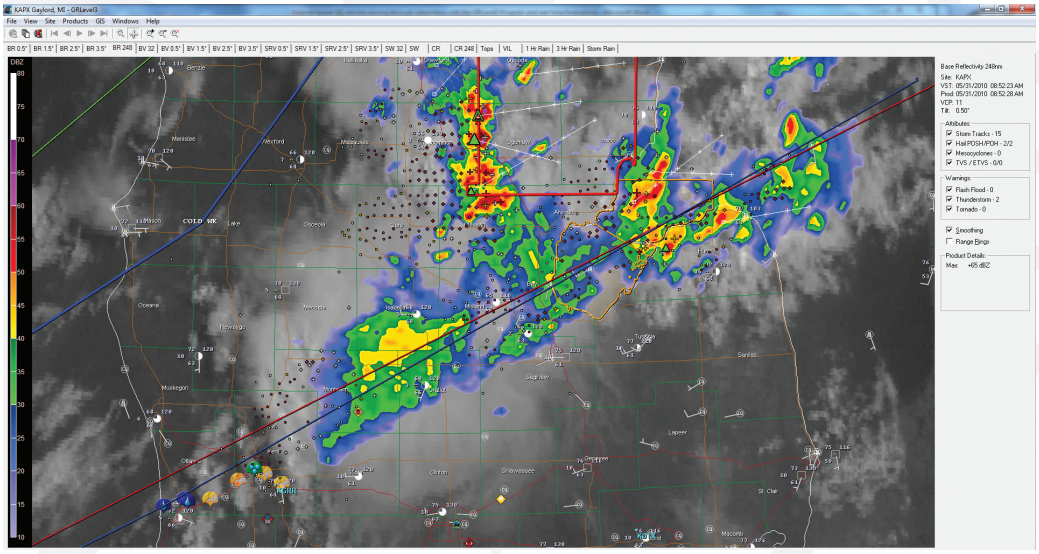


Figure 1 – GRLevel3 with a third party Internet based GIS data integration valid 1352 UTC 31 May 2010.

These data integrations, combined with the radar data, contributed to the successful intercept of the Bowdle tornadoes by the author. Using these tools, the most viable area for supercell initiation was more predictable. Surface station observations were used throughout the chase day forecast period (1300 UTC 22 May to 0000 UTC 23 May) in order to monitor various synoptic and microscale boundaries closely, as their position would ultimately dictate the best storms to chase. GOES visible satellite overlay was used in determining the best area for storm initiation by watching a cumulus and horizontal convective roll field develop in central South Dakota indicating the erosion of the CAP. These two data integrations were used extensively for confirming visual observations made prior to the event start. As the chase continued, radar signatures began appearing around 2200 UTC near Akaska, S.D. (Walworth County) on the Aberdeen (KABR) radar signaling the initiation of the event. The radar data continued to indicate a maturing supercell in the 2200-2300 UTC timeframe, with a more pronounced "hook echo" forming just west of Bowdle around 2320 UTC. Radar also indicated a cell merger occurring around 0000 UTC, potentially shifting the focus for the chase to training cells to the south. With the availability of the radar scans, it was quickly determined to stay on the chase with the initial event cells. The chase concluded in Aberdeen, SD around 0200 23 May with the storm mode transitioning from discreet cells to a Mesoscale Convective System (MCS). Using the remote sensing data before and during the chase resulted in a safe and successful storm chase by the author.

The use of the radar program with GIS integration also has a second primary role in storm chasing - integration with the Spotter Network. The Spotter Network (www.spotternetwork.org) is a free program that allows users to submit reports of severe weather conditions and have them transmitted via the Internet to the local NWS office. A user's position is determined through a user supplied GPS unit, or manually entered in a latitude/longitude format into the program by a user. These reports are available as an overlay in the radar software. The Spotter Network is quality controlled and users are required to take a test before reporting is allowed, in order to maintain the integrity of the program. These reports could be particularly useful to storm chasers, spotters, SKYWARN coordinators, emergency managers and broadcast meteorologists.

An illustration of the radar program is shown in Figure 1 during a severe weather episode in Michigan on 31 May 2010 with a third party data feed integration displayed. This image depicts ASOS data, GOES imagery, National Centers for Environmental Prediction (NCEP) fronts, SPC Day 1 severe weather outlooks, North American Precision Lightning Network (NAPLN) data, spotter locations, storm attributes and a severe thunderstorm warning.

More information can be obtained by contacting Michael Stanga at michael@thewxpage.com.

Michael Stanga
NWA Remote Sensing Committee Member

NWA President's Message – The Newest Vision for NWA

At the 2010 Annual Meeting in Tucson, during the Awards Luncheon, I first publicly announced our new NWA vision and mission statements. The Council recognized that the mission and vision statements should be updated to better reflect the direction and goals of the NWA. The updated statements were developed after a year-long process involving two past-presidents, the Membership and Marketing Committee, the NWA Council and the Executive Director. While in Tucson, the Council unanimously approved the following statements:

NWA Vision Statement:
Promoting excellence in operational meteorology to benefit society.

NWA Mission Statement:
Connecting operational meteorologists in pursuit of excellence in weather forecasting, communication and service.

So, what exactly are vision and mission statements? The *Vision Statement* sets a forward-looking path or direction. It answers the question, "What are we striving for in the future?" A *Mission Statement* describes an organization's purpose. It answers the question, "What is the organization about?" These statements will be the guideposts for planning and decision-making by NWA leadership in the months and years to come.

Mission and vision statements provide a springboard for inspiration for committees and members to engage and move forward with the growth of the NWA. Every member (you!) has the potential and capability to bring the mission and vision statements to life. As a group, we can make a difference to improve the NWA and enhance our profession.

One key phrase in the mission statement is "*Connecting operational meteorologists…*" This wording is an important element because we believe the strength and unique purpose of the NWA is to literally connect meteorologists with each other, and with people in related scientific, technical and communication fields. We've all seen it and felt it – that intangible yet powerful force, that palpable but hard-to-describe synergy that occurs when you **connect** with someone professionally AND personally. **That is what the NWA is all about!** That is our mission.

So as we move forward with the new mission and vision statements, we ask that "YOU" -- the members -- consider what you can do to help connect and strengthen the NWA.

This column is my last one as NWA President. I've truly had a wonderful time. I've met many new faces of the organization, both new and not-so-new. I've had a chance to meet and get to know some of the NWA's original Charter members, and I've had opportunities to speak with many of the students who represent our future in meteorology. I've met many in the broadcast and academic communities. I was honored and humbled to present our NWA Awards at our Annual Meeting in Tucson, especially to Les Lemon for receiving the Special Lifetime Achievement Award. All in all, it was a rewarding experience.

I want to thank the NWA Council for their support, advice, encouragement and tireless energy in serving the membership this year. Your efforts helped move this organization forward. I want to thank all who served on NWA Committees for your hard work, especially the committee chairs, and Alan Gerard, the Commissioner of Committees. A big thanks goes to this year's NWA Annual Meeting Program Committee, lead by Erik Pytlak, for making Tucson a great meeting! I thank the NWA home office staff (Steve, Ruth, Margaret) for their tireless support and effort to keep this organization running smoothly. I'd like to thank all of you who have submitted papers and presentations to our various publications and meetings, and those who have dedicated time to review and edit these communications. The sharing with others of your ideas and experience is what connects us professionally and makes each of us grow. I thank Janice Bunting for her skillful and patient editing of these columns. There are many who support NWA functions and activities through financial donations, and I sincerely thank you for your support. Finally, I want to thank all of you, the members and corporate members, for joining the NWA. My sincere hope is that you'll always remain with the NWA and connect with and learn from your fellow NWA members.

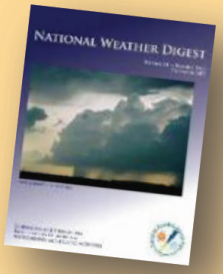
Next month, our new NWA President Pat Market will take over the leadership and make his debut in this space. I wish him success as NWA President for 2011!

Happy Holidays to all!

Steve Zubrick

NWA NATIONAL WEATHER DIGEST

Past Articles are now Online!!!



The NWA Publications Committee plans to make all articles older than about one year available on the NWA website www.nwas.org/digest/index.php.

Articles from July 2007 to August 2009 are now available as well as Volumes 1 and 2 from 1976-1977.

Additional papers will be added as they are scanned and PDF files created. This whole process should be completed by next October's Annual Meeting.

New Learning Opportunities from the EJOM

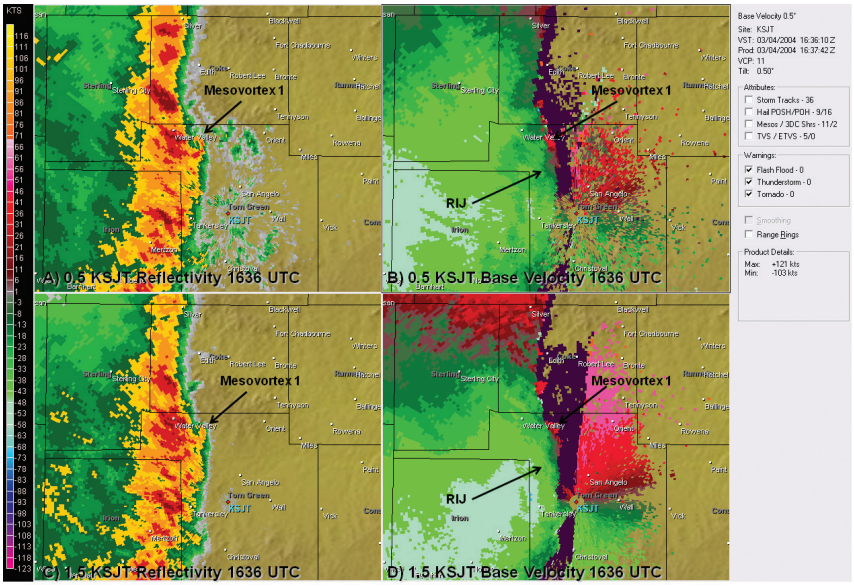
The following three papers are on the NWA Electronic Journal of Operational Meteorology (EJOM) under 2010 articles: www.nwas.org/ej/ with the 2010 articles.

Pablo Santos, EJOM Editor

Mesovortices and their Interactions within a Quasi-Linear Convective System on 4 March 2004

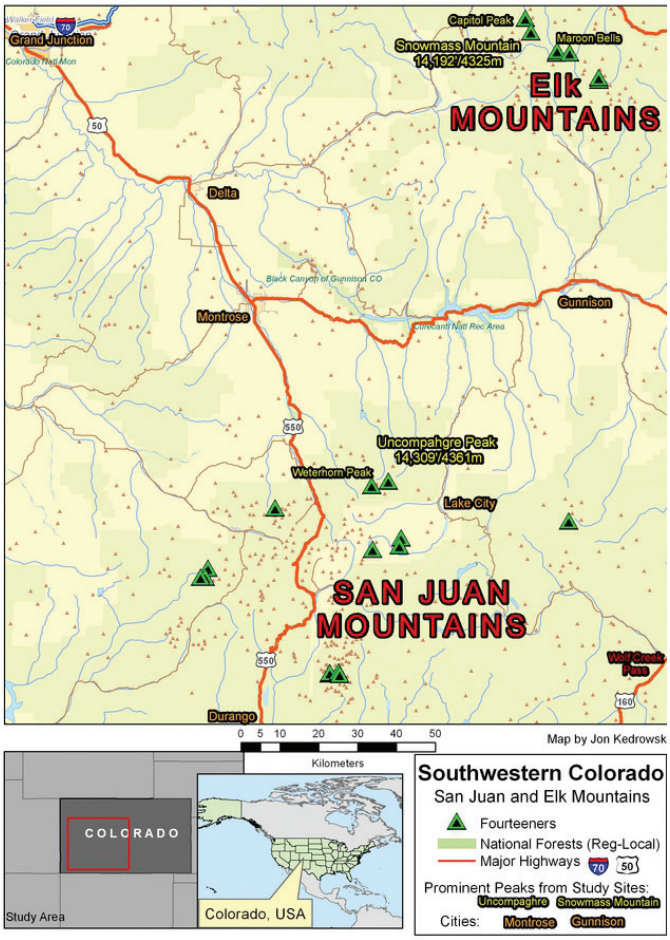
(EJOM Paper 2010-EJ05)

By Scott Overpeck from the NWS Office in Houston, Texas, it examines the various processes for mesovortex genesis within a Quasi-Linear Convective System (QLCS) that developed during the morning of 4 March 2004 over west Texas and moved across the state throughout the day.



Mesovortex near San Angelo, TX on 4 March 2004 from EJOM 2010-EJ05.)

Dirty Snow: Documenting the 2009 Dust Storm Events in Colorado's San Juan and Elk Mountains with Repeat Photography and Historical Snow Pack Data (Paper 2010-EJ07)



Study Area: San Juan and Elk Mountains of Southwestern Colorado

"Dirty Snow" was written by by Jon J. Kedrowski from the Department of Geography at Central Washington University and Chris Tomer from KDVR Fox 31 News in Denver, Colo. This paper uses meteorological, snow pack and streamflow data as well as repeat photography of high mountain basins during the summer months to study accelerated rates of snowmelt across the Colorado's San Juan and Elk Mountains.

See EJOM, page 5

Scholarship Fundraising at the Annual Meeting

The 2010 Annual Meeting Golf Outing and Scholarship Raffle raised over $3500 for NWA scholarships. Businesses and individuals helped us raise this money by sponsoring the Golf Outing, or by providing prizes and goodies for both events. Many others supported the cause by purchasing raffle tickets and playing in the Golf Outing.

Thank You!

Raffle Prize Donors

Tempest Tours – Storm Chase Tour Package
Southwest Airlines – One Roundtrip Air Ticket
Midland Radio – Weather Radios
Gibson Ridge Software – GRLevel2 & GREarth Subscriptions
Ron Holle – Tucson Lightning Photos
The Weather Channel – A Variety of Items
Mike Nelson – Colorado Weather Almanac
Cynthia Nelson – NWA Quilt
Environmental Research Services – RAOB Program & Color Manual
UCAR-COMET – Various Items
American Meteorological Society – AMS Books

Golf Outing Sponsors & Prize Donors

Baron Services, Inc. - Sponsor
WSI Corporation - Sponsor
Atlantic States Weather - Sponsor
Midland Radio
First Energy

Longest Drive Winner Steve Zubrick

Golf Outing Winning Team: (l – r) Betsy Kling, Jim Stefkovich, Keith Stellman. Not pictured Lynn Maximuk.

Golf Outing Winners

Winning Team: Lynn Maximuk, Jim Stefkovich, Keith Stellman & Betsy Kling
Longest Drive #1: Jim Stefkovich
Longest Drive #2: Steve Zubrick
Closest to the Pin: Betsy Kling

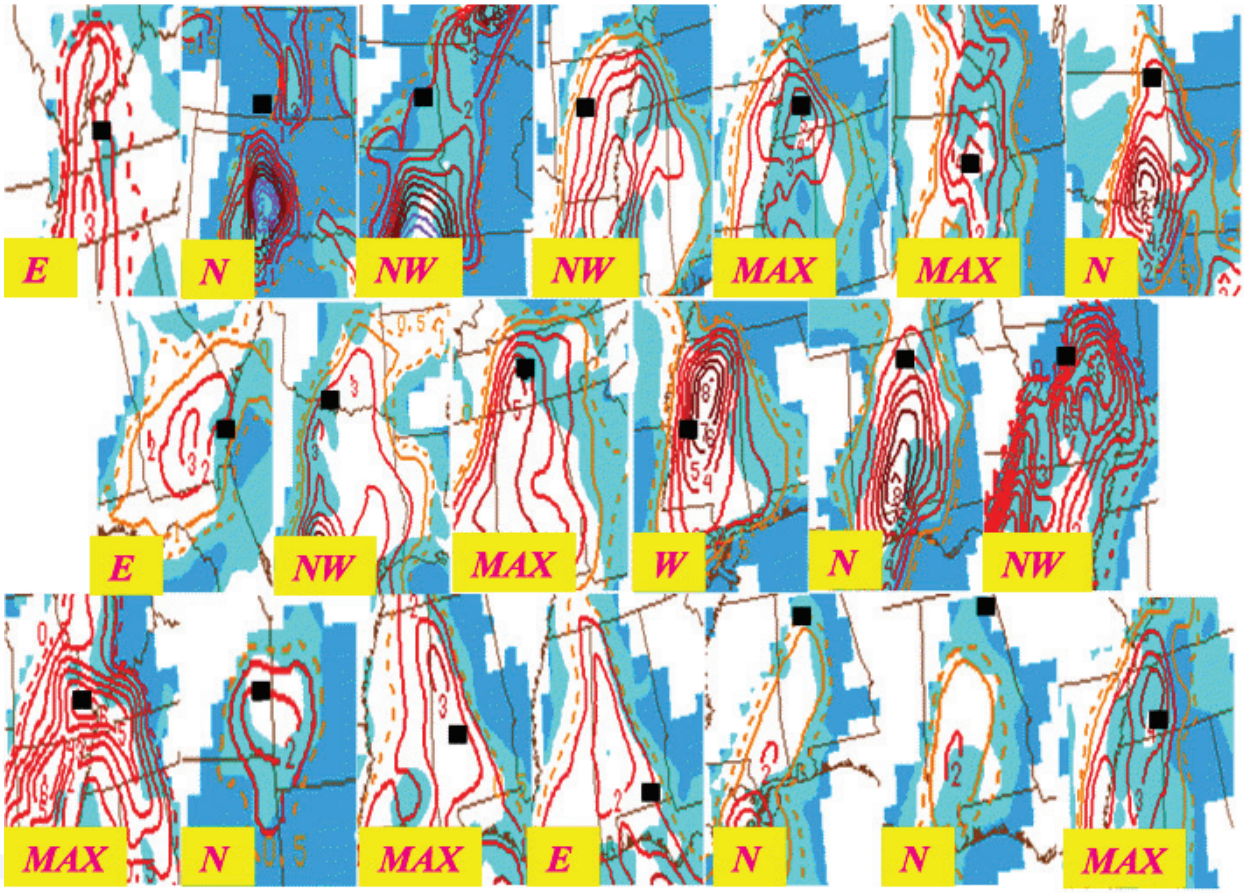
Thunderstorms over Tucson's Randolph Golf Course during the Golf Outing.

Seasons Greetings from the NWA

EJOM from page 4

Indices of Violent Tornado Environments (EJOM Paper 2010-EJ06)

By Ariel Cohen of the NWS Office in Jackson, Miss., it investigates means of identifying environments supportive of violent tornadoes by analyzing the near storm environment associated with 46 violent tornadoes. (The graphic to the right is from Paper 2010-EJ06.)



Connecting to NWA through Twitter and Facebook

You may have heard about the new NWA mission statement: "Connecting operational meteorologists in pursuit of excellence in weather forecasting, communication and service." Two of the easiest ways for you to connect with the NWA, fellow members and others with similar interests are Twitter and Facebook.

Not familiar with Twitter or don't have an account yet? Go to the main Twitter page at http://twitter.com. From there, learn more about Twitter and register for an account. Once registered, go to (http://twitter.com/nwas/) and click the "Follow" button to start receiving NWA "tweets" about upcoming meetings, association news and interesting weather events. These tweets will often include a link to the NWA website or other web pages with more information. In addition, we have started using hash tags to highlight events. Hash tags are a simple way to categorize and follow specific topics. The hash tag #nwas10 was used by several attendees at the last annual meeting, and we've already seen a tweet for the 2011 Annual Meeting (#nwas11)!

The official NWA Facebook fan page is www.facebook.com/nwasorg. All NWA Facebook efforts are now being focused on this single fan page, and we encourage members to become fans.

Similar to Twitter, we are using Facebook to share news and information. However, Facebook provides us the capability to provide networking opportunities, and include more information, external links and other capabilities that Twitter does not provide.

To join Facebook, create an account at http://facebook.com. Then visit http://www.facebook.com/nwasorg and become a NWA fan by clicking on the "Like" button. Once you become our fan, NWA posts will automatically display on your Facebook News Feed.

If you want to explore these sites before creating a Facebook or Twitter account, you can do that. Anyone can view our Facebook and Twitter pages, even if they don't have accounts on these social networking sites.

Our goal is to expand our use of Twitter and Facebook in the upcoming year. If you have ideas for using these social media tools to improve communication within the NWA and our community, or to just connect with fellow members, please send an e-mail to itchair@nwas.org.

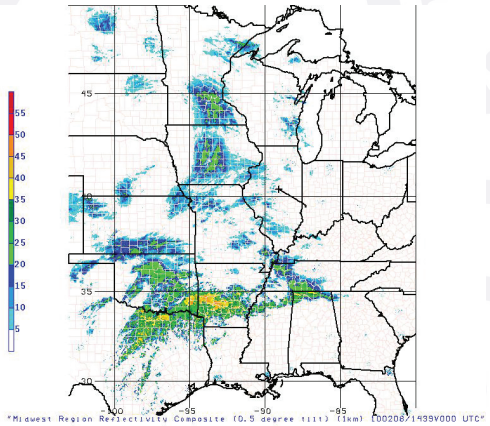
- What are the thermodynamic and kinematic structures of these frontal systems including the distribution of moisture and vertical motion?
- What instabilities and types of mesoscale forcing (e.g., moist CSI, moist frontogenesis, gravity waves and elevated upright convection) control the generation and evolution of precipitation substructures?
- How do microphysical processes vary between the different precipitation substructures and what are the consequences?

Mobile field equipment was used for PLOWS. In the air, the National Science Foundation/National Center for Atmospheric Research (NCAR) C-130 Hercules Aircraft carried a suite of instrumentation to measure in flight dew point, radiation fluxes and basic cloud physics parameters such as water content and cloud drop size distributions as well as dropsondes. Additionally, the University of Wyoming Cloud Radar and Cloud Lidar were used to provide high-resolution cloud-base measurements and cloud extinction coefficients. On the ground the UAH Mobile Integrated Profiling System (MIPS) and Mobile Alabama X Band (MAX) Doppler/ Polarization radar were accompanied by the NCAR Mobile Integrated Sounding System and the UM sounding system to produce high resolution ground based measurements. The teams conducted 23 different missions as they roamed the Midwestern United States from Minnesota to Texas and Nebraska to South Carolina. Students from nine universities participated in the study, which was funded by the National Science Foundation.

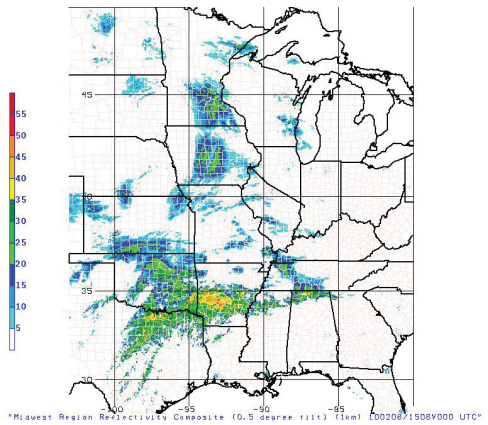
The images at the right show the C-130 flight track; the flight track flown just prior to the time of the composite is also shown.

The aircraft's purpose during IOP-18 was to examine the precipitation feature associated with the Alberta Clipper wave moving in from the northwest. As the C-130 moved along its path shown above, it scanned the storm using its onboard cloud-radar. In addition to the cloud radar, the C-130 also dropped sondes along its path.

Data collected during PLOWS will be used in conjunction with high-resolution numerical simulations from the Weather Research and Forecasting model (WRF) in order to determine if modeled precipitation structures are consistent with those observed in the collected data.



1439 UTC



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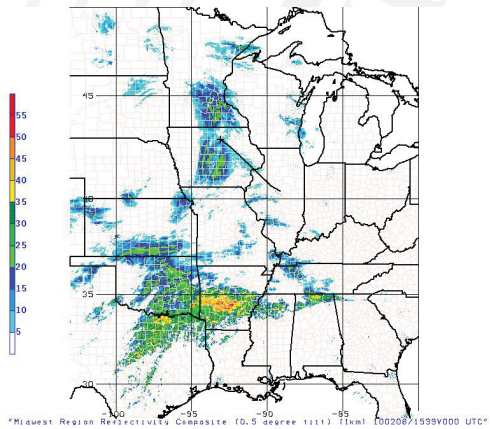
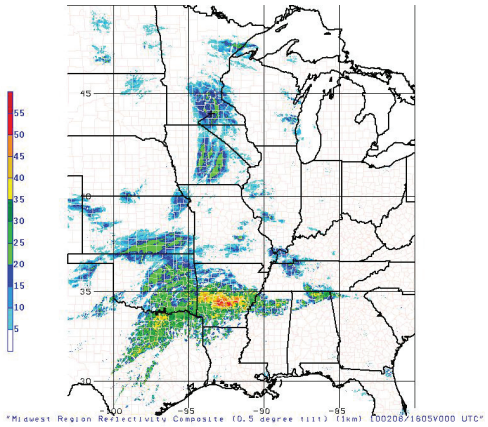


1539 UTC



1605 UTC

The above graphics show the C-130 flight track departing Terra Haute, Ind., overlaid on radar composites during IOP 18 from 1439 UTC through 2605 UTC on 8 February 2010. Times shown are the times of the radar composites.

Jay Martineli
Remote Sensing Committee

ONLINE RESOURCES

Visit
www.atmos.uiuc.edu/plows
for more information on PLOWS

National Academy of Sciences to Study NWS Modernization and Its Future

The National Academy of Sciences is establishing a panel that will conduct a study of the NWS Modernization and Restructuring that took place during the 1990s. The study was prescribed by Congress in the FY-10 appropriation and will take approximately two years to complete. The first phase of the study, expected next summer, will report lessons learned from the NWS Modernization and Restructuring—one of the most successful efforts to re-engineer a federal agency. The second phase, expected in the summer 2012, will apply these lessons to make recommendations for the future of the NWS.

2011 NWA Sponsored Annual Meetings & Conferences

Feb. 26: 2011 Minnesota Storm Chasing Convention
Cosponsored by the NWA and many other organizations, it will be in Maple Grove, Minn.
www.mnstormchasingconvention.com

March 3-5: 2011 National Severe Weather Workshop
Cosponsored by the Central Oklahoma AMS and NWA Chapters, NOAA and others, it will be in Norman, Okla.
www.norman.noaa.gov/nsww/

March 11-13: The 36th Annual Northeastern Storm Conference
Hosted by the Lyndon State College chapter of the AMS and NWA in Taunton, Mass.
http://meteorology.lyndonstate.edu/ams/

March 12: The 2011 National Storm Conference
Organized by The Texas Severe Storms Association (TESSA) and sponsored by the North Texas Chapter of the AMS/NWA, this free, annual event will be in Colleyville, Texas.
www.tessa.org

March 31–April 2: 15th Annual Severe Storms & Doppler Radar Conference
Sponsored by the Central Iowa NWA Chapter, it will be in Ankeny, Iowa.
www.iowa-nwa.com/conference/

Aug. 4-6: 15th Annual High Plains Conference
Sponsored by both the Wichita and High Plains Chapters of the AMS/NWA, it will be in Wichita, Kan.
www.wichita-amsnwa.org

Oct. 15-20: 36th National Weather Association Annual Meeting
It will be at the Wynfrey Hotel in Birmingham, Ala.
www.nwas.org

Other Meetings & Conferences in 2011

Jan. 23–27: 91st Annual Meeting of the American Meteorological Society
It will be in Seattle, Wash.
www.ametsoc.org/meet/annual/

Feb. 18-20: The 13th Annual National Storm Chaser Convention
This ChaserCon will be held in Denver, Colo.
www.chasercon.com

Giant visitor in downtown Denver, Colorado

Feb. 25-26: Southeastern Coastal and Atmospheric Processes Symposium
This 8th annual symposium will be in Mobile, Ala. Registration is free; no fee to attend.
www.southalabama.edu/meteorologyclub/secaps/

March 1-4: 9th Annual Climate Prediction Applications Science Workshop
Bringing together a diverse group of climate application users, climate product developers, and researchers to share best practices and applications of climate information in societal decision-making. Organized by Iowa State University, it will be in Des Moines, Iowa.
www.ucs.iastate.edu/mnet/cpas/home.html

March 8-10: Second Midwest Bow Echo Workshop
This workshop is cosponsored by the NWS and the Earth and Atmospheric Sciences Department at Saint Louis University. This workshop will be held on the University campus and is free, but registration is desired. Details at:
www.crh.noaa.gov/lsx/?n=bow_echo

March 15-16: The 2011 Alaska Weather Symposium (AWS '11)
The sponsors of The 2011 Alaska Weather Symposium invite you to attend at the University of Alaska Fairbanks. The Symposium provides a forum for the exchange of operational and research information related to weather in the Alaska environment. Participation from academic, research, government, military and private sectors is encouraged. Preliminary information, with details to follow, can be seen at:
http://weather.arsc.edu/Events/AWS11/

April 4-8: NOAA Satellite Direct Readout Conference
Hosted by the NOAA National Environmental Satellite, Data and Information Service (NESDIS), it will be in Miami, Fla. A follow-up to NOAA's successful 2008 Direct Readout Conference, it's theme is "Real-Time Access for Real-Time Applications."
http://directreadout.noaa.gov

Announcing the New NWA Mission and Vision Statements

Mission Statement:

Connecting operational meteorologists in pursuit of excellence in weather forecasting, communication and service.

Vision Statement:

Promoting excellence in operational meteorology to benefit society.

Learn more about these new statements - and how they can strengthen the NWA - in the President's Message.

Dates 2 Remember

Jan. 23-27: 91st AMS Annual Meeting, Seattle, Wash.

Feb. 26: 2011 Minnesota Storm Chasing Convention, Arbor Lakes, Minn.

March 3-5: 2011 National Severe Weather Workshop, Norman, Okla.

March 11-13: 36th Northeast Storm conference, Taunton, Mass.

Mar 12: TESSA 2011 National Storm Conference, Colleyville, Texas

March 31-April 2: 15th Severe Storms & Doppler Radar Conference, Ankeny, Iowa

April 4-8: NOAA Satellite Direct Readout Conference, Miami, Fla.

Aug. 4-6: 15th Annual High Plains Conference, Wichita, Kan.

Oct. 16-20: 36th NWA Annual Meeting, Birmingham, Ala.

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Editor and Publisher: Steve Harned, Executive Director

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Submit newsletter items directly to the NWA office or to nwanewsletter@nwas.org. Material received by the 25th will be considered for the next month's issue.

Members receive the Newsletter and *National Weather Digest* as part of their regular, student or corporate membership privileges. Printed Newsletter subscriptions are available for $25 per year plus extra shipping costs outside U.S. Single copies are $3. **Address, phone number, email and affiliation changes can now be made online at the member portal.**

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National Weather Association
228 W. Millbrook Rd.
Raleigh, NC 27609-4304

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