Your Magazine for Air Force Weather

OBSERVER

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MM5: The Future of Fine-Scale Weather

What's Inside for August 1998

SPOTLIGHT

The Mesoscale Model version 5, MM5, is revolutionizing the way you view weather. This month's spotlight looks at MM5 up close. First, the Air Force Director of Weather gives you the future of fine-scale weather forecasting. Then, in the center spread, you'll read how MM5 is shaping the way you forecast and lists the MM5 products currently available on AFWIN. Next, the history of MM5 is provided. Finally, inside the back cover, you'll read what Air Force Weather members are saying about the model. MM5 - Learn to use it in peacetime, so you'll be ready in wartime.

OBSERVER

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Perspective from the Top

Air Force Weather
The Future Of Fine-Scale Weather Forecasting Is Now

by Brig. Gen. Fred P. Lewis, Air Force Director of Weather

As many of you know, many of us are excited about our efforts in mesoscale (fine-scale) numerical weather prediction (NWP). Why? Because we're impressed by what we have seen the model do so far, and are enthusiastic when we consider the potential impact fine-scale NWP can make in Air Force weather operations. Have we achieved all that is possible with fine-scale NWP? No! Do we need to continue pressing the envelope? Yes! Let me take this opportunity to tell you how I look at our fine-scale NWP production and what you can expect in the near future.

The Air Force Weather Agency (AFWA) has been working closely with the National Center for Atmospheric Research, The Pennsylvania State University, the Argonne National Laboratory, and the Air Force Research Lab to transition the MM5 (Mesoscale Model version 5) forecast model (I refer to it as a fine-scale NWP model) into Air Force weather operations. The National Weather Service and many universities around the world are running MM5 in their local areas, and for research purposes.

Nobody, and we are proud of this fact, is running MM5 in as many locations and as often as AFWA is running it (Figure 1). Why? First, because many forecast agencies don't have a worldwide focus, and second, some organizations don't have the computer horsepower to run a complex mesoscale model like MM5 in real-time.

Currently there are 7 MM5 windows running worldwide, and 6 of the windows have inner nests. The elongated shape of the windows is due to the image's map projection.

So what's the big deal about MM5? Well to me the mesoscale model represents where we need to be in the future. The finer the scale, down to even 500 meters between grid points or less, the better. Taking full advantage of fine-scale terrain (or the atmosphere's bottom boundary layer condition) along with all available weather observations will allow us to provide more accurate numerical predictions for use by our highly skilled forecasters in the field, at operational weather squadrons, and at the AFWA. This, to me, equates directly to improved weather support for operators, trainers, and warfighters worldwide.

MM5 will play an "enabling" role in our collective efforts to reengineer Air Force Weather. That's the big deal! So is MM5 the perfect model or what? Or what! That's right, there is no perfect weather forecast model. But MM5 combined with experienced weather forecasters will be a powerful combination. I personally use MM5 for worldwide weather forecasts almost every day and have found it often to be right on target. At the current resolutions, it performs best for weather systems that are dynamically forced, like mid-latitude fronts, troughs, and ridges along with large, severe convective areas.

As I travel around the world talking with the MAJCOM directors of weather and weather station forecasters, I continue to discuss the need for higher resolution than our current 36km outer windows and 12km theater windows. We are pursuing additional resources to make the 12km windows the standard with 4km inner nests located over hot spots such as severe weather areas, contingencies and exercises. In some cases 4km resolution will not even be enough. We need to be able to run with 1km resolution or better for extremely high interest forecasts such as space launches, target discrimination, and chemical or biological agent dispersion.

On the positive side, MM5 has shown good skill at picking out areas of severe weather and heavy precipitation. However, it sometimes misses mesoscale convective complexes. Why? Well, the problem with our current runs of MM5 is really two fold. First, the 12km resolution is not really fine enough scale, we need 4km or even 1km resolution to better resolve these fine-scale features as stated above.

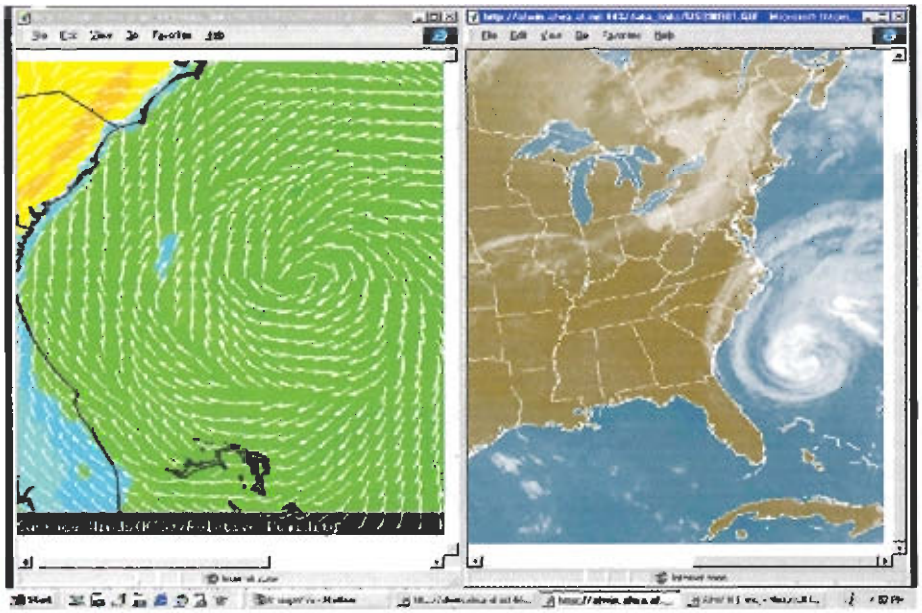
Second, our current initialization for the model is based on a 6 hour AVN or NOGAPS forecast. That's right, we just use the larger scale model 6 hour forecast as our MM5 starting point. This has as tendency to "filter out" some fine-scale features. So really, the accuracy we've seen to date with MM5 is a little amazing given this initialization technique. Well, just wait until we start using an updated "analysis field" to initialize the model. Then we will start seeing better accuracy on the finer scale features – a significant step forward to say the least.

Before getting into how we use the fine-scale NWP

model in our daily forecast process, let me inform you about some of the unique and exciting (at least I find them exciting) attributes of how AFWA is running the model. AFWA uses real-time sea surface temperature data obtained from the Navy's Fleet Numerical Meteorology and Oceanography Center. Most MM5 users rely on climatological SSTs for their lower boundary conditions over water.

AFWA is leveraging the scientific expertise of the National Oceanic and Atmospheric Administration Forecast Systems Laboratory to begin incorporating their Local Analysis and Prediction System into the fine-scale NWP process. The LAPS will use real-time surface observations, rawinsonde observations and geostationary METSAT data to provide improved starting conditions for the fine-scale model. Every regional NWP model requires lateral boundary conditions on the edges of the forecast domain to ensure the fine-scale forecasts match the synoptic-scale weather patterns.

At AFWA the lateral boundary conditions can be taken from the Navy Operational Global Analysis and Prediction System, the NOAA Aviation Model, or the NOAA Eta model. The AFWA fine-scale modeling system can incorporate any of these boundary conditions quickly and easily with a flip of a "switch."



Two panel displays of hurricane Bonnie prior to landfall. On the right, a METSAT image of the area and the left image shows the 12km MM5 surface wind and relative humidity.

Finally, the strength of a fine-scale NWP model is the interaction between the atmosphere and the terrain—fine-scale terrain that normal synoptic-scale models do not even recognize. AFWA is exploring the most efficient method to incorporate an existing DoD 1km terrain into the fine-scale NWP production process.

I could go on and on about the technical details of AFWA's fine-scale NWP process, but let me tell you how we like to use it. First, you need to be familiar with an Internet web browser like Netscape or Internet Explorer. AFWA is currently producing over 10,000 fine-scale images and animations per day. Every one of these products is available on our Air Force Weather Information Network (or AFWIN). We like to bring up two browser sessions at the same time on our computer screen. We size them for half of the screen (Figure 2).

In one session we display a fine-scale NWP product like clouds, winds, or precipitation. In the other session we look at current METSAT, radar, lightning images, or observations (all of these are available on AFWIN). Using the two simultaneous browser sessions we can see how the model initialized and how it is handling detailed weather situations. We also find the animations helpful for diagnosing the weather situation.

Sometimes the timing or intensity of certain forecast weather features are not exactly correct when compared to the actual weather observations. Does this mean the entire forecast is unusable? No! We take another look at the details. Is the frontal position—as evident in the temperature, wind or surface pressure fields correct? If not, why not? What about the intensity of the particular weather phenomena? Is there just a timing error that we can correct for in our forecast?

Next, we often ask ourselves if there is a chance of severe weather? We look at over 5 different severe weather variables plus other AFWA products to help with this determination. The recently introduced meteograms for hundreds of worldwide locations make it much easier to verify the fine-scale model with station observations and TAFs. Overall, we find the MM5 visualizations to be quite helpful.

We continue to be optimistic about the MM5 and what it has to offer operations worldwide, especially when we put well trained forecasters in the loop to use it to provide operational weather support. My challenge to each of you is to use MM5 every day in your forecast process to learn its strengths and weaknesses.

Why? Simply stated, MM5 will be there when you deploy – wherever you go worldwide – we'll have it up and running within 12 hours of notification. You can count on that 365 days a year! So learn to use it in peacetime – so you will be ready in wartime.

We're sure many of you have your own ways of using AFWA's fine-scale NWP forecast information. We would be interested in hearing about your experiences with the model and how you use it. What products do you like the best? How can we improve the fine-scale forecasts? As we visit your organization please tell us what you think. But even better, AFWA has set up a direct feedback process for your comments (an e-mail address, mm5info@afwa.af.mil, accessible via AFWIN or directly from your e-mail). Please take the time to respond.

The era of fine-scale NWP is here now. AFWA is moving out quickly to harness this capability to help us all improve our weather forecasts for worldwide operations and we need your feedback. As always, keep up the great work and keep helping the warfighters "Exploit the Weather for Battle!"

See article on page 12 for more detailed MM5 imagery

Enlisted Perspective from the Top

This month's "special obs" is provided by CMSgt Steve Rosemier, Weather Enlisted Functional Manager from Headquarters, Air Force Special Operations Command. Over the past several years I've had the real privilege to have worked with (and learned much from) Chief Rosemier and people like CMSgt Jim Hoy, CMSgt Marty Mindnich, SMSgt Frank Hall, SMSgt Rich Gideons, MSgt Ralph Ley, MSgt Dave Tucker, and others who have been strong proponents of bringing AFW Parachutist issues to the career field forefront. From Special Duty Assignment Pay to jumper manning improvements, their dedicated efforts have made a real difference for the AFW Jump community and the Air Force. Weather Jumpers are a special breed. The duty is not for all; the personal rewards meaningful -- only to those who have "been there" and understand...

Chief Ramirez

Special Obs: AFW Parachutist Duty

by Chief Master Sergeant Steve Rosemier, Weather Enlisted Functional Manager, AFSOC

Air Force Special Operations Command (HQ AFSOC), Air Combat Command (ACC), and the Air National Guard (ANG) are looking for volunteers to perform weather parachutist duties. This is not your standard day-to-day forecasting and observing mission. Weather jumpers are assigned at US Army special operations forces units and US Army conventional airborne units in the CONUS and overseas. Along with observing and forecasting, duties include a heavy dose of tactical operations and, of course, jumping out of an airplane to get to your duty site. After serving 1 ½ years in AFSOC, there is no doubt in my mind that weather parachutists are the most motivated group of folks in the career field. Their job requires 24-hour a day dedication and hard work, often under extremely adverse conditions. They are proud to serve, they love their job, and they wouldn't trade it for the world.

Is the three-week Airborne Training Course at Ft Benning tough to complete? Yes! Is it impossible? Absolutely not! The overwhelming majority who arrive at Fort Benning and subsequently fail the course are eliminated because they are not in good physical condition. The remainder, fail to complete the course because they are not highly motivated or because they lack the courage to overcome their natural fears. Approximately 10 percent of all students who enter the course fail to graduate. Those who are in good physical condition and are properly motivated will complete the course. Remember, this course is intentionally designed to tax a person both physically and mentally. Those who meet the challenge will indeed value their parachute badge - the "Badge of Courage."

Is it true that once a jumper, always a jumper? Upon becoming jump qualified you will, at least for the immediate future, be used in jump positions at jump locations. As jump manning becomes on par with the rest of the career field, jump-qualified personnel will be allowed to move in and out of jump locations. Currently, jumpers are allowed to volunteer for overseas assignments outside the jump community. When they DEROS back to the states, jumpers may, depending on J-coded manning, be reassigned to another jump unit.

Can anyone volunteer? Yes. The Secretary of Defense combat exclusion policy prohibits females from serving in positions that forward deploy with Army ground combat units. Females may not be assigned to positions supporting Ranger regiments or Special Forces battalions. This accounts for all AFSOC jump positions. Females may serve in ACC jump positions.

If this line of duty tweaks your interest, contact your MAJCOM Weather Enlisted Functional Manager, CMSgt Steve Rosemier, AFSOC/DOW, DSN 579-2145 , CMSgt Nancy Brooks, ACC/DIW, DSN 574-8457, or SMSgt Mike Cavanaugh, ANG/DOOSW, DSN 278-8278. We can answer your questions or get you a copy of the AF Weather Parachutist Recruiting Guide. Additionally, you can find information in AFCAT 26-2223. Finally, the Combat Weather web page is on line! To access, do the following: access www.af.mil --> Sites --> AFSOC --> 720th Special Tactics --> click on the highlighted words "Combat Weather" and enjoy. Good luck!!

Approximately 120 jump-positions in Air Force Weather:

USSOCOM

HQ USSOCOM, MacDill AFB FL, Staff Positions

AIR FORCE SPECIAL OPERATIONS COMMAND UNITS

720 Special Tactics Group, Hurlburt Field FL, Staff Position
HQ 10 Combat Weather Sq, Hurlburt Field FL, Staff Positions
OL-A, 10 CWS, Ft Stewart GA, 160 SOAR/75th Ranger Regiment
Det 1, 10 CWS, Ft Lewis, WA, 1st Special Forces Group (AB)
Det 2, 10 CWS, Ft Campbell KY, 5th Special Forces Group (AB)
160th Special Operations Regiment
Det 3, 10 CWS, Ft Carson, CO, 10th Special Forces Group (AB)
Det 4, 10 CWS, Ft Benning, GA, 75th Ranger Regiment
Det 5, 10 CWS, Ft Bragg, NC, 3rd Special Forces Group (AB)
7th Special Forces Group (AB)
OL-A, 321st Special Tactics Sq., Panzer Kaserne GE, 1/10 Special Forces Group (AB)
OL-A, 320th Special Tactics Sq., Torii Station JP, Special Forces Group (AB)
USASOC, Ft Braff NC, Staff Position

AIR COMBAT COMMAND UNITS

19 Air Support Operations Squadron, Ft Campbell KY, 101st Airborne Corps
18 Weather Squadron, Ft Bragg NC, 82nd Airborne Division XVIII Airborne Corps
18th Aviation Brigade (AB)

AIR NATIONAL GUARD UNITS

146th Weather Flight, Pittsburgh PA, 20th Special Forces Group
181st Weather Flight, Ft Worth, TX, 19th Special Forces Group
107th Weather Flight, Selfridge ANGB, MI, 2 POG

Command Line

Commitment and Sacrifice-Now More Than Ever

by Col H. Webster Tileston III, Air Mobility Command, director of weather

Some of you may recall the article I wrote for the July/August 1997 Observer. It was entitled "Commitment to Change." In that article I stressed the need for all of Air Force Weather to embrace change; be committed to it; and realize that for reengineering to work, it will take a commitment to teamwork. Those ideas are as true today as they were when I wrote them a year ago. Beyond that, however, is an even greater call for commitment and sacrifice.

A career in the military has always demanded commitment and sacrifice. And, there are some times more critical than others when conditions are such that it is absolutely imperative for armed forces personnel to exhibit these qualities in abundance. Certainly, armed conflict, as well as military operations other than war, requires tremendous degrees of commitment and sacrifice, with the ultimate sacrifice being the giving of one's life. But, there are also other times, not necessarily characterized by the extremes of combat, that also require the same degree of commitment and sacrifice. I would submit that not only Air Force Weather, but also the entire Air Force, as well as the other Services, is experiencing challenges today that put our collective commitment and sacrifice to the test.

As I write this, operational enlisted forecaster manning across the Air Force is approximately 74 percent and projected to go down to 70 percent by October 1998. Our operations tempo hasn't missed a beat. Speaking from an Air Mobility Command (AMC) perspective, life on the front lines in the weather flights is extremely tough. AMC, unlike some of the other commands, performs its wartime mission 24 hours per day, 365 days per year. It's just that occasionally, the activity level picks up a bit when tasked to support deployments or military operations other than war, such as humanitarian missions. Every AMC weather flight is down at least one forecaster and inevitably has one to two people deployed. The increased number of deployment taskings results in more time away from home and family, requiring greater sacrifices on the part of the family members as well as the military member. The impact of low manning and non-stop deployments on the small weather flights back at home-station is devastating, and typically results in 12-hour shifts, very few people available to train or be trained, and frequent changes in duty schedules and personal plans. This is where commitment and sacrifice come into play.

We need you! We need you to stay on and see reengineering through. Reengineering is a long-term solution from which we hope to see incremental benefits in the short term. What I mean by that is, we expect to see gradual relief to the career field's overall situation. As operational weather squadrons stand up, the flights will gradually see relief from off base support requirements, and routine installation forecast and warning duties will decrease. This will result in more time to conduct training and to become the experts on their supported operators' missions. For example, we've already reaped some of the fruits of the changes made in Alaska. Forecasters are getting rides in the back of F-16s to experience firsthand the customer's mission. This is right in line with the concept of the base weather flight becoming much more integrated into the operations; taking the tactics courses the operators take; and gaining a much better understanding of the weapons systems they support and the missions they're designed to perform. This knowledge will equip the weather flights to better enable the operators to anticipate and exploit the weather. But reengineering is a long-term solution.

In the meantime, Air Force Weather senior leadership is exhausting every possible avenue to bring some relief in the short term and obtain incentives for people to hang in there. These include successfully obtaining Selective Reenlistment Bonus, Multiple 2 for Zone A and Multiple 1 for Zone B. Additionally, we're literally combing the streets for people who may have gotten out and gone into the reserves, or just plain separated, to see if they want to come back on active duty. We're accelerating the rate at which we send observers back to forecaster school. Within the MAJCOMs, we're requesting the operators consider reduced operating hours for forecast services based on the critical shortage of weather people and their mission requirements. Despite these efforts, it all comes down to commitment and sacrifice on the part of all of us—and that includes our family members as well. They play just as important a role as the military member does.

I think we all would admit that it's always been about commitment and sacrifice. This message is reflected in one of the Air Force Core Values, Service before Self. None of us would have joined the Air Force or stayed in if our only motivation were getting rich. It's a chance to be a part of something bigger than ourselves. It is an opportunity to serve others and our country. And although it's tougher in some career fields to relate the duties to successful accomplishment of the end mission, we shouldn't have that problem. Everything we do can be directly or indirectly linked to the accomplishment of the Air Force mission, which is to defend the United States through control and exploitation of air and space. We need to remind ourselves of the role we play in that mission. As former Air Weather Service Commander, Brigadier General (Ret) Al Kachn, once said, "We need to reinforce in our people how important they are—even the person taking an observation at Ellsworth at two o'clock in the morning when it's 'clear and a million.' That observation may well be the piece of information upon which someone decides to divert an aircraft in trouble." Each and every one of us makes a contribution to the overall mission. So, take a look inside yourselves and think about what you're part of, because we need your commitment and sacrifice—now more than ever!

Weather Facts

by Walter A. Lyons, PH.D.

What impact did Hurricane Hugo have on forests?

In 1989, Hurricane Hugo took 49 lives and affected 300,000 families along its path. It also had a devastating effect on the forests of South and North Carolina. Almost 9,000 square miles of forest (seven times the area of Rhode Island) were flattened. Hurricane Hugo's 135 mph winds destroyed more feet of lumber than the combined effects of the eruption of Mount St. Helens and the 1988 Yellowstone National Park fires. Total damages approached $8-9 billion.

How have tropical and extratropical storms affected military history?

At the onset of the Spanish-American War, President William McKinley declared he feared a hurricane more than the Spanish Navy. He was probably justified in his concern. During World War II, in the Pacific, one Admiral William Halsey's worst defeats came at the hands of a typhoon. Three destroyers were sunk, many ships damaged, almost 800 sailors drowned, and the fleet had to stand down from a major attack.

And if it weren't for a great storm, Americans today might all be speaking Spanish. In 1588, the Spanish Armada, 130 ships strong, sailed for an invasion of England. But raging winds and mountainous seas smashed many of the vessels into the Scottish coast.

In the thirteenth century, the Great Kublai Khan's armies swept out of Mongolia, bent on conquering the world. When they turned on Japan, a great fleet of 1,000 seemed destined to be lost…until a great typhoon smashed the invader's ships, drowning over 100,000 warriors.

Where do people go to church to ward off hurricanes?

Hurricanes haunt the history of St. Croix in the Virgin Islands. So every July 26th the islanders take a day off to attend church services on Hurricane Supplication Day, to pray for protection from hurricanes.

What is the average number of tropical storms and hurricanes per year?

In a "normal" year in the Atlantic basin, there's an average of 9.7 named tropical storms, of which 5.4 reach hurricane strength. The most active basin in the northwestern Pacific ocean, averaging 26 tropical storms each year, of which 16 reach typhoon strength. Worldwide, in an average year, there are 84 tropical storms, of which 45 have peak sustained winds of 75 mph or more.

What was the record year for Pacific hurricanes?

The 1992 Easter Pacific tropical storm season was a record breaker with 27 tropical cyclones. In fact, the year's list of storm names was totally used up and a contingency list had to be employed—the Greek Alphabet.

How much energy is released in a hurricane?

Hurricanes are not to be trifled with. One reason is their enormous energy. According to one estimate, a hurricane's energy output can be rated on the order of 100 billion kilowatt hours each day. As a testament to the forces involved, when a savage hurricane swept across the Caribbean island of Barbados in 1831, it caused extreme damage—and either wind or wave moved a solid piece of lead, weighing some 400 pounds, over 500 yards.

What were some other unexpected impacts of Hurricane Andrew?

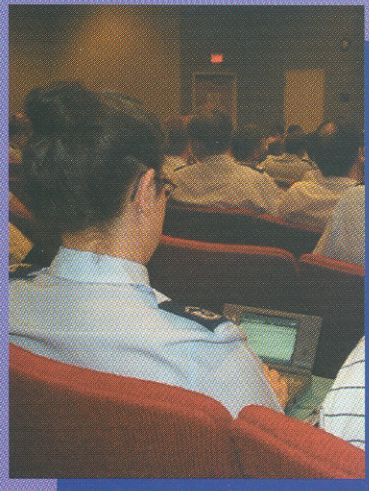
Refugees. The wrath of Hurricane Andrew, the greatest single natural disaster in U.S history, initially left more than 250,000 people homeless, creating a refugee population the size of the city of Orlando.

Hurricane Andrew set a record for damage from a hurricane. It created a record amount of trash. It has been estimated that if all the debris created by Andrew in South Florida were placed in one pile, it would tower more than 300 stories high. But the huge piles of debris left behind by Hurricane Andrew also contained "treasure." More specifically, the tons of aluminum scrap (previously house sidings, lawn chairs, awnings) were scavenged by entrepreneurs and sold for salvage. Some individuals made up to $1,000 a day or more until the booty was finally gone.

Air Force Weather Operations Expo '98

Comments taken from your Expo feedback form
photos by Jodie Grigsby

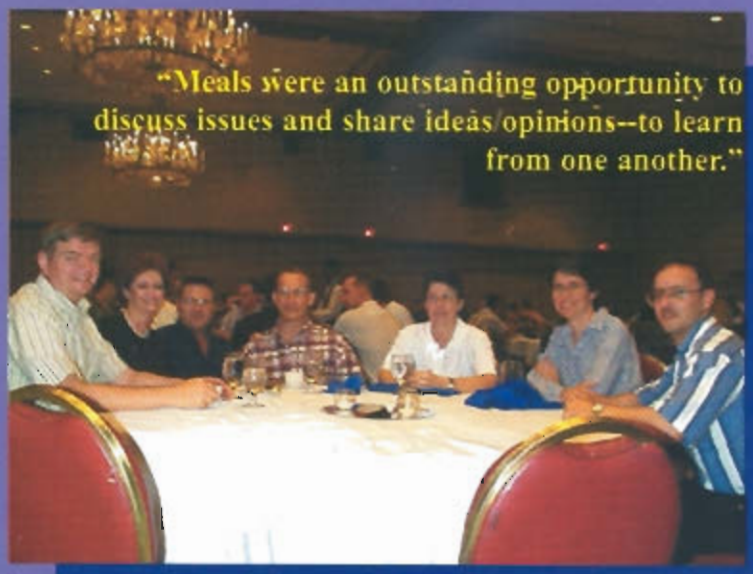
"Obviously by the turnout, the Expo was something that was desired by the field to stay abreast of the significant changes occurring across AFWA. The Expo successfully accomplished the objective of bringing together members across the field to discuss where we are now and where we are going regarding the reengineering of AFWA."



"The Expo is an excellent forum for AFW personnel to get together and work issues...Just being able to talk to colleagues and do "business in the hallway" made the Expo worth while."

"There was a lot of useful information disseminated through demonstrations and discussions."

"The conference was informative. I attained a significant amount of information throughout the discussions or by networking with key people in the weather career field."



"I learned a great deal, got a bunch of important comments from folks nationwide and world-wide...and that was the whole purpose of the event."

"It was one of the most exciting events I've attended in the weather community. I was thrilled to see people I hadn't seen in 16 years. Being a reservist I felt I came up to speed on where the AFWA is trying to go with the new hub system."

"The social setting and the fact I knew many of these people led to honest discussions of their concerns."

Air Force Combat Climatology Center Makes Move

contributed by the Air Force Combat Climatology Center Staff

Leaving the flatlands of Scott AFB behind, the Air Force Combat Climatology Center settled in the shadow of Mount Pisgah in scenic Asheville, North Carolina. AFCCC-Asheville officially stood up in July 1998 after more than four years of planning, transitioning, and moving. Nearly all operations are being conducted at the new site. The rear guard at Scott AFB, now AFCCC OL-A, still handles some special mission support and is completing the shop closure in Illinois. The AF Weather Technical Library also made the move to Asheville bringing 9 full-size moving trucks filled with over 500,000 volumes.

The new AFCCC home should not come as a surprise to military history buffs because Asheville has historically been associated with military weather units. During World War II, the Army Air Forces' Weather Wing was stationed in Asheville, and they were responsible for the technological and scientific improvements to the weather support of their era. In 1952, the Army Air Force (AAF) Statistical Services Division moved to Asheville with a mission to process and store military weather data. They had the distinction of bringing the first electronic computer into operation (an IBM 705) in 1956. Over time the AAF Statistical Services Division evolved into AFCCC OL-A, and now into AFCCC itself.

The new AFCCC is a merger of missions and personnel. Currently 39 DOD civilians and 64 military members are stationed in Asheville, and approximately 20 more are slated to arrive. 60% of the slots in Asheville are meteorological specialties, while the other 40% are systems and information management specialties. The personnel moving from Scott AFB bring with them the mission of producing climatological products for the field, the library function, and the modeling and simulation role. The majority of the military personnel are new to the organization with the notable exception of the AFCCC commander, Lt. Col Virginia Dillon, who previously served as the vice commander of AFCCC at Scott AFB.

The new site offers the benefit of collocation with NOAA's National Climatic Data Center (NCDC). The move facilitates additional cooperation and coordination between the nation's major climatic data centers which will help both organizations provide better data, products, and services for their customers.

In conjunction with the move, numerous technological upgrades have been made. AFCCC and AFCCC OL-A were previously operating on two dissimilar mainframe systems, an IBM 3090 and a UNISYS 2200, respectively. Now AFCCC has moved to a Sun workstation environment to take advantage of a more efficient client/server architecture which adheres to the open systems architecture mandated by DOD. The impressive climatological database contains more than two terabytes of data. The first part of this database is on-line, and the format has been improved from the standard ascii format to a more accessible, user-friendly, Oracle relational database. The second part of the database was previously stored on nine-track reel tapes which were difficult and time-consuming to use. That portion of the database is now being ported to 36-track tapes which hold eight to ten times as much data. The installation of a new tape silo with a robotic arm significantly improves access to the near-line tape data since it automatically selects and loads the proper tape for the analysts. Lastly, the communication lines have been upgraded to be faster and more robust. These upgrades provide the necessary platform for the reengineered, downsized, and relocated AFCCC to streamline its processes and continue to proudly offer quality products and quick, responsive service to its customers.

The AFCCC facility in the new Federal Building in downtown Asheville. (photo courtesy of AFCCC)

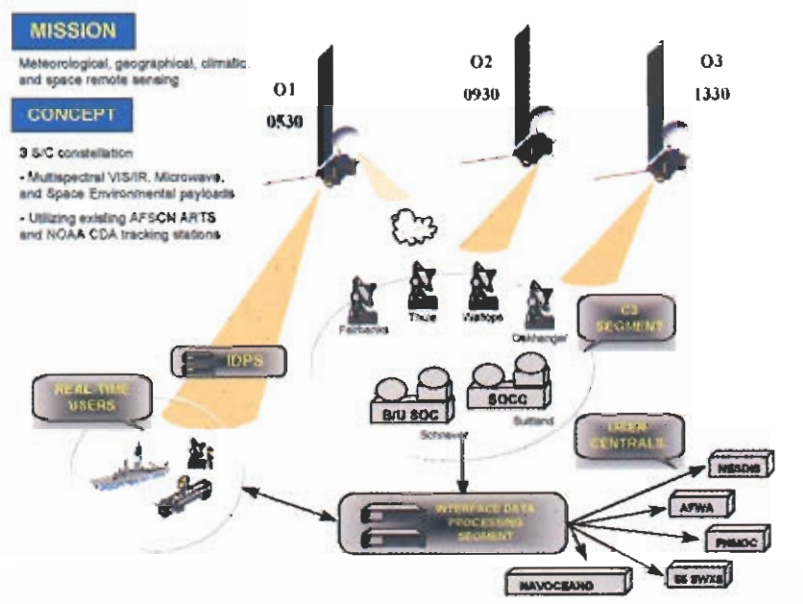
Several different efforts are currently underway to improve existing products and services. These efforts include the exploitation of new web technologies to improve the AFCCC internet site and also the publication of the Southern Africa, Caribbean, and Southwest Asia/Northeast Africa volume three Theater Climatic Files on CD-ROM. Furthermore, AFCCC is focusing on working closer with the intel community in order to better anticipate customer needs. New products are also being developed including a high resolution, modeled climatic database from a project known as the Advanced Climate Modeling and Environmental Simulations (ACMES). In addition to observations and modeled analyses of atmospheric parameters, the mesoscale model incorporates effects from topography, soil type, bodies of water, and vegetation. The end product will be a realistic climatic picture with 10 km resolution for any time of day, month, and location over the entire globe. Such a capability is especially useful in data sparse regions.

AFCCC at Asheville: (828) 628-2406 or DSN 673-9004 or access the AFCCC website: HYPERLINK *http://www.afccc.af.mil*

THE NATIONAL POLAR-ORBITING OPERATIONAL ENVIRONMENTAL SATELLITE SYSTEM (NPOESS)

by Lt. Col. Lauraleen O'Connor and Reginald B. Lawrence (NOAA/NESDIS, NPOESS/IPO)

BACKGROUND: The United States has traditionally maintained two polar-orbiting operational weather satellite systems, each with a 30-plus year heritage of successful service: the Department of Commerce's (DOC) National Oceanic and Atmospheric Administration (NOAA) Polar-orbiting Operational Environmental Satellites (POES), and the Department of Defense's (DoD) Defense Meteorological Satellite Program (DMSP). On May 5, 1994, President Clinton made the landmark decision to merge these satellite systems into a single, national system capable of satisfying both civil and national security requirements for space-based remotely sensed environmental data. Convergence of these programs is the most significant change in US operational remote sensing since the launch of the first weather satellite in April 1960. The joint program, known as the National Polar-orbiting Operational Environmental Satellite System (NPOESS), is expected to provide up to $650 million in government cost savings through the year 1999 and up to $1.8 billion over the life of the program.. Personnel from DoD, DOC and the National Aeronautic and Space Administration (NASA) make up the NPOESS Integrated Program Office (IPO). Each of the participating agencies has lead responsibility for one of three primary functional areas. NOAA has overall responsibility for the converged system and satellite operations, and is also the primary interface with the international and civil user communities. DoD/AF is responsible to support the IPO for major systems acquisitions including launch support. NASA is responsible for facilitating the development and incorporation of new cost-effective technologies. The launch of C1, the first in the series of converged weather satellites, will occur circa FY2008, decade depending on when the current NOAA and DMSP programmed satellite assets are exhausted.



A single system to satisfy both civil and national security requirments for space-based, remotely sensed enviromental data.

NPOESS NOTIONAL SYSTEM/ARCHITECTURE: The agencies and other associated participants involved are well on their way to creating a system that will cost less, be more responsive to user demands, and deliver more capability than previous plans would have suggested possible. The notional NPOESS consists of a Visible Infrared Imager / Radiometer Suite a conical Microwave Imager Sounder an Ozone Mapping and Profile Suite a Cross Track Infrared Sounder a Global Positioning System Occultation Sensor and a Space Environment Sensor suite. Figure 1 details the current notional architecture for the NPOESS program.

MOVING TOWARD CONVERGENCE: As an early step in the convergence process, the command, control, and communications function for DoD's existing DMSP satellites, were combined with the control for NOAA's POES satellites in Suitland, Maryland, during May 1998. This combination of control functions coincided with the closure of the U.S. Air Force Satellite Operational Control Centers at Fairchild Air Force Base (AFB) in the state of Washington and Offutt AFB in Nebraska. In addition to reducing manpower by one-third, this early convergence of command, control, and communications functions for existing satellites is expected to yield additional cost savings and further promote integration of existing programs.

CONCLUSION: The merger of the NOAA and DMSP meteorological satellite systems into a single, national system to satisfy both civil and national security requirements for space-based environmental data represents a significant and exciting change in the way the United States acquires, manages, and operates environmental satellites. The US and international communities will continue to benefit from this new way of doing business well into the next century.

MM5

Taking Air Force Weather by Storm

by Mr. Paul McCrone, DNTT, Air Force Weather Agency

Perhaps the most profound and significant addition to operational weather support for Air Force Weather today is the addition of the Mesoscale Model Version 5 (MM5 for short). Run daily by the Air Force Weather Agency at Offutt AFB, Nebraska, this model produces high-resolution weather visualizations that can be downloaded using Internet technology from the Air Force Weather Information Network (AFWIN) and Secure AFWIN (SAFWIN). Worldwide customers (AF, Army, Navy, and other governmental agencies), both in garrison and deployed, now have access to this new, powerful prediction tool.

MM5 is the Pennsylvania State University/National Center for Atmospheric Research (PSU/NCAR) Mesoscale Model, Version 5. It's a very mature mesoscale forecast model that's been evolving for over 20 years. It's still undergoing development today at universities, U.S. Government laboratories, and private companies worldwide.

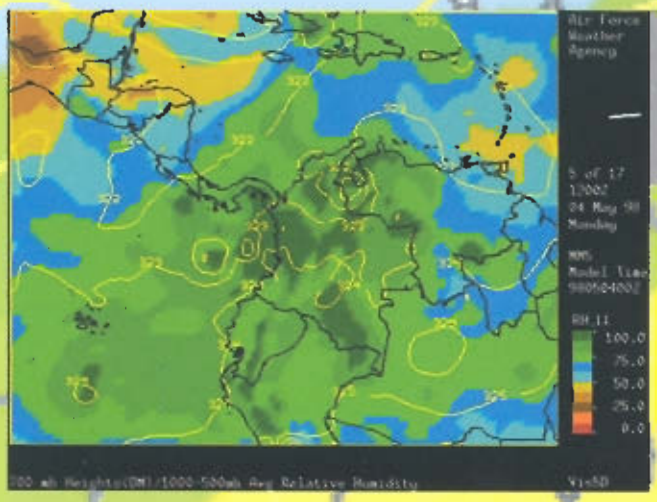
The MM5 is a numerical weather prediction model, generally similar to our own Relocatable Window Model (RWM), the Navy's NOGAPS, and the National Center for Environmental Prediction's NGM and ETA models. Like these models, it should be integrated into the meteorological forecast process, along with satellite data, surface observations, radar imagery, upper air soundings, and other applicable weather data.

> ***"The visualizations make it a little easier to understand what's happening (weatherwise) over time, pictures speak louder than numbers."***
>
> *Capt. Leonard M. Berman*
> *Commander, Weather Flight*
> *72 Operations Support Squadron*
> *Tinker Air Force Base, Oklahoma*

The MM5 runs at finer resolutions than the models just mentioned, and incorporates a 1km terrain database. For these reasons, output from the MM5 will depict mesoscale features that can't be resolved by lower resolution, global and regional scale models. Presently at AFWA, the model is running over various geographic areas, at different horizontal grid point resolutions, which are summarized in the chart to the left.

For more information about the MM5 model, the geographic coverage, valid times, products, etc., go to our AFWIN homepage, URL http://

Alaska Outer Nest	36 km resolution centered on Fairbanks, Alaska
Alaska Inner Nest	12 km resolution centered on Anchorage, Alaska
Europe Outer Nest	36 km resolution centered on Central Germany
Bosnia Inner Nest	12 km resolution centered on Central Bosnia
East Asia Outer Nest	36 km resolution centered on the Sea of Japan
Korea Inner Nest	12 km resolution centered on the Eastern Demilitarized Zone
Caribbean Outer Nest	36 km resolution centered on the Panama Canal
Central America Inner Nest	12 km resolution centered on Honduras
Southwest Asia Outer Nest	36 km resolution centered on Riyadh
Iraq Inner Nest	12 km resolution centered on Baghdad
CONUS Outer Nest	36 km grid point resolution centered on Omaha, Nebraska
West, Central and East U. S. Inner Nest	12 km grid point resolution which can be repositioned depending on operational requirements
CONUS Severe Weather Threat	12 km grid point resolution centered on the area most likely to receive severe weather, valid from 12 to 36 hours



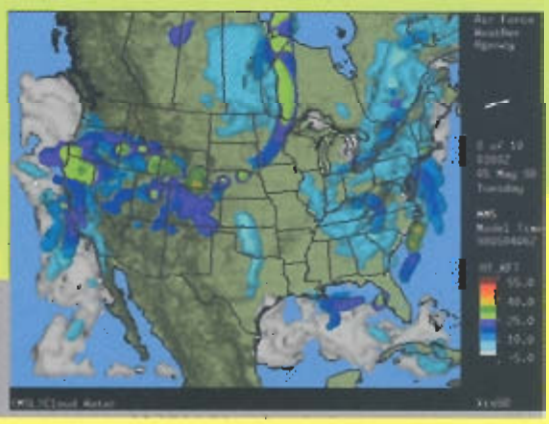
Two Dimensional Forecast of 700 mb heights and 100-500 mb average Relative Humidity from the MM5 (36 km resolution) Central America Window, as visualized by Vis5D.

afwin.afwa.af.mil. Then, click into any of our theaters, then access the "Model Charts" section, then select the "MM5 Fine Scale Model Output" hyperlink. Finally, select the "About the MM5 (strengths, weaknesses, resolution, products, etc.)" to browse this information package. We strive to keep it up to date, and have a feedback button for those customers who desire more information about the MM5.

The MM5 product line is quite extensive, and includes cloud, winds, temperature, aviation, precipitation, severe weather, and other miscellaneous products. Some of these examples are shown in this article. New products will continue to be developed, such as icing and turbulence. In addition, we'll soon provide some simple lines/contoured products that can be printed on a black and white printer. The products are created using Vis5D, a popular software program that is used throughout the meteorological community. This software ingests gridded model data, then applies various algorithms to create the weather visualization products. To find out more about Vis5D, access one of the popular WWW search engines, and request "Vis5D."

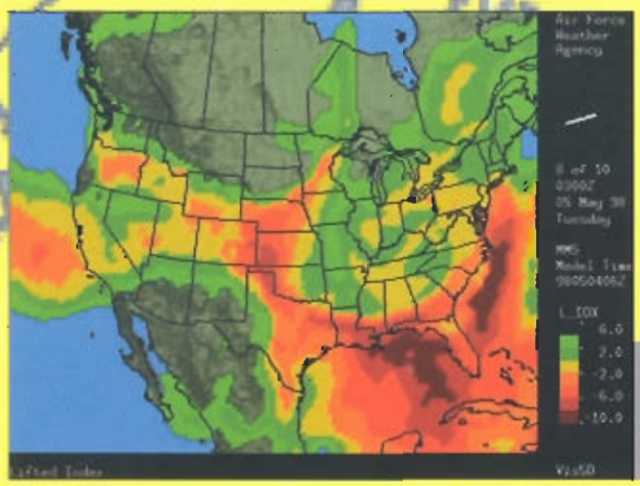
"The MM5-derived meteograms are a good 'what's going on' tool for both the professional and the layman. I especially like the trending feature. In one compact graphic, it provides insights as well as perspectives into what can be expected over the next 24-48 hours. And, for some of our customers, the meteogram maybe all we need to show them."

Lt. Col. Blaine K. Tsugawa
MDANG; 104WF/CC



Two Dimensional Cloud Forecast from the MM5 (36 km resolution) CONUS Window, as visualized by Vis5D.

There's great potential for the MM5 model, but we need our customers' feedback to help us improve the quality of the visualizations. In addition, we need the customers' thoughts on the strengths and weaknesses of the model, or other model tendencies that they've noticed. We'll incorporate these comments into our main MM5 information and training page, so other users can benefit from these "lessons learned." For additional questions on the MM5 at AFWA, please contact AFWA/DNTT, at DSN 271-2110 (commercial 402-294-2110) or send an e-mail to *mm5info@afwa.af.mil.*



Lifted Index (Instability) Forecast from the MM5 (36 km resolution) CONUS Window, as visualized by Vis5D.

The History Of The Model

by Wei Wang, associate scientist, Mesoscale and Microscale Meteorology Division, National Center for Atmospheric Reasearch.

The Pennsylvania State, National Center for Atmospheric Research Center mesoscale model has a long history dating back to the early 70's. The development effort started with Dr. Anthes's interrest in hurricane research. The first, complete model was developed in 1978, landmarked by the paper of Anthes and Warner (1978). In the early 80's, Dr. Anthes moved to NCAR and brought the model.

The development continued at both Penn State and NCAR. By mid-80's, a complete mesoscale modeling system was built with pre- and post-processing software and documentation. The version 4 of the model (MM4) was released to the public by 1987, and soon after that user support service began to take shape. In the late 80's, two parallel efforts, developing a parallel, flexible nesting model and non-hydrostatic dynamic framework began which had brought the model to the 90's computer technology, and broadened the aspect of model application. With these enhancements, the model was updated to mesoscale model Version 5, or MM5, and released for general use in early 1994, completed with upgraded pre- and post-processing software and a new set of documentation.

The most recent effort of model development has been in the area of generalizing it to multiple computing platforms, especially those of high-performance workstations, PCs and distributed-memory machines. As a result, the MM5 Version 2, which was released in the summer of 1996, can now be run on Cray, major workstation vendor machines and PCs.

METEOGRAMS

AFWA Forecast Meteograms are a time-series, cross-section product produced for military installations and metropolitan areas around the world. The MM5-based meteograms are produced twice daily and have valid times ranging from the model time out to 48 hours in 3 hour increments. The MM5 currently being used has a grid resolution of 36km. In the near future, some meteograms will use MM5 data with a 12KM resolution.

The MM5 based Meteogram is broken down into 7 graphs:

1. The first section is an upper-air slice from 1000mb-250mb. Temperature is Celsius, wind barbs in knots, and a cloud water content parameter are displayed for the entire range. Relative humidity greater than 70% is shown from 1000mb - 400mb. Dew point depression greater than 6 degrees Celsius, depicting the presence of cirrus clouds, is displayed from 400mb-250mb.

2. The second section depicts sea level pressure.

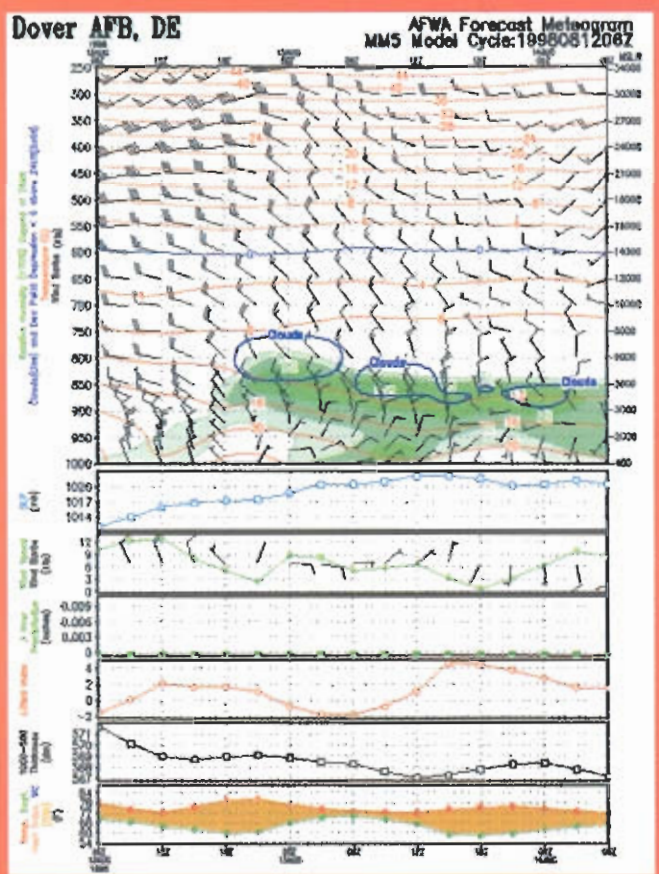
3. The third section displays wind barbs and graphically presents wind speed in knots.

4. The fourth section is a bar graph chart representing the 3 hour precipitation amount in inches for the preceding 3-hour period.

5. The fifth section depicts the lifted index.

6. The sixth section displays 1000mb-500mb thickness values.

7. The seventh section contains graphical lines which represent the temperature (red) and dew point (green) in Fahrenheit degrees, and solid, color-filled area between the two lines which displays the dew-point depression trend.



In the near future, some meteograms will use MM5 data with a 12km resolution.

Informal AFWIN Survey

In the last AFWIN Newsletter (98-8), a short survey was included. If you have not already completed the survey, please take a few moments and tell us what you think about AFWIN. All responses will remain anonymous. Send your completed survey to:

Lt. Col. Kenneth Smith,
Deputy Director, Air and Space Sciences,
HQ AFWA,
106 Peacekeeper Dr., Ste. 2N3,
Offutt AFB, Neb. 68113-4039,
Email responses to: smithk@afwa.af.mil

1. What type of PC and Internet connection do you have? Most customers had higher-end Pentiums, but communication speed ranged from 14.4K modem to T1 connectivity.

2. What are the best features of AFWIN? The navigation, hotlinks, and meteograms were the most popular responses.

3. What are the worst features of AFWIN? The most frequent responses were related to download times: large files and slow access and navigation through the menus.

4. What additional products would you like to see?

5. What additional capabilities would you like to see?

6. What's the #1 thing you'd do to improve AFWIN?

YOU ASKED FOR IT....YOU GOT IT!

Here are a few areas we are currently working in AFWIN to better serve you.

***A.* Refined Navigation through menus:** Our AFWIN contractor is already working on a smarter, simpler, faster AFWIN. Will consolidate frames, no-frames, and text into one page. Also, will be quicker to find products. We hope to have this new version implemented next month.

***B.* Faster download time:** Our contractor will offer most images at a default resolution of 400x300 resolution, which will speed up download by four times. Full-size images will still be available. This is also targeted for September.

***C.* Improved animation.** Next month as well, we'll have a Java-based applet that will have greater flexibility than the animated GIFs (stop, start, pause). In addition, animations will load up much faster once we implement the smaller files (c(1)). We'll have a small core of products as animated GIFs and MPGs, and all others will be via the Java applet.

***D.* Faster accesses to observations.** We are working to dramatically improve the timeliness of alphanumeric data on AFWIN. At present, these text products are updated at best, one hour after issue time. With our improvement, we plan to link AFWIN to our centralized database. This will enable us to provide alphanumeric data within 15-20 minutes of time of receipt by the AWN. We will also include special observations with this improved capability and are targeting the end of next month (Sep) to bring online the first increment (surface observations) of this improvement. This will be followed by upper air observations, TAFs, and bulletins.

***E.* A new, enhanced look for SAFWIN** is set for 15 Sep 98.

Space Weather Effects on Army Communications

by Maj. Tom Frooninckx, Air Force Weather Agency

frooninf@afwa.af.mil, DSN271-9771

Right on schedule — every 11 years! The sun recently awakened from its hibernation of "solar (sunspot) minimum" and is now strengthening toward "solar maximum," a period when space weather is more capable of affecting military operations. Based on climatology and the 11-year solar cycle, space weather will keep our attention for the next six years with a peak in severity during 2000-2001. Although it's perhaps obvious that space weather affects space operations, such as satellite control and astronaut activities, it is less apparent what the effects are on ground or air operations. You might even think that the Army, of all Services, is the least affected by space weather. Well, not exactly.

The Army systems affected by space weather include: communications systems that use ultrahigh and superhigh frequency satellite communication (SATCOM) radio signals or high frequency over-the-horizon radio signals; intelligence collection systems; intelligence dissemination systems that use a special network of ultrahigh frequency SATCOM systems; electronic attack systems that use high frequency over-the-horizon radio signals; and navigation systems that use the Global Positioning System for purposes ranging from basic ground navigation to precision-guided weapon delivery. Before discussing some of the details related to the impacts on communications, let's consider some fundamentals.

Space weather refers to electromagnetic radiation (e.g., radio wave, ultraviolet, and X-ray radiation), electrically charged particles (e.g., electrons, protons), and a variety of other phenomena (e.g., ionospheric disturbances, thermospheric heating) created by the radiation and charged particles interacting with the earth's upper atmosphere and magnetic field. Different types of space weather occur at the sun, in interplanetary space, and in the near-earth environment to include on the earth's surface. Figure 1 depicts the key space weather regions surrounding the earth.

The ionosphere is an especially key layer of the earth's upper atmosphere, especially with respect to Army operations. Electron disturbances in the ionosphere can disrupt or modify the radio wave signals used in SATCOM, high frequency over-the-horizon radio communications, and other space-based applications, such as navigation and surveillance. Most satellites are located above the ionosphere, so the radio wave signals transmitted to and received from these satellites must traverse the ionosphere. Meanwhile, satellites typically orbit within either the upper ionosphere, the radiation belts, or the magnetosphere, all of which are regions where energetic electrically charged particles may bombard the satellites and cause abnormal behavior in or damage to a satellite.

Although Army operations would certainly be impacted if a communication, navigation, or surveillance satellite suddenly failed, the day-to-day effects on Army operations are not related to the health of satellites, but are instead due to the effects of space weather on radio wave signals as described in the previous paragraph. Moreover, problems experienced by satellites are not typically noticed by users of the satellites. Instead, satellite controllers or a satellite's on-board computer often fixes a problem before it affects the user. There are exceptions: satellites have failed due to an "overdose" of charged particles, and during the last solar maximum satellites temporarily lost their ability to perform their primary function. But the military space community is not expecting space weather to cause any catastrophic satellite failures during solar maximum. We'll have to wait and see.

Finally, although most space weather occurs in and well above the mesosphere, some types of space weather penetrate the earth's atmosphere and reach the ground. One example is the sun's radio wave radiation, which causes interference with radio communication or radar systems operating at similar frequencies. Magnetic fields generated by electrically charged particles in the ionosphere and magnetosphere also reach the earth's surface and mask the earth's true magnetic field. Collectively, these types of space weather can impact Army operations. Now let's look at communications in detail.

The communication systems operated by the Army

Army Functions Affected Include:

- **Communications**
  - **--High Frequency Over-the-horizon**
  - **--Ultrahigh Frequency SATCOM**
  - **--Superhigh Frequency SATCOM**
- INTEL Collection
- INTEL Dissemination
- Electronic Attack
- Navigation

which are affected by space weather are high frequency (HF) over-the-horizon systems, ultrahigh frequency (UHF) SATCOM systems, and superhigh frequency (SHF) SATCOM systems. The HF systems communicate over-the-horizon using the ionosphere as a reflecting media and are, therefore, virtually controlled by space weather. The UHF SATCOM systems send and receive radio waves that can be disturbed as they traverse through the ionosphere, resulting in the intermittent disruption of communications. The SHF SATCOM systems can experience interference because they operate at radio wave frequencies in which the sun may emit bursts of radio waves.

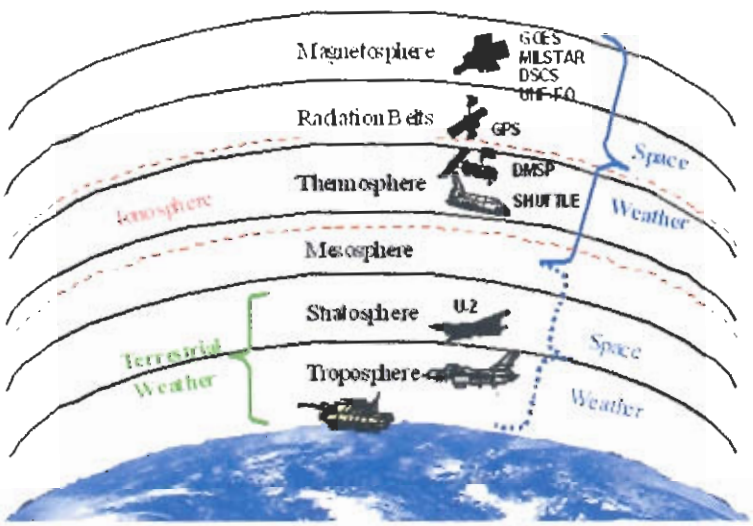
The use of HF over-the-horizon radio is alive and well within the Army, and with that, so too is the importance of space weather because it dictates the success or failure of HF communications. Special operations forces and corps and division long-range surveillance units use systems such as the ARC-220, VRC-100, GRC-193, and PRC-104. In some cases, communications are executed by a high frequency, split-second transmission burst at a preplanned time in order to reduce security risks to friendly forces. Of course, the Integrated Meteorological System (IMETS) is a weather data communication system that also uses HF radio.

Military forces using HF systems could use space weather information in several ways: identify periods when and locations where ionospheric conditions are unlikely to provide adequate radio wave propagation; identify specific frequencies within the HF band which are most likely to provide successful communications; and identify the optimum angle of incidence with the ionosphere at which to focus the HF transmission in order to reach the intended receiver.

For in-theater tactical and operational level communications, the Army relies heavily on UHF SATCOM because the user ground terminals are relatively light, inexpensive, and operate well on the move or under dense foliage. This type of SATCOM is often called "TACSAT," referring to tactical SATCOM. The operating frequencies range from 225-400 megahertz, and the ionosphere is able to disrupt the radio waves at these relatively low SATCOM frequencies. One effect on these radio waves traversing through the ionosphere is a weakening of the radio wave and a shifting of the radio wave's phase. This effect occurs when space weather processes create large electron density gradients in the ionosphere.

The radio wave traverses through regions where, at one moment, fewer electrons exist, and a moment later, the radio wave abruptly encounters a large number of electrons. The result of this phenomenon is commonly referred to as scintillation.

Figure 1: Depiction of key space weather layers.



For more information on space weather effects on Army operations, see *"Determining If Space Weather Conditions Should Be Considereds in the Intelligence Preparation of the Battlefield Process" located on the space products section of AFWIN (http://afwin.af.mil:443/).* Also see *"Space Weather - An Air Force Weather Training Guide"* for more information on space weather and its relevance to military operations.

Unlike the space weather that affects HF radio waves, the ionospheric disturbances that disrupt UHF SATCOM don't occur everywhere around the world, nor do they occur at all times of day. Instead, the disturbances relevant to Army UHF SATCOM are dependent on location and time of day. For practical purposes, this effect occurs intermittently during nighttime hours and is most common over Southwest Asia, Africa, South America, and the southern Far East. With the exception of Alaska, the effect virtually does not occur over the United States.

The Army employs a host of UHF SATCOM systems such as the PSC-5, PSC-7, and PSC-10, and they are used by combat and combat support units at all echelons. The Corps and Division Warfighter Nets rely on these systems for tactical control, combat coordination, and tactical data reporting of combat and combat support units.

Commanders and TACSAT system operators could mitigate space weather impacts by using space weather information in the following ways: identify periods when and locations where UHF SATCOM may be temporarily prevented and, if possible, use other modes to satisfy the communication requirement; schedule UHF SATCOM transmissions at times less likely to be disrupted; and most importantly, consider space weather conditions before deciding to rely on UHF SATCOM to meet a time-sensitive communication need.

The effects of space weather on Army SHF radio wave applications are typically less significant than on HF over-the-horizon or UHF SATCOM applications. The primary space weather effect on Army SHF SATCOM systems is signal interference due to bursts of radio wave radiation from the sun. The sun can emit bursts of radiation at the same frequencies that the SHF systems operate at, and when a system's ground receiver is pointed toward the sun during a burst, then the sun's radio wave radiation reaches the receiver and causes interference. This effect is possible only when the sun enters a receiver's field of view.

Army signal companies, battalions, and brigades employ SHF systems such as the TSC-85B, GSC-52, and FSC-78 to meet high-volume communication needs. Because the effect is most often one of interference rather than interruption, system operators could use space weather information to evaluate system performance and perform troubleshooting analyses, adjust signal levels, and determine the causes of interference such as environmental conditions, equipment problems, or enemy jamming.

This article has hopefully provided some insight into the effects of space weather on Army communications. Units within your supported command/echelon that use HF radio, UHF SATCOM, or SHF SATCOM can better perform their mission by using space weather information available from the 55th Space Weather Squadron, Schriever AFB, Colorado.

TSgt David O'Connor
Air Force Weather Agency
Computer Training Manager
Offutt AFB, Nebraska
Hometown: Orland Park, Illinois

A1C Aaron W. Kelley
5th OSS/OSW
Weather Apprentice
Minot AFB, North Dakota
Hometown: Murphysboro, Illinois
Trumpet

tops IN blue

Weather Got the Blues

by Paige D. Rowland, Air Force Weather Agency

Two Air Force weather members are singing the blues...the 1998 Red, White, Rhythm and Blues to be exact.

Tops In Blue cast members Tech. Sgt. David O'Connor, a computer-training manager at Air Force Weather Agency, Offutt Air Force Base, and Airman 1st Class Aaron W. Kelly, a weather apprentice assigned to Minot Air Force Base, N. D., are entertaining thousands with the music from the ragtime 20's to today's country and pop.

"This job is incredible," said O'Connor, whose favorite part of the evening is meeting the crowd afterward. "When you shake their hands and see the look in their eyes, you can tell your performance really meant something to them."

O'Connor and Kelly, along with 30 others, began their one-year assignment in March and will tour the world, visiting more than 100 installations and performing countless times before they return to their weather jobs in February 1999.

The uniqueness of the active duty, Tops In Blue cast is that everyone acts as a "jack of all trades." Each member puts in long, exhausting hours not only under the lights but behind the scenes as well as setting up and striking the show.

Both commented that what they are learning while on tour will benefit their Air Force careers.

"My supervisor at Minot will definitely appreciate the level of work I am capable of," Kelly said. "An average Tops In Blue day is 14 to 15 hours."

For O'Connor, being a part of the cast has given him a better understanding of the Air Force. "I'm seeing places I'd never see as a programmer," he said.

Kelly entered the Air Force with one stipulation. "I wanted to be a weather forecaster," he said. Since he was young, he has always had an interested in weather. "I've been lucky. I got the career field I wanted and I was picked up for Tops In Blue."

The Air Force Tops In Blue show was created in the early 1950s to provide high qulaity, contemporary, family oriented entertainment for all members of the Air Force community by active duty Air Force performers. Tops In Blue has established a sterling tradition unequalled in military entertainment.

Although Kelly and O'Connor are enjoying the thrill of performing, they both agreed that being on the road can be lonely and grueling.

"It's a great once in a lifetime experience," said Kelly, "but it'll be nice getting back to my weather job."

MIST In Korea

by Airman 1st Class Furry, 51st Fighter Wing, Public Affairs

The first real-world deployment of the Air Force's newest Internet-based weather dissemination information system, Meteorological Information Standard Terminal, was recently completed.

The MIST system replaces two separate weather communications systems with a single laptop computer that exploits the communications capabilities of the Internet.

This system proves that deployed combat weather teams can use the Internet to support warfighters, according to Major Dave Zehr, Seventh Air Force's Staff Weather Officer.

"MIST not only provides weathermen a wider range of environmental data to choose from, but decreases the amount of work the weather community had placed on Air Force Communicators to maintain aging dedicated weather systems," said Zehr.

MIST became operational, supporting the 3rd Air Expeditionary Force at Kwang Ju AB, March 26 when an installation team made up of contract personnel from Booz-Allen & Hamilton, Inc and the 607th Combat Operations Squadron Weather Flight arrived to install the system and train the combat weather team of Elmendorf Air Base's 3rd Operations Support Squadron weather flight.

This was not an easy task. Through herculean effort was the team established communication connection to the MIST data servers located at the Denver Megacomputer Center in Colorado and begin receiving weather data.

MIST systems have been issued to all lead combat weather teams deploying to Korea, 7th Air Force Weather and the 607th Weather Squadron.

(courtesy of Air Force News Service)

DO YOU HAVE A NEWS STORY FOR THIS SECTION OF THE OBSERVER?

Email your news article to *Observer@afwa.af.mil.* Please list NEWS as the subject and include a point of contact.

Detachment 7's New Commander

by Jodie Grigsby, Air Force Weather Agency public affairs

Major Kenneth V. Kiburis assumed command of Detachment 7, Headquarters Air Force Weather Agency, Tinker Air Force Base, Okla. 21 July, 1998. Kiburis stated that he has been thoroughly impressed with the performance of his new unit. "My one overriding career goal has always been to be a unit commander. To walk into a unit with people as dedicated and motivated as we have at Detachment 7 makes it all the more rewarding."

Major Kiburis has clear goals for his new command. Over the next two years, unit personnel will be key players in the effort to reengineer the functions of the Automated Weather Network. The unit will also be supporting other initiatives such as the Meteorological Information Standard Terminal, New Tactical Forecast System, and Very Small Aperture Terminal (VSAT) Satellite initiative.

Kiburis has had a distinguished and decorated military career, preparing him for this new challenge. He has earned the Meritorious Service Medal with one oak leaf cluster, the Air Force Commendation Medal with one oak leaf cluster, and the National Defense Service Medal. He also wears the Senior Communications-Computer System Specialist Badge.

Kiburis graduated from the University of New Hampshire in 1983 with a Bachelor of Arts Degree in History and was commissioned a Second Lieutenant through the Reserve Officer's Training Program. After an assignment to Buckley ANG Base in Colorado as a Maintenance Control Officer, he went on to earn a Masters of Science Degree in Management Information Systems from the University of Colorado-Boulder, in May 1989.

After his graduation in 1989, he was assigned to Strategic Air Command, Offutt AFB, Neb., as a Communications-Computer Plans and Programs Officer and as an Embedded Computer Program Manager.

Kiburis was selected to attend Advanced Communications Officer Training in 1992. Upon completion of ACOT, he was assigned to the Air Force Operational Test and Evaluation Center, Kirtland AFB, N.M as the Wing Command and Control System Test Director. In 1995, he was assigned to HQ Air Force Global Weather Central, Offutt AFB as Chief, Baseline Management Workcenter; Deputy Chief, Systems Divisions and finally Chief, Communications Systems Support Division.

Major Kiburis was born in Dorchester, MA and grew up in East Sullivan, N.H. He is married to the former Sarah K. Price of Hampton N.H.

Salutes from around the world

MERITORIOUS SERVICE MEDAL

Master Sgt. Andrew Farley *(1st Device)*
Tech. Sgt. Eric Bonham
Staff Sgt. Candace JongetJes-Pursel

AIR FORCE COMMENDATION MEDAL

Capt. John K. Millhouse, *HQ AFWA OL-K, Norman, Okla.*
Capt. Lisa C. Swartz, *HQ AMC/DOWO, Scott AFB, Ill.*
Lt. Michael W. Darwin, *319 OSS/OSW, Grand Forks AFB, N. D.*
1st Lt. Kenneth P. Cloys, *49th OSS/OSW, Holloman AFB, N.M.*
Staff Sgt. Michael E. Shattuck, *HQ AFWA OL-K, Norman, Okla.*
Staff Sgt. Loren J. Rudd, *51 OSS/OSW, Osan AB, Korea*
Staff Sgt. Andrew J. Grimm. *51 OSS/OSW, Osan AB, Korea*
Staff Sgt. Wayne R. Hardesty, *51 OSS/OSW, Osan AB, Korea*
Senior Airman Mark E. Reed, *51 OSS/OSW, Osan AB, Korea*
Senior Airman Greg Schweitzer, *49th OSS/OSW, Holloman AFB, N. M.*

AIR FORCE ACHIEVEMENT MEDAL

Staff Sgt. Marry Williams, *49th OSS/OSW, Holloman AFB, N. M.*
Senior Airman Donald Buck Bird, *Osan AB, Korea*
Senior Airman Angela A Carter, *Osan AB, Korea*
Senior Airman Raymond L. Griego, *Osan AB, Korea*
Senior Airman Patrick S. Hill, *Osan AB, Korea*
Senior Airman Ernest Kennedy, *49th OSS/OSW, Holloman AFB, N. M.*
Senior Airman Cara Combs, *49th OSS/OSW, Holloman AFB, N. M.*
Senior Airman Tummy Teague, *319 OSS/OSW, Grand Forks AFB, N. D.*
Senior Airman Ryan H. Kiefer, *319 OSS/OSW, Grand Forks AFB, N. D.*
Senior Airman Jonathan Lewis, *319 OSS/OSW, Grand Forks AFB, N. D.*

ARMED FORCES EXPEDITIONARY MEDAL

1st Lt.. Kenneth P. Cloys, *49th OSS/OSW, Holloman AFB, N. M.*
1st Lt. Chris T. Finnigsmier, *49th OSS/OSW, Holloman AFB, N. M.*
2nd Lt. Sean R. Keaveney, *49th OSS/OSW, Holloman AFB, N. M.*
Master Sgt. Phil Poseberry, *49th OSS/OSW, Holloman AFB, N. M.*
Staff Sgt. Kevin Mattingly, *49th OSS/OSW, Holloman AFB, N. M.*
Staff Sgt. Scott Butler, *49th OSS/OSW, Holloman AFB, N. M.*
Senior Airman James S. Monroe, *49th OSS/OSW, Holloman AFB, N. M.*
Senior Airman Cara Combs, *49th OSS/OSW, Holloman AFB, N. M.*

AIR FORCE GOOD CONDUCT MEDAL

Senior Airman Victor Herrera, *Little Rock AFB, Ark.*
Staff Sgt. Jason Anderson
Staff Sgt. Candace Jonget Jes-Pursel

PROMOTIONS

1st Lieutenant
Chris T. Finnigsmier, 49th OSS/OSW, Holloman AFB, N. M.

Senior Master Sergeant
Phil Roseberry, 49th OSS/OSW, Holloman AFB, N. M.

Master Sergeant
Daniel W. Jones, 49th OSS/OSW, Holloman AFB, N. M.

Technical Sergeant
William R. Courtney, 51 OSS/OSW, Osan AB, Korea
Paul J. Conroy, HQ AFWA OL-K, Norman Okla.
Jerry W. Pedone, HQ AFWA OL-K, Norman, Okla.

Staff Sergeant
Kenny Harris, Detachment 2, 10th CWS (SOWT)
Curtis E. Gortz, Offutt AFB, Neb.
Bell, Brian K., Scott AFB, Ill.
Carney, Rebecca M., Offutt AFB, Neb.
Certain, Gordon E., Tinker AFB, Okla.
Fago, Charles J. Jr., Offutt AFB, Neb.
Harris, Jeremy P., Offutt AFB, Neb.
Marin, Lois M., Offutt AFB, Neb.
Nichols, Lonny M., Scott AFB, Ill.
Otte, Andrew D., Offutt AFB, Neb.
Richardson, Allen K., Offutt AFB, Neb.
Rollings, Craig A. J., Offutt AFB, Neb.
Shaw, James A., Asheville, N. C.
Sherman, Terri J., Offutt AFB, Neb.
Snyder, Danielle L., Offutt AFB, Neb.
Tate, Rachael O., Offutt AFB, Neb.
Wildes, Gregory C., Asheville, N. C.
Gayan, Kyle D., Asheville, N. C.
Vaughn, Michael T., Asheville, N. C.
Yeager, Francis T., Offutt AFB, Neb.

Senior Airman
Cara Combs (BTZ), 49th OSS/OSW, Holloman AFB, N. M.
Stacey K. Stimac, 319 OSS/OSW, Grand Forks AFB, N. D.
Lance Stringham, 51 OSS/OSW,Osan AB, Korea

Airman 1st Class
Matthew Myers, 49th OSS/OSW, Holloman AFB, N. M.
Todd Petty, 49th OSS/OSW, Holloman AFB, N. M.

HAILS AND FAREWELLS

Lt. Col. Douglas Ebert to AFWA, Offutt AFB, Neb., from Germany
Lt. Col. Robert LaFebra to 46 WS/CCS, Eglin AFB, Fla. from Vandenberg AFB, Calif.
Maj. Don Berchoff to TACC/XOW, Scott AFB, Ill. from Maxwell AFB, Ala.
Maj. Greg Engel to AFWA, Offutt AFB, Neb. from Tyndall AFB, Fla.
Maj. Tom Frooninckx to AFWA, Offutt AFB, Neb. from Fort Leavenworth, Kan.
Maj. Eric Wyss to AFWA, Offutt AFB, Neb. from Ramstein AB, Germany
Capt. Chris Bjorkman to AFWA, Offutt AFB, Neb. fromWiesbaden, Germany
Capt. John K. Millhouse to HQ AFWA OL-K, Norman, Okla. from National Air Intel Center, Wright-Patterson AFB, Ohio
Capt. Bruce Muller to TACC/XOW Scott AFB, Ill. from AFCCC, Scott AFB, Ill.
Capt. Scott H. Saul to HQ AFWA OL-K, Norman, Okla. from 57 OPS SQ, Nellis AFB, Nev.
Capt. Mark Yeisley to Keesler AFB, Miss. from AFWA, Offutt AFB, Neb.
1st Lt. Kenneth P. Cloys to AFIT from 49th OSS OSW, Holloman AFB, N.M.
Lt. Michael W. Darwin to Wright-Patterson AFB, Ohio (AFIT) from 319 OSS/OSW, Grand
Lt. Michael Holmes to AFIT Wright-Patterson AFB, Ohio from TACC/XOW Scott AFB, Ill.
1st Lt. Mark C. Miller to HQ AFWA OL-K, Norman OK from National Air Intel Center, Wright-Patterson AFB, Ohio
2nd Lt. Ryan Knapp to AFWA, Offutt AFB, Neb. from college
2nd Lt. John Kurian to AFWA, Offutt AFB, Neb. from IIT, Chicago
2nd Lt. Harmen Vissor to Lajes from 46 WS/CCS, Eglin AFB, Fla.
Senior Master Sgt. Christopher Andrejcik to 46 WS/CCS, Eglin AFB, Fla. from Holloman AFB, N. M.
Senior Master Sgt. Michael Przybysz to AFWA, Offutt AFB, Neb. from Fort Bragg, N. C.

Senior Master Sgt. Christopher Andrejcik to 46 WS/CCS, Eglin AFB, Fla. from Holloman AFB, N. M.
Senior Master Sgt. Michael Przybysz to AFWA, Offutt AFB, Neb. from Fort Bragg, N. C.
Senior Master Sgt. Jerry Sanders to Shaw Hub, Shaw AFB, S. C. from AFWA, Offutt AFB, Neb.
Master Sgt. William D. Foreman to AFWA, Offutt AFB, Neb. from NATO
Master Sgt. Dennis Hem to Little Rock AFB, Ark. from, Osan AB, Korea
Master Sgt. Tomas Klopfer to AFWA, Offutt AFB, Neb.
Master Sgt. Salinda Larabee, to 78 OSS/OSW, Robins AFB, Ga. from Scott AFB, Ill.
Tech. Sgt. Eric Apple to RAF Lakenheath, U. K. from HQ AMC TACC/XOW, Scott AFB, Ill.
Tech. Sgt. (Sel) Paul Cafiso to, from Kelly AFB, Texas
Tech. Sgt. Dan George to 25 ASOS/DOW Wheeler AAF, HI from TACC/XOW Scott AFB, IL
Tech. Sgt. Roddy Nixon to 78 OSS/OSW, Robins AFB, Ga. from Osan AB, Korea
Tech. Sgt. Charlene Przybysz to AFWA, Offutt AFB, Neb. from Pope AFB, N. C.
Tech Sgt. Daniel Radebaugh to 617 WS, USAFE from AFWA, Offutt AFB, Neb.
Tech. Sgt. Todd Allen to Sembach, Germany from AFWA, Offutt AFB, Neb.
Staff Sgt. Andrew J. Grimm to Spangdahlem AB, Germany, from Osan AB, Korea
Staff Sgt. Wayne R. Hardesty to Nellis AFB, Nev., from Osan AB, Korea
Staff Sgt., Randy Marmino to Osan AB, Korea, from Luke AFB, Ariz.
Staff Sgt. Daniel Powell to Kunsan AB, Korea from AFWA, Offutt AFB, Neb.
Staff Sgt. Loren J. Rudd to Wright-Patterson AFB, Ohio, from Osan AB, Korea
Staff Sgt. Paul Teff to Howard AB, Panama from AFWA, Offutt AFB, Neb.
Staff Sgt. Wally Tumblin to Ft. Wainwright, Ark. from 78 OSS/OSW, Robins AFB, Ga.
Staff Sgt. Ronald W. Kessler to 319 OSS/OSW, Grand Forks AID, N. D. from Travis AFB, Calif.
Senior Airman Jeremiah Beckmann to 319 OSS/OSW, Grand Forks AFB, N. D. from Keesler AFB, Miss.
Senior Airman Brian Bell to HQ AMC TACC/XOW, Scott AFB, Ill. from AFCCC
Senior Airman Lisa Blackerby to 46 WS/CCS, Eglin AFB, Fla. from Mildenhall, . K.
Senior Airman Donald Buck Bird to Ellsworth AFB, S.D., from Osan AB, Korea
Senior Airman Cara Combs to Forecasters School from 49th OSS/OSW, Holloman AFB, N.M.
Senior Airman Raymond L. Griego to Beale AFB, Calif., from Osan AB, Korea
Senior Airman Patrick S. Hill to Dyess AFB, Texas, from Osan AB, Korea
Senior Airman Reuben Kast from the Weather Apprentice Course, Keesler AFB, Miss., to 49th OSS/OSW, Holloman AFB, N.M.
Senior Airman Warren LaBare from the Weather Apprentice Course, Keesler AFB, Miss., to 49th OSS/OSW, Holloman AFB, N.M.
Senior Airman Ashley Ringo to Sembach, Germany from 78 OSS/OSW, Robins AFB, Ga.
Senior Airman Martha Roberts to 352nd OSS/OSW, RAF Mildenhall, U.K., from 49th OSS/OSW, Holloman AFB, N.M.
Senior Airman Greg Schweitzer to Osan AB, Korea, from Hollomasn AFB, N. M.
Senior Airman Tom Teague to Osan AB, Korea, from Grand Forks AFB, N.D.
Airman 1st Class Mollica Askren to Osan AB, Korea, from Luke AFB, Ariz.
Airman 1st Class Mark Hendrickson to Camp Humphries, Korea from 78 OSS/OSW, Robins AFB, Ga.
Airman 1st Class Todd Petty to Heidelberg, Germany, from 49th OSS/OSW, Holloman AFB, N.M.
Airman 1st Class James McKenzie to Camp Humphries, Korea, from Little Rock AFB, Ark.
Airman Jason Blackerby to 46 WS/CCS, Eglin AFB, Fla. from Heidelberg, Germany
Airman Amy DeVaughan to 46 WS/CCS, Eglin AFB, Fla. from Keesler AFB, Miss.
Forks AFB, N. D.
Airman Tanna J. Langue to 319 OSS/OSW, Grand Forks AID, N. D. from Keesler AFB, Miss.

DEPLOYMENTS

Tech. Sgt. Daniel W. Jones, 49th OSS/OSW, Holloman AFB, N.M., to Taszar, Hungary
Master Sgt. Scott C. Copeland, 319 OSS/OSW, Grand Forks AFB, N. D. to Thumrait,Oman.
Staff Sgt. Connie H. Fant, 319 OSS/OSW, Grand Forks AFB, N. D. to Prince Sultan AB, Saudi Arabia.

REENLISTMENTS

Staff Sgt. Todd Vonalmen
Senior Airman Tim Roser
Chief Master Sgt. Daniel J. Machalewicz

RETIREMENTS

Lt. Col. David W. Rust
Maj. Susan Montgomery
Tech. Sgt. Michael Persian
Lt. Col. Brian Knuass
Maj. Catherine M. Biddolph
Master Sgt. Allen Rogers
Master Sgt. Victoria Edwards
Senior Master Sgt. Eric Fjetland

SEPARATIONS

Senior Airman Ernest Kennedy, 49th OSS/OSW, Holloman AFB, N.M.
Senior Airman Nancy Tranter, 46 WS/CCS, Eglin AFB, Fla.
Senior Airman Gary Markman, 46 WS/CCS, Eglin AFB, Fla.
Senior Airman Ryan H. Kiefer, 319 OSS/OSW, Grand Forks AFB, N. D.
Senior Airman Jonathan Lewis, 319 OSS/OSW, Grand Forks AFB, N. D.
Senior Airman Bratt Ryan, AFWA, Offutt AFB, Neb.

EDUCATION

Weather Apprentice Course
TSgt James T. Meyer
Staff Sgt. Robert Love
Staff Sgt. Diallo Omavi
Staff Sgt. Cordell A. Proctor
Senior Airman Scot A. Moore
Senior Airman Karla Szczr
Senior Airman Denise Treon (Distinguished Graduate)
Senior Airman Robert E. Winninger
Airman 1st Class Princess Samonte
Airman Christopher M. Bizzell
Airman Laterese M. Childs
Airman Joshua E. Coons
Airman James E. Dillon
Airman Michael J. Deal
Airman Michael B. Downing
Airman Krista B Greider
Airman Jeremy Henderson
Airman Crystal Hobbs
Airman Kristy L. James
Airman Charles B. Jimmerson
Airman Corey R. Jones
Airman Daniel J. Kern
Airman Kelly K. Kennelly (Distinguished Graduate)
Airman Joshua A. Peters
Airman Joseph S. Rosato
Airman Aaron C.D. Strickland
Airman Jacqulyn N. Wright
Airman Basic Amanda L.Boykin,
Airman Basic Kevin J. Goff Jr.
Airman Basic Shannon L. Kennemore
Airman Basic Relynn K. Nguyen

GUIDELINES FOR SALUTE SUBMISSIONS

Do NOT Use ALL CAPS

Email:
Observer@afwa.af.mil

LIST CATEGORY:
Award, Decoration, Deployments, Hails and Farewells, Reenlistments, Retirements, Separations, Education, Birth, etc.

FORMAT:
Rank (DO NOT ABBREVIATE: *i.e. Airman 1st Class*) First Name, Middle Initial, Last Name, Organization, State (DO NOT ABBREVIATE: *i.e. California*), Country

All submissions must be received by the 1st of the month prior to the publication month *(i.e. June 1st for the July).*

Forecaster Course
Staff Sgt. Eric M. Hancock (Distinguished Graduate)
Staff Sgt. Daryl S. Gibson
Staff Sgt. Terry D. Hudgins
Staff Sgt. Ceaser Webb
Senior Airman Brian Burch
Senior Airman Nicholas DiTondo
Senior Airman Jon Hoagboon
Senior Airman Amber Roberts
Senior Airman C. Timmermann
Senior Airman M Timmermann
Senior Airman W. Thunberg
Senior Airman Stoney Blair
Senior Airman Jevon Counsler
Senior Airman Glen DeMars
Senior Airman Thomas Dishion
Senior Airman Richard Gagne
Senior Airman Jeffrey Godemann
Senior Airman Erwin Gove
Senior Airman Thomas Hauser
Senior Airman Michael Krieger
Senior Airman Danny Lopez
Senior Airman Timothy Legg
Senior Airman Stephen Moran
Senior Airman Samuel Pugh
Senior Airman Joshua Turnier
Airman 1st Class Philip Beda
Airman 1st Class Sirus Bontea
Airman 1st Class Phillip Hancock
Airman 1st Class Stephen Harvilla
Airman 1st Class Rachael R. Kemp
Airman 1st Class Brian Tassia
Airman Robert Davis,
Airman Michael Marston,
Airman James Pfeifer
Airman Gunther Sequeira

Weather Officer Course
Capt. Diana Hajek
1st Lt. Kathleen Campbell
1st Lt. Cindy Howell
1st Lt. Christian Wohlwend (Distingaished Graduate)
2nd Lt. Michael Lewis
2nd Lt. Dana Uehara

NCO Academy
TSgt John Edwards, HQ AMC TACC/XOW

CCAF Degree with an AAS in Weather Technology
Staff Sgt. Louie Gonsalves, 319 OSS/OSW, Grand Forks AFB, N. D.

Airman Leadership School
Senior Airman Victor Herrera
Senior Airman James S. Monroe, 49th OSS/OSW, Holloman AFB, N.M.
Senior Airman Elbretta Robinson, 78 OSS/OSW - ALS Essay Award Winner.
Senior Airman Greg Schweitzer, 49th OSS/OSW, Holloman AFB, N.M.

AWDS Systems Manager Course
Senior Airman James S. Monroe, 49th OSS/OSW, Holloman AFB, N.M.

WSR-88D NEXRAD class
Senior Airman Larry Law

WSR-88D PUP Operator/manager
Master Sgt. Paul Armitage, 46 WS/CCS, Eglin AFB, Fla.

Staff Sgt. Edward Acuavera, 46 WS/CCS, Eglin AFB, Fla.

Satellite Interpretation School
Staff Sgt. Kevin Mattingly, 49th OSS/OSW, Holloman AFB, N.M.

Satellite Meteorology Course
Senior Airman Jennifer Shields, 46 WS/CCS, Eglin AFB, Fla.

7 Level School
Staff Sgt. Brian Landtroop
Staff Sgt. Michael Schierer

Tropical Weather Analysis and Forecasting
Senior Airman Jennifer Shields, 46 WS/CCS, Eglin AFB, Fla.
Senior Airman Ted Klein, 46 WS/CCS, Eglin AFB, Fla.

AWARDS

314 OSS CGO of the Quarter, Jan - Mar 98
2nd Lt. Christopher M. Hogue, Little Rock AFB, Ark.

314 OSS SNCO of the Quarter, Jan - Mar 98
Master Sgt. Philip D. Thompson, Little Rock AFB, Ark.

314 OSS Airman of the Quarter, Apr - Jun 98
Senior Airman Todd Preimesberger, Little Rock AFB, Ark.

Forecaster Technician of the Quarter; Apr - Jun 98
Senior Airman Todd Preimesberger, Little Rock AFB, Ark.

Observer Technician of the Quarter; Apr - Jun 98
Airman 1st Class Tracy A. Beene, Little Rock AFB, Ark.

TACC NCO of the Quarter - 2nd Quarter 1998
Master Sgt. Jerry Scholl - TACC/XOW, Scott AFB, Ill.

Senior NCO of the Quarter - 2nd Quarter 1998
Senior Master Sgt. Jeff Fluegge - TACC/XOW, Scott AFB, Ill.

The Air Force Longevity Service Award
Maj. Charles Buckler (2nd Device),
Master Sgt. Andrew Farley (4th Device)

American Meteorological Society Certified Consulting Meteorologist
Alan W. Gibbs HQ AFSPC/DORW, Peterson AFB, Co.

Award for Outstanding Performance in recognition of Academic Excellence
Staff Sgt. Candace Jongeljes-Purser for a score of 92 on IWOS1A and a 92 on IWOS1 B CDC.

HQ AFWA Quarterly Award
CGO of the Quarter - 1st Lt. Dustin Yates
Senior NCO of the Quarter - Master Sgt. Antonio Chisholm
NCO of the Quarter - Staff Sgt. James Slear
Airman of the Quarter – Airman 1st Class Daniel Tennant
Civilian of the Quarter, GS9 and above – Mr. Paul McCrone
Civilian of the Quarter, GS8 and below – Ms. Loraine Becker

Civilian 20-year service pin – Mark Surmeier, Offutt AFB, Neb.

Base Weather Professional Provider of the Year (Forecaster)
Staff Sgt. Kevin Mattingly, 49th OSS/OSW, Holloman AFB, N. M.

Base Weather Professional Provider of the Year (Observer)
Senior Airman Kimberly Kennedy, 49th OSS/OSW, Holloman AFB, N.M.

ALS: John Levitow Award
Senior Airman Greg Schweitzer, 49th OSS/OSW, Holloman AFB, N.M.

ALS: Academic Achievement Award
Senior Airman Greg Schweitzer, 49th OSS/OSW, Holloman AFB, N.M.

319 OG NCO of the Quarter (3rd quarter, 1998)
Staff Sgt. Louie Gonsalves, 319 OSS/OSW, Grand Forks AFB, N. D.

BIRTHS

Jacob Orlando Siciliano to Tech. Sgt. Brian Siciliano and Cathy Siciliano, 49th OSS/OSW, Holloman AFB, N.M.
Celeste Nicole Diorio to Monica and Tech Sgt. John Diorio, HQ AFWA, Offutt AFB, Neb.

OPENINGS

The 156WF has vacancies for 2 enlisted technicians (either 1 W051 A or 1 W071 A) and 1 enlisted observer (1W051). POC is Master Sgt. Andrew Farley, DSN 583- 9137/ E-Mail afarley@nccit.ang.af.mil

OBSERVER COMMENTS

We'd like to hear from you. Tell us what you think about this publication. What would you like to see more of, less of? What would you change? Send your comments to: *Observer@afwa.af.mil* Subject: FEEDBACK

MM5...Perspectives From the Field

"The capabilities are tremendous, and we're probably just at the tip of the iceberg. In the future, the MM5 will be used with the Integrated Meteorological System (IMETS), improving our capability to provide battlespace products to the warfighter."

Lt. Col. Mark Welshinger
USAFE/ 7th Weather Squadron

"It would be nice to know what model was used to initialize the MM5 model daily so we in the field can determine if MM5 will work that day for us.

Example: If the MM5 was initialized one day with the ETA model, but the ETA model is not reliable that day in my area, the MM5 would probably not be reliable either. If the next day it's initialized with the NGM model and the NMG is working for our area, then MM5 will probably work for our area."

Master Sgt. Stephen W. Dombek
Chief, Weather Station Operations
45th Airlift Squadron, Keesler AFB, Miss.

"Overall, I'm pleased with the MM5 products. Be aware that in a field environment, we have to reproduce many products in a black and white format so extensive use of colors is counterproductive. I understand the black/white printer issue is being worked. In fact, I ended up using many NODDS products for briefings because of this issue. But in the weather station, we used the MM5 and NODDS both."

Capt. James A. Kratzer
Former OIC, Prince Sultan Weather
Flight Commander at Cannon AFB, N.M.

"I routinely look at the MPEG loops of severe weather indexes and precipitation and find them useful. The absolute value of the stability indexes is not necessarily accurate, but the pattern and trend are pretty good.

The MM5 meteogram seems to be pretty good on precip and RH in the vertical cross section. Its temps are always way too low and sometimes out of whack with the diurnal cycle."

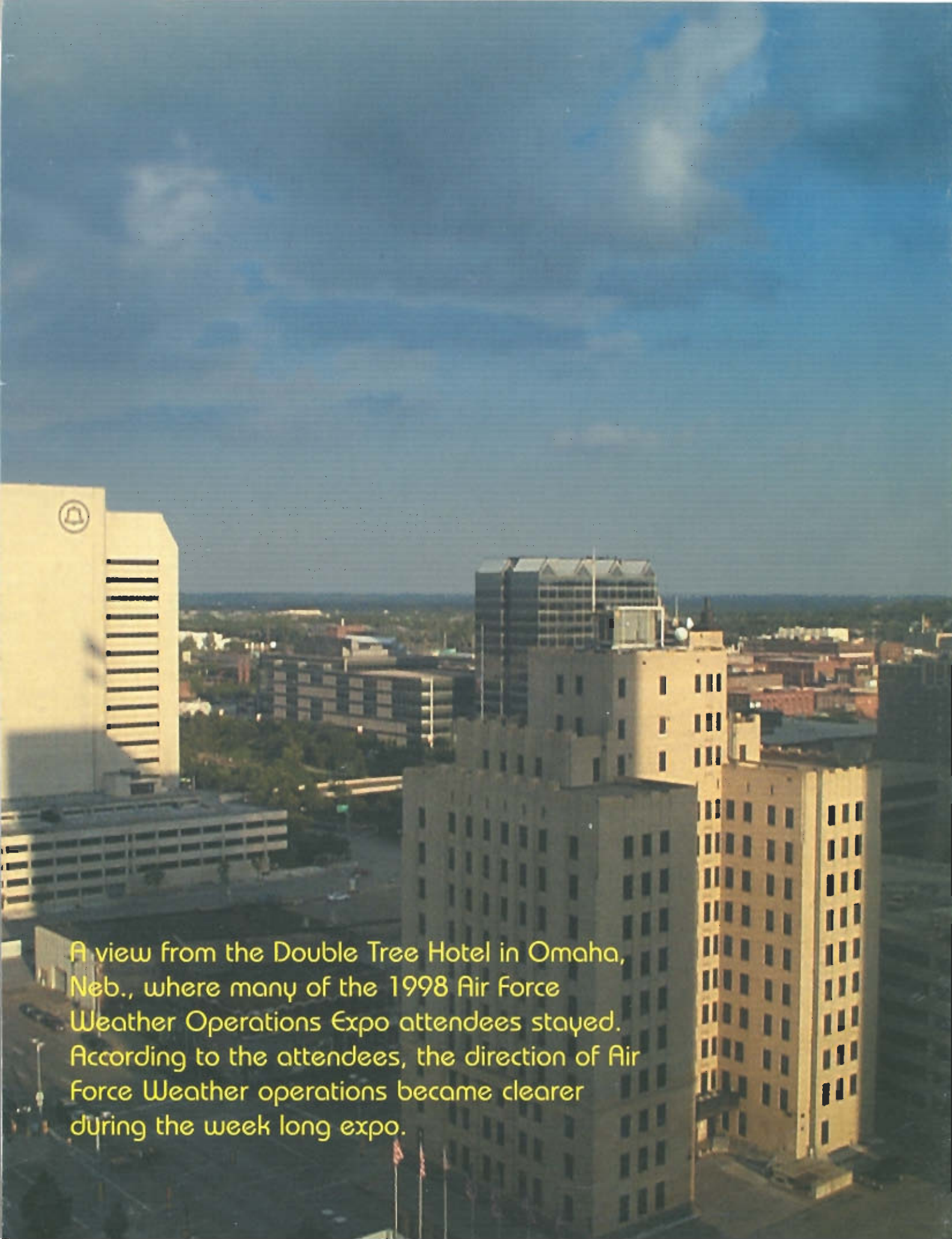
Maj. Kevin Callahan
7 Exp Weather Squadron Commander,
Tuzla, Bosnia-Herzegovina

"We look at products from the MM5 model everyday. My forecasters like them because they are easy to read and understand. Having the meteograms for the air refueling tracks and drop zones is outstanding! The model has been working pretty well for our area except it hasn't been handling low pressure systems to our east as well as the NGM model, but I'm sure with time the model will be improved. The only concern they have is that it seems to take a very long time for the products to get updated on AFWIN."

Senior Master Sgt. Frank Hall
436 OSS/OSW
Dover AFB, Del.

"I feel that MM5 handles convective as well or better than any model I've ever seen (European or American). It seems to have shown its value during this summer's repeated outbreaks of severe weather affecting ACC bases. We just need to get more units using the model."

Capt. Mal Walker
ACC/DIWPX



A view from the Double Tree Hotel in Omaha, Neb., where many of the 1998 Air Force Weather Operations Expo attendees stayed. According to the attendees, the direction of Air Force Weather operations became clearer during the week long expo.