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Observer

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Transformation: **Map to** **the future,** **Tool of success**



Observer

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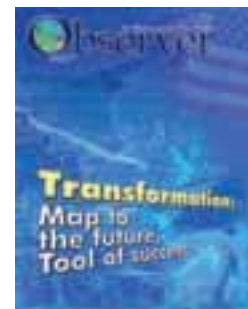
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A graphic illustration of the changes driving Air Force Weather transformation. Technological advances and world events drives the inevitable change of the profession and how AFW has made the decision to anticipate and embrace this change. Photo illustration by Jodie Grigsby.



AF Weather transformation

What is it, what does it mean to me?

By Col. John Lanicci
Air Force Weather Agency Commander
Offutt AFB, Neb.

Technology is driving change in the Department of Defense, and Air Force Weather must be ready to embrace a new approach to solve future challenges. There will be significant changes to the way we do business in the future.

The term “Transformation” has been used to describe sweeping changes that will take place in the ways our

forces organize, train and fight. While Air Force Weather is not alone in facing impending transformation, it’s very important that we approach it with the right attitude. AFW Transformation is not simply another reorganization, but inevitable change driven by rapidly advancing technology and world events. As a profession, we can choose either to react to that change, or anticipate and embrace it.

The *Air Force Transformation*

Flight Plan describes transformation as:

... A process by which the military achieves and maintains advantage through changes in operational concepts, organization, and/or technologies that significantly improve its warfighting capabilities or ability to meet the demands of a changing security environment.

This definition suggests that transformation can be achieved through a combination of concepts, organization, and/or technology. What does this new approach mean to us? Most importantly, potential solutions to problems and issues may not always lend themselves to buying new equipment, faster computers, or better prediction models. Transformation requires us to approach the requirements process by analyzing our capabilities and deficiencies instead of jumping immediately to materiel solutions. Let’s take an example from the corporate Air Force to compare the old and new approaches. In the past, our “platform-centric” planning process, would propose purchasing a specific number of F-22s, and then justify it by looking at the problems we were trying to address. The new Air Force approach instead looks at the problem the military is trying to address, such as the need to defeat anti-access strategies that may be employed by a future adversary. It examines the current shortfalls in our ability to defeat such a

strategy, and formulates a solution set to close those gaps. In this example, the proposed solution set includes the F/A-22 because the Air Force believes its super cruise and stealth capabilities can defeat a future enemy’s anti-access strategy by opening holes in the enemy’s defenses, allowing follow on forces to enter the denied territory.

We will need our best people to step up and think out of the “weather box” to help us through the difficult decisions required as we transform. It will require us to ensure that environmental information is integrated into operational decision cycles, whether they are at the Air Operations Center, Army Tactical Operations Center, or in the system program office of an emerging weapon system. They will require our people to be fully embedded at multiple levels of command, whether they are Joint, Air Force, or Army.

To set the profession’s course for transformation the AFW Strategic Plan and Vision was built during the last year. It addresses AFW’s future starting with the fiscal year 2008 to 2032 planning cycle. The AFW plan does this by outlining eight “Transformation Vectors” that will radically change the Core Processes of Collect, Analyze, Predict, Tailor, and Disseminate.

While significant changes will take place in each of AFW’s Core Processes, it is the last process, *Dissemination*, which will undergo the greatest transformation. It will change from a largely manual process in which there is limited ability to update information rapidly and provide immediate decision assistance to commanders, to an *Integration* of information and people at the appropriate places in the operational decision cycle. This is likely to be a combination of “machine-to-machine” passing of critical weather sensitivity information for a particular weapon system and mission, and human-in-the-loop consultation about the potential impacts of the terrestrial and space environment during planning and executing of military operations.

The strategic plan also addresses the future of AFW’s day-to-day business operations. It outlines a vision for an AFW community “network,” in which known weapon and platform sensitivities are analyzed, documented, and databased, and operating concepts are developed before the system gets into the field. To reach this vision, as in the F/A-22 example discussed above, we will have to analyze our capability gaps in weather sensitivity knowledge. Once the analysis is complete,

**“The future
ain’t what it
used to be.”**

Yogi Berra



we will likely see solution sets involving the development of technologies, databases, and interfaces with command and control systems to deliver that environmental impacts knowledge to decision makers at the strategic, operational, and tactical levels.

The development of the networked community will itself will require a transformation of sorts from today's community of semi-isolated organizations. It will require efficient and timely communications among the major commands and Air Staff, as well as the major commands and headquarters staff of our Sister Services, so that capability reviews and risk assessments can be performed before entering into the Planning, Programming, Budgeting, and Execution process. If we do this right, we can achieve a full integration of environmental effects and impacts information into processes such as Predictive Battlespace Awareness, and Joint Command and Control.

The strategic plan describes lineages between the new Vision and Mission Statements by putting them within the context of "AFW Effects," which are broad overarching impacts that weather operations accomplish within the battlespace.

AFW Effects

1. Maintain global battlespace situational awareness of natural environmental phenomena, conditions, and effects upon joint operations and intelligence
2. Achieve decision superiority using predictive battlespace

awareness to exploit friendly force strengths and adversary limitations relative to the natural environment

3. Counter threats from the natural environment impacting forces and resources

The first effect ties together the Core Processes of Collection and Analysis and combines it with knowledge of environmental effects to provide Joint Battlespace Awareness for real-time operations. The second effect combines Prediction, Tailoring, and Integration, with knowledge of environmental effects on friendly and enemy systems, to achieve decision superiority. The third effect encompasses all AFW core processes in the traditional resource protection mission, as well as addressing the emerging chemical, biological, radiological, nuclear, and explosive threat to our forces. These effects are the backbone upon which we will describe our capabilities to the AF corporate structure.

In this limited space I've only been able to scratch the surface of the strategic plan and vision. AFW transformation will require smart investments in future capabilities - the most important of which is our people. It is only through your efforts that AFW will be able to make the transformation journey successful. There are associated issues with each transformation vector; you'll see many stated as questions. We did this on purpose to inspire YOU to think about the future, and the part you will play in it! I strongly encourage you to grab a copy of this plan and take a look at it.

Transformation of the AFW Core Processes

The following are the Transformation Vectors for each of the AFW Core Processes.

Collection

Vector 1

Integrate environmental information collection into the theater Intelligence, Surveillance, and Reconnaissance collection plan.

Vector 2

Data explosion from the Next Generation Environmental Satellites, unmanned vehicles, National Technical Means, smart tankers, and future combat system vehicles.

Analysis and Prediction

Vector 3

Space weather models going from climatologically and statistically

based to physics based.

Vector 4

Increasing model resolution, vertical domain from surface to near space, and physics requirements based on new weapon systems coming into the inventory such as Airborne Laser, advanced UAVs, High Altitude Airship, space-based platforms, and Army aviation airlifting mobile maneuver forces.

Tailoring

Vector 5

Moving from a 'graphically based' to 'digitally based' product line.

Vector 6

Automated Decision Tools as a mainstream product (some will be

machine-to-machine, others will be semi-automated). What role will Modeling and Simulation play (e.g., mission rehearsals, command level training)?

Disseminate - this changes to Integrate - the biggest transformation for AFW

Vector 7

Weather information fully integrated into decision cycles at appropriate levels of command.

Vector 8

People fully embedded with the users as 'weather/climate consultants'—this has two sides: the research and development side, and the operations side.

Reflections of the Operator vision

by Chief Master Sgt. Jeffrey Fries
AFWA Operations Division
Offutt AFB, Neb.

The May/June edition of the Observer Magazine was a fabulous reminder of our proud history and a vital part of a tapestry explaining who we are by helping us understand where we came from. I find it important to reflect on our roots as we come face to face with the ongoing transformations in the profession of arms. One of my favorite writers, Daniel Quinn, discusses the difference between a “vision” and a “program.”

Quinn describes a vision as something that grows from within; he likens the phenomena to a number of small springs that merge and flow to form a river of thought through a culture. On the other hand, he describes a program as a conscious effort with a clearly stated goal to affect change, usually from the outside of a culture, often with measurable beginning and ending periods. I believe that a new vision - the weather operator vision - is taking hold in our corner of the profession of arms.

For the longest time, we thought of ourselves as weather “support” - this was our vision; we provided support with pride and built an entire stovepipe organization to manage and standardize support to a separate community we called the “operator.” This vision grew from the doctrine of the day and was driven by a technological base heavily reliant on manual processes coupled with a communications capability that kept weather forces plugged into a weather data umbilical and locked up in a place I like to call the “weather fortress.”

In many ways the old base weather station was modeled after the medieval fortress. The weather stations were in centralized operations buildings with warning signs posted everywhere aiming to keep out the non-flying community. It was similar to a moat, with imposing, chest high; forecaster counters, to provide a physical barrier between the operator and the weather support. Our forces were relatively static since we couldn't venture too far from our wind recorders, aneroid barometers, and teletypes and chart walls for long periods, lest our data became stale.

To communicate with the operator we relied on shipping products via stand alone, one-way, communications systems unique to the weather community. We didn't talk to a command

and control system because this was not a critical part of the support vision.

We excelled at the support business and got so wrapped-up in the support vision that we were a bit slow in reacting to world changes which was giving rise to a new vision. Advances in computer and communications technologies eliminated the static weather data umbilical, and provided the keys which unlocked the gates of the weather fortress. This allowed us to move in the midst of the operators.

Stovepipes gave way to networks and our reach back capability replaced boots on the ground, and machines are replacing humans in tasks such as plotting, graphing, displaying, and observing the weather. Technologies that permit real time information exchange allow weather forces in regional or strategic centers to participate in operations occurring halfway around the world. In the midst of this fundamental change, the support vision is beginning to give way to a new vision - the operator vision.

Our history is filled with colorful characters that didn't completely buy in to the support vision. One of the more famous was Capt. Keith Grimes who was instrumental in (using the words of the time) “operationalizing weather support.” By imbedding weather forces under his control with the operator a small band of weather troops directly influenced almost every phase of planning and execution of a daring raid to attempting the rescue of American Prisoners of War being held at the Son Tay Prison compound in North Vietnam in 1970. This is one of the more famous events in the rise of an operator vision that gained momentum in the largely anonymous acts at small units scattered around the world.

Today, the river of thought that is the operator vision is growing within our community and is making inroads on replacing the support vision. Many of us will know nothing but the operator vision; some are fortunate enough to be assigned to units engaged in the pursuit of this vision today. You will set the stage for future generations of weather operators. The operator vision is alive on the battlefields of Iraq, at many combat weather teams, and in the Tanker Airlift Control Center. It is anywhere, where integration and innovation have taken hold to become the norm.

The operator vision is alive and well at units that shift focus from providing weather products to infusing decision grade environmental information into an operational decision making process to bring about changes to the operation. Networked communications, centralized command and control with decentralized operations enable a merger of information with outcome in ways that were only imagined a few years ago.

I am proud of the “1” in our Air Force Specialty Code that designates the weather community as a part of the operations family of specialties. We've earned that privilege through the hard work, courage, and persistence of weather operators who stepped out of the support vision and ventured into new territory. Based on what I've seen in the last couple of years I feel confident in stating that we are operators - this is our vision.

Transforming... ARMY weather initiatives

by Maj. Peter Citrone,
AF Combat Weather Center
White Sands Missile Range, N.M.

Goals & Initiatives

One of the primary goals of the Army Transformation is to provide U.S. Soldiers and commanders advantages in situational awareness and decision-making. As weather can adversely impact personnel and military operations at all echelons, the Army Research Laboratory's Battlefield Environment Division developed an initiative to investigate and develop environmental intelligence such as decision aids and alerts on a highly mobile computing device.

The goals of this ongoing initiative are to determine the current capabilities of these mobile devices in terms of computing power, ease of use, display and, if possible, develop an initial set of products that could be transitioned to the field. People using the personal digital assistants found it to be useful in hosting and demonstrating several weather intelligence applications. These applications are at various stages of development, however, the mobile heat stress decision aid is fairly advanced and may be integrated into the military.

Test & Performance

Mobile Heat Stress Decision Aid provides real time guidance for military units and soldiers on the effects heat has on the soldiers' performance under a variety of environmental, work and clothing conditions. The core prediction algorithms were developed by the U.S. Army Research Institute of Environmental Medicine, Natick, Mass.

The ARL's battlefield environment division then adapted these algorithms for the personal digital assistant and developed a tailored graphical user interface. They also incorporated a solar insolation algorithm, as a function of cloud cover, date, time and location, so that

the mobile user does not require pyranometer readout. The pyranometer is basically a flat plate, covered with a transparent dome, that is coated with an extremely absorptive surface. As the sun strikes it, the surface gets hot. The temperature of the surface is measured with a thermopile, giving an output voltage related to the amount of solar radiation striking the surface.

Weather inputs include air temperature, humidity, wind speed and cloud cover. Simplified qualitative menu choices are provided for wind speed, whether light or strong, and humidity either dry or moist.

The GUI is simple to modify, thus, the choices can be readily tailored if required. For example, if deployed with a unit that has access to real-time weather observations, the humidity and wind speed inputs could be modified to quantitative values. Non-weather inputs include location, month, day, time, work rate, and clothing levels such as mission oriented protective posture levels.

The location can be automatically obtained if the PDA has a global positioning system capability, while the month, day and time are automatically retrieved from Java software utilities.

Output consists of a number of useful parameters to include:

- Probability of heat stress injury
- Work/rest cycle
- Maximum work time
- Canteens of water required
- Wet Bulb Globe Temperature

More to come

Additional software applications that are available or under development on the mobile device include:

Integrated weather effects decision aid: will help in determining the environmental impacts on weapon systems and military operations over space, includes a map

overlay, and time.

Weather alert: Provides a visual and audible notification to one or more weather related alerts to which users have subscribed.

Spot weather report: Allows a local weather observation to be entered and transmitted to a remote server.

Mobile acoustic detection: Provides the probability of detection of an acoustic target by a user-specified listening device.

Night vision goggles decision aid: Text and graphic displays of optimal times to use night vision devices as a function of weather conditions.

The "One-Theater, One-Forecast" axiom is a vital component of the re-engineered Air Force Weather concept of operations.

This axiom ensures consistency of weather products from the tactical to theater levels. In order to meet this axiom, the assigned operational weather squadron, in the future, could provide quantitative weather data inputs needed to drive these PDA applications.

On the Horizon

However, there may be times when a soldier or airman operating the PDA will not have "reachback" to an OWS, CWT, or any other weather team.

In such a situation, the soldier or airman can still use the simplified weather data inputs to operate the PDA and generate accurate estimates of the desired outputs.

The Mobile HSDA can enhance force protection by enabling individual soldiers to monitor the local heat stress threat and take the appropriate actions to protect themselves and their team members.

Nevertheless, while the Mobile HSDA is still in its development stage, the possibility of putting the most current and accurate weather products in the hand of individual teams is not so far on the horizon.

For Better? or Worse? AFW validates reengineering trends

by Master Sgt. Larry Groff
HQ Director of Weather Readiness Office
Washington, DC

It's now more than five years since the first operational weather squadron assumed terminal aerodrome forecast and weather warning responsibilities from the base weather stations, as part of the Air Force Weather Reengineering plan.

This issue of the magazine takes a look at the progress of AFW since its reengineering.

But, how has reengineering improved our forecasting capabilities? Are the operational weather squadrons, and combat weather teams of today able to provide better, worse, or about the same forecasts as the autonomous base weather stations, pre-reengineering?

To find the answers to these questions, the AFW Policy and Procedures Division, with the help of the Air Force Weather Agency Field Operations Division, and experts from the major commands obtained substantive data and metrics in order to determine the trends.

In January, we began to assemble AFW metrics on Warning Verification and Terminal Aerodrome Forecast Verification, which showed some interesting results.

The first metric examined was WARNVER. It shows clear evidence of overall improvement of AFW's warning capabilities during the post-reengineering era. This is even more impressive when you consider that we increased the desired lead-time from one to two hours in 1998. This improvement was offset by a slight increase in false alarm rate, which is understandable due to the increase in desired lead-time.

Overall, the WARNVER data tells a success story. It proved that it is possible to provide quality weather warnings, remotely, which was an initial concern during the beginning stages of weather reengineering.

The second metric used to compare pre- and post-reengineering forecast performance was the TAFVER. AFW has a continuous record on how accurately we forecast 1,500-foot ceilings and 3-miles visibility at predetermined hours of the TAF period. From this data, we develop the forecaster skill score, a comparison of our forecast performance against persistence. From 1968 to 2000, the sample points were three, six, and 12 hours. In 2001, these were changed to four, eight, 12, and 24 hours.

The change in reporting times caused an "apples to oranges" metrics disconnect in all but the 12-hour point. Interestingly, at the 12-hour point, we noted only a small

decline in the FSS, and even this data point shows slight improvement during the last two years. The recent upward trend may be a sign of the maturing OWS-CWT relationship. The other time frames do show a moderate drop-off in TAF performance since reengineering, most pronounced at the three to four-hour point.

Why the decline?

First - some of the decline may be due to the different verification hour - the "apples to oranges" disconnect mentioned above.

Second - the drop-off is at least partially attributable to some growing pains in the OWS-CWT relationship and the need for improvements in the "eyes forward" process.

Third - in many cases, weather units that operated for 24-hours a day and seven days a week before reengineering, now operate a more limited schedule to meet their mission.

Thus, OWS forecasters have had to issue many TAFs without the benefit of a human observer to establish initial conditions, further lowering TAF performance in the near-term. Also, during a recent visit, the standardization evaluation team noted that at times some apprentice forecasters might have a tendency to overreact to ceiling taps from the GMQ-34 or TMQ-53 displayed on the AOS software, even though these readings may not necessarily reflect a true ceiling. Overall, AFW leadership expects to see continued FSS improvement in the next few years, especially in the near-term portion of the TAF.

The bottom line is that we're providing a vital resource protection service to the nation and doing so better than ever. Although the TAFVER numbers appear to have gone down, it is difficult to accurately correlate them due to the change in reporting times. Even so, as the CWT-OWS relationship continues to mature, we anticipate continued improvement. Since AFW reengineering, the accuracy of the mission execution forecast has provided the biggest "bang for the buck" for the warfighters. By putting our experienced forecasters at the CWT, we're focusing our capabilities where they're most needed.

This study is just an initial snapshot of the first few years of the reengineering. For more accurate picture of AFW's performance into the post-reengineering era, comparisons of the metric data will need to be examined over a longer period of time.

Contributors to this story are Tech. Sgt. Daniel Oien of AF/XOO-WP, Director of Weather operations metrics teams at the major commands, Capt. Troy Johnson, Capt. Trisha Fuller, retired Master Sgt. Don Jeter, and Master Sgt. Dan Radebaugh, Air Force Weather Agency XOP.

AFMC weather - small team leans toward transformation

by Steven Weaver
AFMC Flight Operations and
Weather Branch
Wright-Patterson AFB, Ohio

It has been an exciting year of change for the Air Force Materiel Command weather staff. Three staff members retired in February and as a result, the staff has shrunk to just three people. Fortunately two new people arrived in July to complete the team.

In addition to personnel changes, we have undergone another transformation here at Headquarters Air Force Materiel Command. In May 2002, the AFMC director of weather merged with air traffic control branch.

We are organized into three cross-functional teams: operations, readiness, and resources. Each team consists of weather and air traffic control technicians. While there were some challenges during the merger, the new organization is working and the transformation experience has helped us, as weather technicians, to gain a broader perspective on airfield operation.

The recent transformation initiative was implemented to streamline the command functions and better organize and improve the performance of its primary functions which is to deliver new systems on time and at cost to the warfighter.

As part of this reorganization we've merged with the AFMC director of operations, flight operations, to form AFMC/DOO, on June 1. This adds more diversity and expertise to the team, while enhancing our support to the field. It is truly a win-win situation for everyone.

HQ AFMC organization and multi-specialty teaming is unique among the major commands. For example, our resources team not only manages weather resources, but also the air traffic control maintenance

and AFMC flying programs. The resource team has revolutionized the way we utilize our resources with annual business and strategic plans plus conducting Board of Directors meetings with our operational support squadrons and weather squadron commanders. We meet at least once a year with the Board of Directors to discuss and decide on proposed funding and equipment initiatives. Using this approach and out-of-the-box thinking, AFMC is the leader in upgrading its airfield equipment and funding levels.

While we have been viewed as the "junior" partner among the MAJCOM weather staffs, our staff is dedicated to providing the required manning, equipment, and training for our units. In addition, we must plan for the future of AFMC weather and preserve our core functions.

Our mission at AFMC is to field test new systems, and to successfully

accomplish this mission our weather units play an important role.

In AFMC, there are combat weather teams at seven bases supporting a wide variety of missions to include combat aircraft wings, air logistics center, test and evaluation missions, and acquisition. In addition, there are weather officers and civilians supporting research and development, and test and evaluation activities at Edwards AFB, Calif.; Eglin AFB, Fla.; Hanscom AFB, Mass.; Kirtland AFB, N.M.; Rome, N.Y.; and Wright-Patterson AFB, Ohio. These meteorologists are charged with ensuring that new systems are tested under the most realistic conditions, and that they perform as designed by the manufacturer. They are truly on the cutting edge of technology, supporting demanding systems such as the Global Hawk, the F-22, and the Air Force Airborne Laser Program.

While the weather staff at HQ AFMC may be small, the impact is great and as part of the new DOO team, we are leaning forward, excited about the future of weather in AFMC.

Hurricane Naming trivia

1. What novel contained an early example of naming a storm using a woman's name?
2. What year were men's names added to the Atlantic and Gulf of Mexico lists?
3. An international committee, of what organization currently maintains and updates Atlantic tropical storm name lists?
4. What are the first four names that will be used to name tropical storms or hurricanes this year?

Information taken from the NWS Tropical Prediction Center Web site about Storm names at <http://www.nhc.noaa.gov/aboutnames.shtml>

See answers on Page 35.



A graphic display of the warning of Hurricane Charley used by the National Hurricane Center in Miami, Fla.

AFWA gets new commander

Story and photo by Paige Hughes
AFWA Public Affairs
Offutt AFB, Neb.

Col. John M. Lanicci assumed command of the Air Force Weather Agency from Col. Charles L. Benson, Jr. in a change-of-command ceremony held here June 2 at the Offutt Club.

Brig. Gen. Thomas E. Stickford, Air Force Director of Weather, Washington, D.C., presided over the ceremony.

Gen. Stickford praised Colonel Lanicci's accomplishments during his military career and expressed his confidence. "Colonel Lanicci certainly made tremendous contributions to Air Force Weather through his outstanding vision and ability to bring structure to the strategic planning process," said Gen. Stickford.

In his remarks, Colonel Lanicci laid the foundation for his tenure as commander. "We will support our operational units around the world and work hard to help them do their jobs even better in the future through smart and efficient planning and execution of major weather technology programs, in both the terrestrial as well as space environments," said Colonel Lanicci. Air Force Weather Agency maximizes the nation's aerospace and ground combat effectiveness by providing accurate, relevant and timely air and space weather information to Department of Defense, coalition, and national users. AFWA also provides standardized training and equipment to the weather career field.

Colonel Lanicci takes command of AFWA with a breadth of knowledge of military weather operations. He spent the past year heading the plans division of the Air Force Directorate of Weather in Washington, D.C. He ensured Joint, U.S. Air Force, and major command documents addressed weather requirements and impacts. His responsibility included the weather requirements for the \$7.6 billion National Polar-orbiting Operational Environmental Satellite System.



Brig. Gen. Thomas E. Stickford (left) Air Force director of weather presides over the ceremony with the passing of the flag to Col. John M. Lanicci, as the new AFWA commander. Chief Master Sgt. David M. Scalia (center), AFWA First Sergeant stands at attention with the flag.

Colonel Lanicci served two previous assignments at Air Force Global Weather Central here, the first as a wing weather officer, from 1980 to 1982, and then as chief of meteorological models from 1991 to 1995.

The Colonel was commissioned through the Reserve Officer Training Corps at Manhattan College, Bronx, N.Y. in 1979, graduating Summa Cum Laude with a Bachelor of Science Degree in Physics. He was a research meteorologist and project manager at the Air Force Geophysics Laboratory, Hanscom AFB, Mass. He commanded a weather detachment in Alaska and a weather squadron at Wright-Patterson AFB, Ohio. His staff experience includes a tour at the Headquarters USAF Directorate of Command and Control in Washington, D.C., where he was Chief, Data Management and Environment Branch, and responsible for the stand-up of the directorate in 1997. Col. Lanicci also spent three years as a professor at the Air War College, Maxwell AFB, Ala.

According to the Colonel, the diversity of opportunity in his career has prepared him for command of Air Force Weather Agency. "It's shaped what I am today, and hopefully will allow me to be an effective commander in this new and exciting assignment," said Colonel Lanicci.

History behind the ceremony

by Paige Hughes
AFWA Public Affairs
Offutt AFB, Neb.

The Air Force Weather Agency flag, bearing the familiar AFWA shield, passed to the hands of Col. John M. Lanicci in a ceremony here.

The passing of the AFWA flag is symbolic of the unit and stands as a long tradition in military history. The flag is also a symbol of honor, a rallying point and a communication device. The flag has a story all it's own.

The blue on the AFWA flag alludes to the sky, the primary theater of Air Force operations. Yellow refers to the sun and the excellence required of Air Force personnel.

The blue and black backgrounds indicate that the organization functions around-the-clock. The anemometer, a primary weather observation instrument, symbolizes the weather mission of the organization. The fleur-de-lis on a staff represents the lineage of the organization's heritage from the Army Signal Corps in France during World War I.

The history of the ceremony is as unique as the AFWA flag. The long-

standing tradition of passing the flag was born out of medieval times.

Ceremonies like the change-of-command contribute to the continuity of military life and reinforce the belief that competence, diligence, valor and devotion to duty are rewarded.

These ceremonies have added color and pageantry to military life, while preserving tradition and stimulating esprit de corps. From ancient times, armies throughout the world have conducted ceremonies to commemorate victory over the enemy, to honor comrades in arms, and to celebrate special occasions such as the change of command.

Chief Braverman retires

AFWA Public Affairs
Staffs report
Offutt AFB, Neb.

Chief Master Sgt. Penny Braverman, Headquarters U.S. Air Force, Directorate of Weather, Deputy Chief of Staff for Air and Space Operations, Chief Enlisted Manager, Washington D.C., retired last month after nearly 30 years of military service. Chief Master Sgt. Jacob Lee replaced Chief Braverman.

As the first female to serve in this position Chief Braverman was awarded the prestigious Women in Military Service for America Memorial Silver Dollar during her retirement ceremony. The coin was presented by Mr. Samuel P. Williamson, Federal Coordinator for Meteorological Services and Supporting Research.

The Women in Military Service for America Memorial honors women who have defended America throughout history and recognizes their patriotism and bravery as a part of our heritage. It recognizes women who have served in or with the United States Armed Forces – past, present, and future – and serves as an inspiration for others.

Likewise, the Office of the Federal Coordinator for Meteorology, through its Federal coordinating infrastructure, has a long and established history of promoting and recognizing strength in leadership and diversity within the Federal meteorological community.

“Our successes have often been drawn from outstanding individuals. Significant contributions and unique levels of accomplishment and leadership warrant special recognition. In this spirit and on behalf of the Federal meteorological

community at large, I take great pride in recognizing Chief Braverman for her exemplary service and leadership, in the United States Air Force and the Federal meteorological community, during a commendable and distinguished career,” said Mr. Williamson.

According to Mr. Williamson the chief has culminated a career of “first” as she was the first woman to serve in the position of chief enlisted manager for Air Force Weather.

“She is a role model in service, sacrifice, and achievement,” he said.

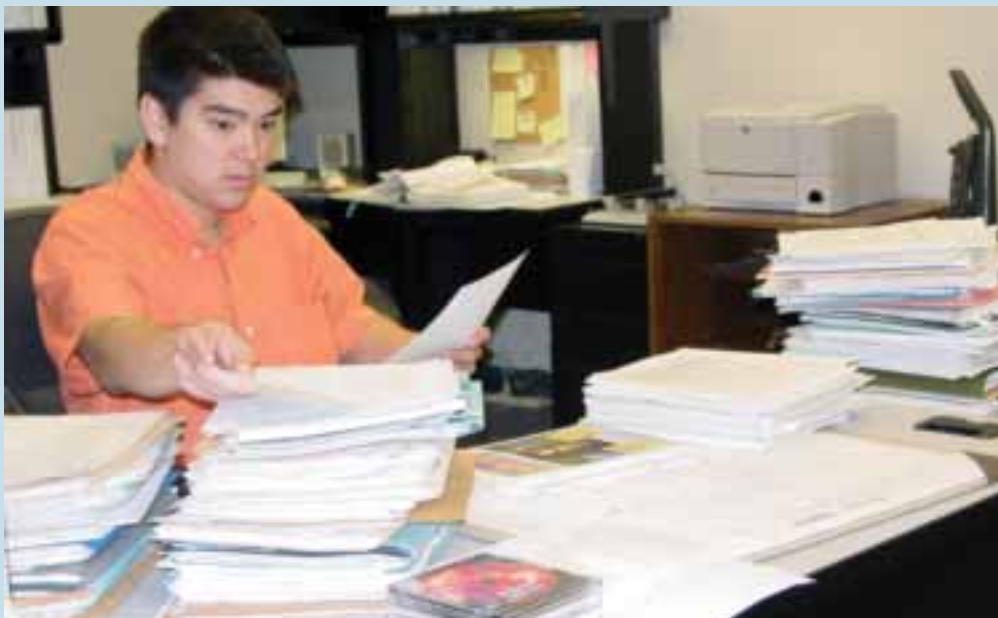
The coin recognizes the tremendous contributions women have made in service to the Nation and is the only legal tender coin issued by the United States to honor military women. Its face recognizes strength of diversity and includes the profiles of five women who represent each of the uniformed military services. The reverse side includes a depiction of the Women in Military Service Memorial.

Mr. Williamson extended his appreciation and gratitude to the Chief for her years of service and dedication.

“Thank you for your contributions to the Federal meteorological community, for your selfless dedication, and for your absolutely outstanding service to our great Nation. Best wishes upon your retirement,” he said.



Chief Master Sgt. Penny Braverman (right) receives the Women in Military Service for America Memorial Silver Dollar during her retirement ceremony.



On the job

Dustin Fichter, son of retired Senior Master Sgt. Darrell Fichter sorts through documents as part of his duties at the Air Force Weather Agency Requirements Branch. Dustin, a Boston University student and a Bellevue, Neb. resident is home for the summer. This is his second year participating in the Summer Employment Program here at Offutt, AFB. Dustin said this is a great benefit as the program provides a unique opportunity for him and other family members to experience working in a military environment while earning some money. Photo by Tech. Sgt. Claudette Hutchinson

'Cream of the Crop'

Weather troop receives
Outstanding Airman of Year award

by Claire Dattilo
43rd Airlift Wing Public Affairs
Pope AFB, N.C.

Most people don't relate weather to combat, said Staff Sgt. Terri Palmer of the 15th Air Support Operations Squadron. But it was exactly this combination where she excelled as a weather operator and earned the selection as one of the Air Force's 12 Outstanding Airmen of the Year.

The 15th ASOS works out of Fort Stewart, Ga., and is part of Pope's 18th Air Support Operations Group.

Reporting with almost perfect accuracy to the Army's 3rd Infantry Division in Operation Iraqi Freedom, Sergeant Palmer transmitted tactical weather observations and weather warnings to 22,000 soldiers.

Her briefings with the commanding general were 99 percent correct and were the first weather reports to come out of Iraq in years.

"Saddam had cut all outside communications," she said, "so it felt good to be the first to report the weather inside Iraq." She earned the Army Commendation Medal for her work there.

"It always feels good to be recognized for doing your

job," Sergeant Palmer said.

A job well done

She started her job as a weather operator for the 15th ASOS in November 2002 at Fort Stewart, Ga. Her observations are briefed to the base for daily planning and to the Air Force Combat Climatology Center in Asheville, N.C., where they use the data to execute worldwide military operations.

Taking on such tasks was a new challenge but in January the ante was upped as she was tasked to deploy for OIF.

"Everything I learned about combat weather, I learned in combat," she said.

She received initial training in garrison with advanced contingency training in theater. She stepped up to the task of providing essential weather information to the Army.



Staff Sgt. Palmer

"For what they threw at me, I think I did all right," she said.

Seeing the brighter side Sergeant Palmer said war changed her, "It makes you a different person."

With no privacy, getting up in the middle of the night and working in sandstorms and rain you really appreciate the conveniences of home, she said.

Describing herself as an optimistic people person, Sergeant Palmer said her ability to find the good in everything made deployment a little easier.

She said a smile goes a long way and everybody appreciated a happy face in the desert.

Back home, many missed her smiling face. As a dedicated volunteer, Sergeant Palmer spends much of her time away from work at the Ronald McDonald House in Savannah, Ga.

There she assists guests and staff and on the third Wednesday of every month

brings Airmen, Soldiers, and Civilians in her shop to cook dinner for the families. "I volunteer anytime I get a chance," she said.

Habitat for Humanity in Savannah, Ga., also benefit from her time.

She is working toward a degree as a neonatal nurse through Armstrong Atlantic State University and hopes to one day experience the joys of being with families as they meet their newborns. "That is my ultimate goal," she said.

In May, the Air Force Personnel Center selected Sergeant Palmer and 11 other Airmen for their superior leadership, job performance and personal achievements.

The winners were honored in September at the Air Force Association's national convention in Washington, D.C., and will serve on the AFA's enlisted advisory council for the next year.



On the Hunt

Airmen begin hurricane-hunting season

by Donna Miles
American Forces Press Service
Washington

“Hurricane Hunters” from the Air Force Reserve’s 53rd Weather Reconnaissance Squadron completed their final mission tracking Hurricane Alex late Aug. 3, but are already on the trail of a tropical storm in the Lesser Antilles.

Meanwhile, the North Carolina National Guard’s 690th Maintenance Battalion are providing emergency resupply and evacuation support along the state’s Outer Banks, the area hardest-hit by Hurricane Alex.

Six-person crews from the 53rd Weather Reconnaissance Squadron began their first mission of the season July 31, at the request of the National Weather Service, according to Air Force Tech. Sgt. James

Pritchett, a spokesman for the 403rd Wing at Keesler Air Force Base, Miss. At the time, Alex was still a tropical depression east of the Bahamas.

Sergeant Pritchett said the squadron flew its C-130 Hercules aircraft nearly around-the-clock out of Homestead Air Reserve Base, Fla., launching every six hours for missions that typically lasted eight to 12 hours.

“When one plane came back, another one was going out,” Sergeant Pritchett said.

Lt. Col. John Talbot, a weather officer for the squadron, said the initial mission for Hurricane Alex was a “low-level invest,” flown about 1,000 feet above the ocean’s surface. At the height of the storm, Colonel Talbot said the crews encountered winds averaging just more than 100 mph.

During the missions, the aircraft crisscross the hurricane in what Colonel Talbot called an “alpha pattern,” using onboard instruments and small “dropsonde” canisters dropped by parachute to provide the most accurate measurements of the

storm’s location and intensity. The canisters relay details about barometric pressure, wind speed and direction and other measurements to the aircraft during their descent until they hit the water, the colonel said.

The aircrews consist of an aircraft commander and co-pilot, flight engineer, navigator, weather officer and dropsonde operator. They fly through rough turbulence and heavy rains during the missions, Colonel Talbot said. The heaviest turbulence occurs in the “eye wall,” the circular area directly around the hurricane’s eye, he explained.

After checking the data collected, the crews forward it directly to the National Hurricane Center in Miami.

Meanwhile, the “Hurricane Hunters” are already focused on their second weather system of the season, over the Lesser Antilles. Colonel Talbot said squadron Airmen typically devote about 1,100 flying hours tracking weather systems between June and November.

“We’ll be busy now through September,” he said.

19 ASOS team return home

Group first weather flight to support Army operations during OIF

by Senior Master Sgt. Rick Keil
19 Air Support Operations Squadron
Ft. Campbell, Ky.

After spending a year in Iraq, one group of Air Force Weather Warriors is finally back home. They were the last five members of the 31 member team deployed from the 19th Air Support Operations Squadron out of Ft. Campbell, Ky., and the Air National Guard units from Minnesota, Florida, and Virginia, to return home. They were the first Air Force Weather unit to complete this yearlong deployment in support of the Army during Operation Iraqi Freedom.

In preparation for this extended deployment they participated in rigorous exercise scenarios, and trained with their Army weather counterparts, at various locations, on the procedures and formats to be used during combat operations. It also required a team of support people back at home base to prepare the required vehicles and equipment for the deployment.

Of course, weather conditions are usually a big determining factor in the success or failure of any mission. As was the case during preparations for this deployment where they were battling the harshest winter the Ft Campbell area has seen in a decade.

Once in Iraq the unit's primary mission was to provide meteorologi-

cal and environmental information to the Army's 101st Airborne Division.

In the months of combat that ensued, the weather flight split into six different CWTs, and operated interdependently. Some were geographically separated by more than 350 miles inside Iraq. During the first 50 days, the flight set up operations at a total of 14 different sites in both Kuwait and Iraq. Operating up to five different locations at any given time, the flight fielded teams from southern to northern Iraq, providing coverage across more of Iraq than any other CWT. Once major combat operations ended, the flight continued to support operations at four different locations for more than 8 months in and around the northern city of Mosul.

During the security and sustainment phase the number of people required was reduced and the first 20 forecasters returned home in May 2003. Weather inputs proved to be a key factor for decision makers during mission planning throughout the operation. Whether it's forecasting the extreme summer heat, or keeping up with the rainfalls, thunderstorms, and low ceilings and visibilities of late fall and winter, the CWTs proved instrumental to the operations success. They also played a key role in the success of the operations which took actions against Uday and

Qusay Hussein in city of Mosul, July 2003, by providing timely and accurate weather support to the aircrew.

The latest technology available to Air Force Weather technicians such as TMOS, IMETS, T-VSAT and First-In Weather System was crucial in providing accurate weather information during these missions. Forecasters were also deployed to Afghanistan for Operation Enduring Freedom.

The accomplishments of the flight throughout OIF are quite impressive. The teams drove deeper into Iraq than any other CWT, covering over 1,200 kilometers from Kuwait to

Mosul. The CWTs provided weather services and

support to the largest contingent of Blackhawk and Chinook helicopters in theater. This helped the aviation brigades to successfully transport people and supplies by air during the combat phase.

They supported 10 brigades and three battalion level air assault missions including the longest air assault in history; which was made up of 1,520 soldiers moving 500 kilometers north from Baghdad to Mosul. The unit also provided vital weather information during the most challenging aspects of the operations as they briefed 145 combat medical evacuation missions during the war.

The cheering crowds that greeted them on that February day have now faded, the guidon is back in its place, and for the members of the 19th ASOS weather flight it's back to business as usual as they continue to prepare and train, ready for the next mission.





Kara Bramhall (left) and friend Ardi give canine officer, Ago a friendly pat while on the neck while Deputy Rob Rice holds onto his partner's leash. Photo by Tech. Sgt. Claudette Hutchinson.

Dog-gone good deed

by Paige Hughes
AFWA Public Affairs
Offutt AFB, Neb.

Kara Bramhall, 13 and her sister Kristen, 11, along with their friend, Ardi Mrasek, 13, presented Cass County with a check for \$1,980 June 15 to purchase protective vests for their city and county canine officers, Ago and Reno.

"It took a long time to raise the money, but it's a great feeling to know we did," said Kara.

Kara and Kristen are the daughters of Lt. Col. Michael Bramhall, deputy director, Air and Space Science, Air Force Weather Agency. The girls began their fundraising for the vests two years ago. They placed donation cans in area stores and recently reached their goal, funds to purchase two protective vests.

"This is a big benefit. The dogs are placed in dangerous situations, and they run the chance of getting hurt," said Officer Pablo Jimenez, Reno's handler.

Last December, Reno was assaulted.

"He was punched several times

in the head, luckily the suspect didn't have a weapon," said Deputy Rob Rice, Ago's handler.

Both handlers have had their canine partners for more than two years and the dogs live with them.

"You not only work with them every day, but you care for them every day, too," said Deputy Rice. According to Rice, there's an attachment that many people don't realize.

Kara, Kristen and Arti did realize the attachment and the need to protect these four-legged officers. They couldn't have been prouder to present the handlers with the funds to help protect their canine partners.

"The vests will provide extra security to our dogs and the dog handler. This is an excellent idea these young ladies came up with," said Officer Brad Kreifel, assistant chief of police for Plattsmouth after accepting the check.

The dogs will be measured for their vests next week and should have them in six weeks.

Airman helps save boy's life

by Jodie Grigsby
AFWA Public Affairs
Offutt AFB, Neb.



When Master Sgt. James Gunderson volunteered to chaperon his youth group's field trip to a local lake July 17, he thought his biggest worry would be making sure the children did not get sunburned. But before the day was over, the Air Force Weather Agency sergeant helped save the life of a 4-year-old boy.

There were no lifeguards on duty at the recreational lake, so Sergeant Gunderson stood about 35 to 40 feet from the water and kept an eye on the group. He constantly scanned the water and counted to make sure he could account for everyone.

Sergeant Gunderson said something in the water caught his eye. He realized it was a small boy floating face down in the water. He said he watched the boy for a second or two to see if he was okay.

"In a moment like that, you hope that he is just playing some sort of game," said Sergeant Gunderson, the NCO-in charge of the agency's national intelligence community weather branch.

Unfortunately, it was not a game.

Sergeant Gunderson approached the boy when he noticed that he was indeed not moving, grabbed him and then turned him over.

"He was blue, and he wasn't breathing," the 20-year veteran said.

As Sergeant Gunderson ran to the beach with the child, he shouted for someone to call 911. He said a million things were racing through his mind.

"You ask yourself, 'Do you remember CPR?' And then ev-

erything just kicks in," he said.

Fortunately, one person in his group was an emergency medical technician and another was a trauma nurse. The pair began to perform CPR. Sergeant Gunderson said he helped keep the crowd out of the way and tried to locate the child's mother, who was not with his group.

It took several minutes to get the small child breathing again, Sergeant Gunderson said, "but it felt like forever."

The child was eventually flown by helicopter to a local hospital for further evaluation and was released the next day.

Sergeant Gunderson said he had difficulty sleeping that night.

"The 'what-if scenarios' just kept going through my head," he said as he visibly shuddered.

When asked how he feels about his new "hero status," Sergeant Gunderson denied that he did anything heroic. He said he had "the easy part," and was just at the right place at the right time.

Sergeant Gunderson's branch chief, Maj. Dan Edwards, disagrees. "He is a hero," he said. "If he hadn't been there, done what he did, that child very easily could've died."

The major credits Sergeant Gunderson's quick action to the training all Airmen receive.

"We are taught situational awareness everyday, whether it is with the mission, antiterrorism, or in this instance, saving a child's life," Major Edwards said.

Did you know?

Drowning is the third major cause of unintentional death in the US, and the second major cause of death for people aged 5 to 44.

Children aged 1 to 4 are most likely to drown in hot tubs, spas and swimming pools. Children aged 5 to 14 most often drown in swimming pools and open water such as rivers, lakes, dams and canals.

Among children ages 1 to 4 years, most drowning occur in residential swimming pools (Brenner et al. 2001). Most young children who drowned in pools were last seen in the home, had been out of sight less than five minutes, and were in the care of one or both parents at the time (Present 1987).

Links to water safety resources

Centers for Disease Control and Prevention

<http://www.cdc.gov/safeusa/water/water.htm>

The National Swim Schools Association

<http://www.nationalswimschools.com/watersafety%20page.htm>



Ammo recovery

Air Force meteorologist discovers ammo cache

by Maj. Sabrina Taijeron
1st Cavalry Division
Baghdad, Iraq



(Above) Master Sgt. Joseph L. Nichols Jr., 9th Expeditionary Air Support Operations Squadron holds up one of the boxes of ammo found during the site survey. (Below) A display of the total number of ammunition found at the site. Courtesy photos.

An Air Force Weather inspection team found 240 rounds of live ammunition near a runway at the Baghdad International Airport during a routine site inspection, June 10.

Master Sgt. Joseph L. Nichols Jr., 9th Expeditionary Air Support Operations Squadron, and other members of a joint US/Iraqi meteorological equipment site survey team said something unusual caught their eyes during the inspection.

"I noticed some odd boxes in one of the airfield runway visual sensors," said Sergeant Nichols.

He said when the Iraqi meteorologists who accompanied Sergeant Nichols during the site survey could not identify the boxes; they immediately decided to stay at a safe distance.

According to Sergeant Nichols he initially thought it might have been an Improvised Explosive Device and so he carefully approached the boxes to examine them. Upon opening the boxes, he discovered there were 240 rounds of 7.62mm ammunition.

Sergeant Nichols said, he didn't know why they were placed there, but he realized it was very hazardous to have them located so close to the runway. The runway is frequently used by many of the coalition forces aircraft.

Concerned about the ammunition falling into the wrong hands, he immediately turned them over to the Army's 1st Cavalry Division's ammunition point.

Operation Location-B closes

Combat weather center OL closes after 8 years

by Maj. James R. O'Connor
Air Force Combat Weather Center
Weather Technology Division
Hurlburt Field, Fla.

Operating Location B, Air Force Combat Weather Center, White Sands Missile Range, New Mexico closed its doors in June after eight years of providing liaison support to the Army Research Laboratory. The one-person operating location served as the Air Force Weather Liaison for the ARL's Battlefield Environmental Directorate and the Integrated Meteorological System, the Army's digital system to integrate weather intelligence into the Army Battle Command System.

The office served as a liaison between AFW and Army operational issues with the IMETS program and provided an AFW technical interface for ARL technological efforts since 1996. The were transformed in 1992 from previous designation of OL-N, Headquarters Air Weather Service, to its current function as the primary technical transfer and IMETS liaison between AWS and ARL.

It also served as the primary AFW focal point for coordination of combat weather teams operational issues involving the IMETS. The office leader was the only Air Force voting member on the IMETS Software Configuration Control Board, and served as the Chair of the IMETS Software Users Review Group and was an AFW member of the Tri-Service Integrated Weather Effects Decision Aid Requirements Working Group.

The functions and responsibilities of this office have been transferred to various agencies, such as departments at the US Army Intelligence Center and Fort Huachuca and the Air Force Weather Agency.

M2M

Digital exchange of knowledge to enhance human decision making

by Maj. David Bacot
HQ USAF/XOO-WR
Washington, D.C.

Information is the raw material that facilitates command and control of military forces by decision-makers. The speed of modern warfare witnessed in Afghanistan and Iraq reinforces the requirement to move the right information rapidly to the right place at the right time. The C2 process involves assembling complex data and information into a combined set of knowledge from which a commander makes decisions to employ military forces. Even with the automation of many of the processes, the final step still involves produc-

ing briefings and packaging of information for the decision-maker. These briefings normally contain information on weather, intelligence, logistics, and operations and assembled mentally by the decision-maker before providing commands.

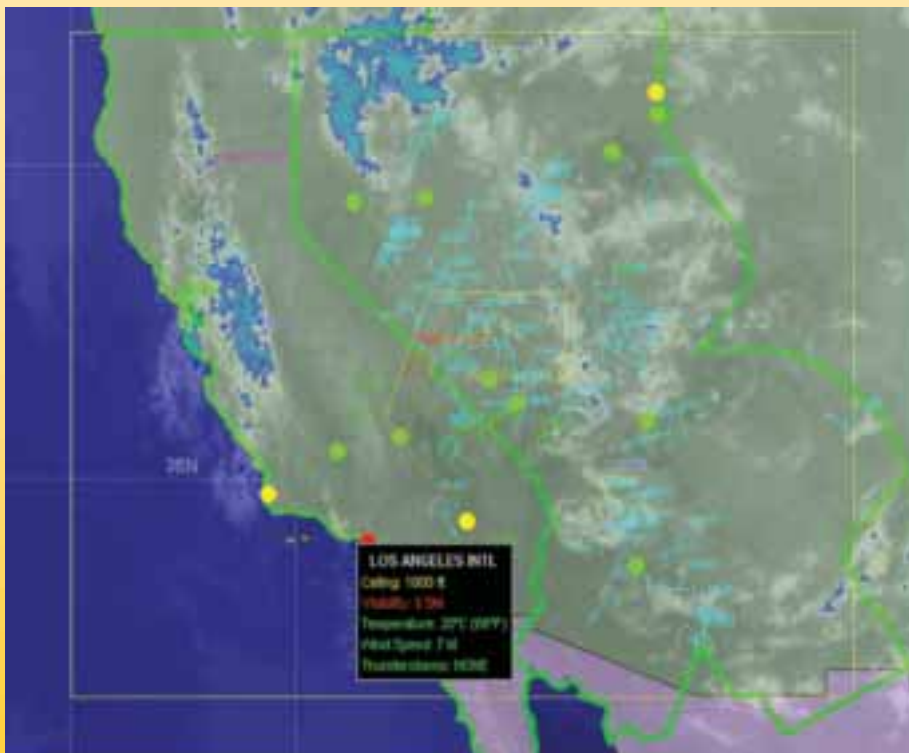
The “last ten yards to the decision” are often the most difficult – is enough accurate and timely information available to make the best decision?

Just as more information is gathered about the atmosphere by combining or overlaying different meteorological elements to form one image, commanders make more informed choices when the different elements of a decision, including weather, can be fused together with the whole to provide more knowledge than the briefings alone can provide. However, as the complexity of operations has skyrocketed, it has become increasingly more difficult for people to identify, digest and track all of the factors affecting a decision. Could machines do a better job of managing the data?

Nowhere is this more accurate than at the Combined Air Operations Center. Within the CAOC, a weather specialty team provides weather forecasts to teams planning and executing air and space operations. The

WST is essentially a combat weather team within the CAOC that tailors data and products received from the operational weather squadron and other Meteorological and Oceanographic centers to produce natural environment impacts that are factored into every operational decision. The WST is everywhere in the CAOC and impacts every process and decision. The sooner accurate weather conditions and its impact can be accounted for, the less likely weather will hinder operations and the more likely our forces will be able to exploit the environment to their advantage.

When planning operations, decision support systems can assemble data and information to provide a variety of “views” of how an operation might unfold (succeed or fail), given the variety of impacts. Knowledge of these different views can help planners optimize the plan, mitigating or exploiting certain factors to gain the effects or outcomes desired by the commander. In monitoring ongoing operations, the common



Bases color-coded for take-off and landing conditions overlaid on the Common Operational Picture along with weather satellite, aircraft, threats and ground elements shorten the time it takes to make time-critical decisions during the heat of battle.

Weather

operational picture provides the decision-maker the means to monitor the execution of the plan through visual depiction of all of the elements in the same view, anticipating areas where changes are needed early enough to maintain operational momentum or react to enemy actions/reactions.

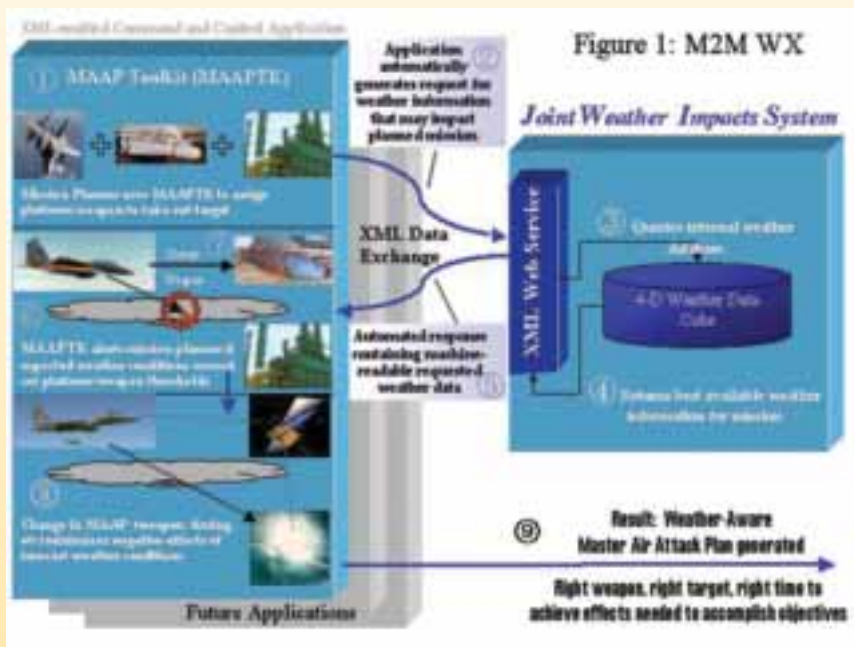
The concept of machine-to-machine, or “M2M,” envisioned by Gen. John P. Jumper, Air Force Chief of Staff, presumed that networked systems communicating without human assistance can gather more information together faster than humans, ultimately increasing the knowledge of a decision-maker. However, machines that need data and information must be able to interact with the machines that provide that data and information.

Air Force Weather operations, particularly under reengineering, depend heavily on M2M concepts. As we have evolved from hand-plotted and analyzed weather charts and rule-of-thumb impacts to Internet-delivered, auto-updated briefs with color-coded, visualized impact displays, AFW has essentially been moving toward M2M for years. However, the critical “last ten yards” of the decision is often still provided as a separate brief and is not fused with the rest of the decision elements. M2M for weather means to provide a standard template, a developer’s toolkit of computer code, for other C2 systems to access weather systems and retrieve the weather data, products and the impacts required, and integrate it so it adds value to the decision-maker’s process.

The M2M weather template, called Joint METOC Brokering Language, was developed with the other services, and is the standard data transfer methodology for all systems with Department of Defense terrestrial, space, or oceanographic data requirements.

AFW participated in the Joint Expeditionary Force Experiment 04 to experiment and refine M2M WX as a concept for employment across the CAOC. JEFX 04 took place in a fictional theater in the desert southwest, with C2 elements distributed across the U.S. The CAOC, located at Nellis AFB, Nev., experimented with different technologies and processes to see which ones can improve C2 at the operational, theater levels of warfare. The M2M WX initiative focused on applications using JMBL to access the Joint Weather Impact System to retrieve METOC information for the different decision support systems in the CAOC.

As M2M WX was demonstrated in the pre-experiments leading up to JEFX, called Spirals, more application and process owners have seen its capability and are asking to add M2M WX to their systems. The processes driving these



The Master Air Attack Planner includes weather to allow decision-makers the ability to exploit weather in advance rather than chasing weather during execution.

systems have always required weather impacts, but until now it was deemed “too hard.” JEFX proved the opposite to be true: with the M2M WX template, all systems can build automatic weather requests into their systems.

As many more decisions are made, many more questions will be generated – but at a deeper level. We must be prepared to go beyond the forecast and provide more refined knowledge about the natural environment’s impact on weapon systems, the potentially thousands of “sensors and shooters,” from the individual infantryman to the network of UAVs, fighters and bombers that keep the enemy off balance and give us the advantage.

At the center of every operation is a decision-maker. From a two-ship element of fighters or an infantry platoon to the Joint Force Commander, weather’s impact is a factor in every desired effect. To remain valuable to Air Force and Army operations, AFW must transform away from the era of briefings and dissemination toward integration of weather impacts at the machine level to enhance command and control for the warfighter. The M2M WX template will ensure all of the decision-support systems have the weather impacts that allow commanders to anticipate and exploit the environment as part of the path to victory. AFW personnel will continue to ensure that the weather intelligence we provide is timely, accurate and relevant.

Mother Nature combats Father Time

by 1st Lt. Corinna M. Jones
Joint Expeditionary Force Experiment 2004 Public Affairs
Nellis AFB, Nev.

Mother Nature is a force to be reckoned with. Warfighters know weather can be more dangerous than the enemy itself, which is the logic behind the Joint Expeditionary Force Experiment 2004 Machine-to-Machine Weather Innovation initiative (M2M WX), providing automatic weather information to the Combined Air and Space Operations Center.

At JEFX, the M2M WX initiative provides instantaneous information from the Joint Weather Impact System Web-service database. The JWIS relays information such as satellite imagery, observations, modeled weather and forecaster generated information, and automatically and instantly displays the weather to both the computer generated maps used for mission and target planning and the Common Operational Picture, the large command and control screens observed in the CAOC. Through M2M WX, both applications being demonstrated in JEFX 04, provide instant weather information to the people planning and executing the war.

In the past, wartime mission planning was done with maps and grease pencils. Although grease pencils are rarely used anymore, weather professionals still rely on manual methods of updating forecasts and personally contacting mission planners when the weather changes. During JEFX, most manual methods are being removed as M2M WX sends information directly to the computer-based Master Air Attack Plan Toolkit, automatically assessing the weather of the take-off base, target area and recovery base.

The weather assessment can be read either in a table format or on a computerized map. Each assessed area comes up color-coded: green, meaning no impact; yellow, marginal impact; or red, significant impact. The program explains why an area comes up moderate or significant to give planners other options.

"Rather than canceling a mission, we can know to change the weapon system, aircraft, launch or recovery base," said Harry Druckenmiller, MAAP weather forecaster. "It saves operators a lot of time and keeps them from needlessly rescheduling or retasking a mission when perhaps only an element of the mission needs to change."

Mr. Druckenmiller said not being able to consider weather ahead of time was a major lesson learned in Operation Iraqi Freedom.

"This is going to benefit the warfighter tremendously because they can plan missions around the weather ahead of time so that weather impacts will be minimal," he said. "By not taking weather into account ahead of time, we risk the chance of scrapping a mission that otherwise could have been planned around the weather and been successful."

As for providing weather information to command and control operators, weather personnel currently provide warfighters with information through briefings. The time it takes to manually update maps and personally brief warfighters could



Capt. Eric Harten, Electronic System Center surveillance and reconnaissance officer from Hanscom Air Force Base, Mass., discusses with Lt. Gen. Charles L. Johnson II, ESC commander, how "Paul Revere," a flying laboratory being used by the Air Force, supports the Joint Expeditionary Force Experiment 2004. JEFX 04 is an experiment that assesses new and emerging technologies that can be quickly fielded. The M2M is a new piece of weather equipment fielded during the exercise. Photo by 1st Lt. James L. Bressendorff.

come at a high price to the people fighting the war on the ground and in the air. However, the M2M WX automatically updates weather information, which is integrated into the COP viewed by commanders and operators in the CAOC.

"Just like they know where the intel threats are, they know where the weather threats are too," said Capt. Dean Carter, JEFX chief of weather support. "This is not a tool for weather people; it's to show weather to operators."

Captain Carter said currently weather professionals manually update power point briefs, which are viewed as a separate picture on the CAOC screens. Commanders observe the map separately from the weather report to put the pieces together.

"I worked the CAOC during OIF and we were PowerPoint jockeys. We read the weather, typed it into the PowerPoint slide, put it on a floppy disk and loaded it into the coalition network that broadcasted on the wall," Captain Carter said. "In JEFX, the weather is being communicated directly to the coalition network. Now I have more time to do other parts of my mission such as time-sensitive targets. It's a tremendous time saver."

M2M WX is a new initiative for JEFX. The experience gained through this experiment will be immediately applied to the process of establishing further machine-to-machine weather linkage at all levels of warfare. The payoff will be speed-of-light weather situational awareness for mission planning and execution.

"It's through technology that we are able to improve warfighter situational awareness and exploit the weather for battle," said Lt. Col. Lucy Lee, Initiative Sponsor representative for M2M WX. "What used to be done by grease pencils and other manual methods are now instantly color coded. Time is the critical factor."

Although only two M2M applications were experimented during JEFX 04, the M2M template has value to all AOC systems requiring weather information and the impact weather has on a mission.

Hyper-X

Weather Warriors key in launch success

by Steven Weaver
HQ AFMC Air Traffic Flight Operation and Weather
Wright-Patterson AFB, Ohio

Team members from the 3-D Research Company's Scientific Services Division Weather Operation branch at Edwards Air Force Base, Calif., were at the scene to provide much needed weather support, which was integral to the successful launch of NASA's X-43A Hyper-X vehicle, March 25 to 27.

The flight is part of the Hyper-X program which is a \$250 million research effort to demonstrate alternate propulsion technologies for access to space and high-speed flight within the atmosphere.

During the two days leading up to the launch, weather technicians were deeply involved in the weather aspects for planning the mission. Attached to the underside of the wing of the B-52 aircraft, the X-43A has unique weather sensitivities before the flight, during the flight and leading up to the release of the test vehicle. The unpiloted 12-foot-long vehicle, part aircraft and part spacecraft, was dropped from a B-52 aircraft. Once dropped from the B-52, it was boosted to nearly 100,000 feet by a Pegasus rocket and released over the Naval Air Warfare Center Weapons Division Sea Range off the coast of southern California. It flew

on its own power at approximately 5,000 mph.

On the day of the mission test, Ms. Barbara Castillo launched two rawinsonde weather balloons to the height of 100,000 feet. She said the weather information obtained from the balloons was used for the go/no go decision before the flight and also for the post flight analysis of the mission.

The flight test provided unique free flight data about hypersonic (faster than Mach 5) air-breathing engine technologies that have large potential pay-offs. The program, which began in 1996, signifies the first time a non-rocket, air-breathing scramjet engine has powered a vehicle while it is in flight at hypersonic speeds.

Researchers believe these technologies may someday offer more airplane-like operations and other

benefits compared to traditional rocket systems. Rockets provide limited throttle control and must carry heavy tanks filled with liquid oxygen, necessary for combustion of fuel. An air breathing engine, such as on the X-43A, scoops oxygen from the air as it flies. The weight savings could be used to increase payload capacity, increase range or reduce vehicle size for the same payload.

Information courtesy of NASA at <http://www.nasa.gov/missions/research/x43-main.html> and CNN at <http://www.cnn.com/2004/TECH/space/03/28/hypersonic.jet.flight/>

U.S. Air Force combat veteran named Top Weatherman

by Tam Cummings
Fort Hood, Texas

Senior Airman Kylee Reynolds, 3rd Weather Squadron, 3rd Air Support Operations Group, Fort Hood, Texas was named Top Weatherman for 2003 when she was awarded the prestigious Dodson Award.

The Dodson Award honors the "leadership abilities and overall excellence by an airman. Airman Reynolds said she has found a calling in predicting the weather and advising Army pilots about flying conditions.

"The Army doesn't do its own weather," she said recently. "All weather people that support the Army are in the Air Force. People don't know the Air Force is here (with the Army). And they certainly don't expect to see us out in the field."

Being out in the field draws the most enthusiasm from the 5 feet 3 inch forecaster. There, under battle conditions, preparing weather reports for the soldiers and Army pilots is where she said she does her best work.

"Anybody can sit behind a desk and type and forecast the weather, but the real trick is to do it while you're getting shot at. You get desensitized to it," she explained. "You hear gunshots, but after a while, you don't even turn to see where they're coming from."

Her ability to fulfill her mission in battle conditions has brought Reynolds some high recognition. The Air Force gave her the Dodson Award to honor "leadership abilities and overall excellence by an airman."

The award recognizes Reynolds as "the outstanding Air Force weatherman." It is named for Staff Sgt. Robert Dodson, who parachuted behind enemy lines and set up an observing site to support Allied troops landing at Normandy on D-Day. The nomination for the award came after Reynolds won Airman of the Year for the 3rd Weather Squadron and Airman of the Year for the 3rd Air Support Operations Group.

"My favorite part of the job is deploying to the world and its real world missions. I was briefing pilots and forecasting weather for them, it was great to be a part of the team. When I got back from Iraq in August 2003, I immediately volunteered to go back. I told them to put me on the list," she said.

Reynolds is getting her wish, she will deploy back to Operation Iraqi Freedom at the end of June.

Reynolds joined the Air Force when she was 18. "I was living in Germany with my sister, who is married to a soldier. I needed discipline. I wasn't ready for college and so I started researching which branch I wanted to join. I wanted to do weather.

As a joke I asked the Air Force recruiter to find me the easiest desk job he could and my desk ended up being in Iraq," she laughed. But the weather in Iraq turned out to be exactly what the young airman wanted, a challenge to predict because of the turbulent winds, heat and dust.

"The weather is about 130 degrees hotter than New Hampshire," she said. "It's always hot and dusty. We worry because aircraft can only fly with certain visibilities. Any time the wind picked up and blew dust it makes visibilities drop, which hinders flying operations. We forecast off models and real time data. We can tell winds, visibility and any significant weather like a thunderstorm."

Storms in Iraq can be especially tricky and dangerous to pilots and ground crews. "We always worry about gust fronts from collapsing thunderstorms," Reynolds said. "The storm builds up real big," she lifts her arms to demonstrate the storm, "and then collapses and pushes the wind out. That gust can flip a helicopter over on the ground or in the air."

When not preparing combat weather reports, Reynolds said weathermen



Senior Airman Kylee Reynolds advises Army pilots about weather and flying conditions. The Air Force gave her the Dodson Award to honor "leadership abilities and overall excellence by an airman." U.S. Army photo

are on guard for the physical elements of the Army.

"We pretty much provide resource protection. The amount of equipment on this post (Fort Hood) totals billions of dollars and we put out watches and warning advisories so equipment like airplanes can be protected in bad weather."

Reynolds will be stationed in Taji, Iraq when she deploys. One soldier will be particularly excited to see the young weatherman return to the desert. Her husband, Army Sgt. Robert Reynolds, 6-15 Aviation Support Battalion, attached to the 1st Cavalry Division, is already there. "He deployed in March," she said smiling, "and we will work about 50 feet from each other."

Exercise your right to vote

Federal Voting Assistance Program available for military, civilians at home and abroad

by Capt. Charles Spicer
AFWA Plans and Programs
Offutt AFB, Neb.

The Federal Voting Assistance Program provides U.S. Citizens worldwide a broad range of non-partisan information and assistance to facilitate their participation in the democratic process - regardless of where they work or live.

The FVAP has three distinct goals. They are to inform and educate U.S. Citizens worldwide of their right to vote; to foster voting participation; and to protect the integrity of, and simultaneously enhance, the electoral process at the Federal, State and local levels.

Under the FVAP, unit and detachment commanders appoint a unit voting assistance counselor, for every 100 member unit. This includes military members of any service, and civilians and contractors, in overseas areas only. The UVACs provide voting assistance through one-on-one contact with the people they will serve.

They also provide individuals with absentee voting information for their home states, including election dates, absentee registration, and voting rules. However, only election officials within a state can determine a person's eligibility to vote within that state.

They also make in-hand delivery of

Federal Post Card Applications to all assigned personnel of voting age, including family members, for use in general, primary, and special elections. During even-number years, UVACs issue the FPCAs no later than August 15 to eligible voters who reside outside the territorial limits of the continental United States and no later than Sept. 15 to those who reside within the CONUS. The general election date this year is Nov. 2.

Information on specific elections and application procedures can be found at the Federal Voting Assistance Program Web site at <http://www.fvap.gov>. Among the publications available at this Web site are the *Voting Assistance Guide*, voting news releases which are periodic, time sensitive notices that alert citizens of special elections and other important voting issues, and the *Voting Information News* which is a free, monthly newsletter published by the FVAP.

Another resource is the Department of Defense Voting Information Center. It provides information on elections and recorded messages from candidates, governors, U.S. Senators, and Representatives. Callers can have their calls forwarded to an FVAP staff member, where they can leave a message for the FVAP or have their call forwarded to their Senator's, Representative's, Governor's or State Chief Election Official's office.

The VIC also answers questions concerning voting, elections, candidates, or issues that cannot be answered locally. Refer to the current edition of the VAG for telephone numbers and calling instructions.

For more information about voting, contact your UVAC.

Don't forget to register

General elections are approaching and Air Force voting officials here want to remind everyone to register to vote.

The Department of Defense recently announced that it has worked out a plan with the United States Postal Service to get absentee ballots to overseas members faster but registering to vote is the first step to acquiring a ballot.

"Getting registered to vote is not a difficult process, it's just a matter of making it a priority," said Lt. Col. Lee Shick, Air Force voting action officer.

Deadlines and state specific rules on voter registration can be found on the Federal Voting Assistance Program web site at <http://www.fvap.gov>. The site includes a list of 10 things to do to ensure your vote counts.

"Our goal is 100 percent contact with every Airman by a voting representative," he said.

The opportunity to vote has been emphasized as a command responsibility and the installation voting officers play a key role.

"We want to make sure each individual gets the word about voting and that they have the tools and information to apply for an absentee ballot and vote," Colonel Shick said. "If Airmen can't get registered online, installation voting officers will have a supply of federal postcard applications."

Contact information for base voting officers is available at local military personnel flights.

(Information courtesy of AFPC located at Randolph AFB, Texas)

AFWA hits homerun with First-in Weather System

by Bradley Kassube
AFWA Communication and Information Branch
Offutt AFB, Neb.

Weather is a key-contributing factor in our military's information superiority, which directly relates to decision dominance over our adversaries. The Air Force Weather Agency's motto is "Anticipate and Exploit the Weather for Battle," but this is not always as easy as it sounds, especially as a first-in warfighter.

First in usually means you deploy without the robust communications needed to fully support the large bandwidth requirements of deployed weather personnel necessary to support military operations. Existing operational capability is centered on a Tactical Very Small Aperture Terminal or common user communications when available. Both capabilities meet the bandwidth requirement; however, this ties weather support operations to fixed locations, and stand up of these communications services can take days, and in some cases weeks, to be up and operational.

As witnessed in Operation Iraqi Freedom and Operation Enduring Freedom, our forces continually pushed forward at an unprecedented pace and are constantly on



Tech Sgt. Billy Cowgill demonstrates the use of the First-In Weather System. The FinWS continues to be a success as military operations expand into areas with limited communications. It has rapidly become the system of choice for those first-in units without robust communications. Courtesy photo.

the move in remote locations. There were no dedicated weather communications capabilities that could keep up with this pace of operations and support warfighters in remote locations. In the case of T-VSAT, the broadcast footprint for current Southwest Asia operations is currently on the outer edge and suffers from intermittent signal loss, significantly impacting combat weather team's ability to accomplish their mission.

Weather is a key contributor to decision dominance, but in most cases weather data is only valuable when it is provided in real-time. What was needed was a gap filler to provide those first-in warfighters a mobile capability that could immediately start to receive data upon 'hitting the beach.'

L-Band broadcast was selected after an extensive business case analysis explored expanding current capabilities like Iridium satellite phones and the T-VSAT. Key weight factors in the business case analysis were cost, which was tied to an associated dollar cap, and schedule such as could the system be delivered prior to the start of Operation Iraqi Freedom. The L-Band broadcast capability was selected because it was the only service that could be delivered within defined cost constraints and had commercial vendors with existing geostationary satellites in place to provide footprint coverage for the area of interest.

Leveraging this core communications capability and using an end-to-end systems approach, AFWA teamed with commercial L-Band service providers to develop a warfighting capability called First-In Weather System. FinWS is made up of four primary pieces that are all integrated to provide a robust one-way data dissemination system. First, there is the production server at AFWA that

collects, processes, and employs data compression techniques to package the requested weather products into a single file that averages about 625KB.

Each of these files hold approximately twenty weather products to include Joint Air Force/Army Weather Information Network products, operational weather squadron products, satellite imagery, and alpha-numeric products. Each broadcast takes only about one to two minutes to complete.

These files are then sent to the AFWA's Weather Product Management Distribution System, which uses file transfer protocol to send the file through the Non-secure Internet Protocol Routing Network. Once the files are received at the Defense Information Systems Agency gateway router, they are shipped to the WorldSpace server located in South Africa. At this point they are encrypted and passed to the WorldSpace uplink antenna for transmission to the AFRISTAR satellite, which then broadcasts the file over the coverage footprint.

The satellite has three separate transponders, which can broadcast into three separate areas of interest and can easily be reconfigured at the South African ground station. Combat weather teams on the ground know when the transmission will take place and when to turn their systems on. The users will either configure the digital receiver to interface with the small mobile antenna or the larger antenna, which is used when units can accommodate outdoor mast mounted equipment. Once received, the file is decrypted and unzipped. The file is automatically passed to a laptop. Files can then be saved, printed, or transferred to other systems for use. The FInWS is very compact and can be set up quickly and used while on the move just as long as the line of site for the antenna is not obstructed. There are 24 transmissions a day which averages 15,000,000 bytes, or 444MB per month.

AFWA conducted a rapid proof of concept prototype test with a single system, accomplishing a week of testing by manually pushing products to the uplink site in South Africa who then would manually transmit the files to the broadcast satellite. With a successful test accomplished, Air Staff approved the purchase of 100 systems. Teams at AFWA packaged the equipment into single containers so they could be shipped as a single kit. While the system was being built, the systems management division at AFWA worked out the processes needed to automatically build and transfer the weather data every 60 minutes. Before any systems were sent forward, a team of two

specialists were sent to the island of Crete to run an end-to-end live broadcast test and iron out the system user checklist and user manual.

The primary method of measuring success was the weekly feedback received from field users. This information was continually tracked through the 24-hour customer service center at AFWA and any adjustments to the data content were immediately addressed. In the case of meteorological systems, if they did not provide an added value to the mission they would not be used. This is even more prevalent when it comes to combat weather teams who will only carry the bare minimum due to their mobility requirement. If something is not meeting a requirement, there will be immediate negative feedback.

According to a 101st Airborne Weather Warrior from the Operation Iraqi Freedom lessons learned report, the Air Force Weather Agency has hit a homerun with this equipment in the war. "It's a complete tactical weather station that fits in a rucksack along with personal gear. I know this because I did it." he said.

The FInWS continues to be a success as our military operations expand into areas with limited communications, and it has rapidly become the system of choice for those first-in units without robust communications. The FInWS is a great example of using commercial-off-the-shelf communications service and coupling it with existing data and data dissemination capabilities to provide the warfighter key information which is an enabler to decision dominance over the enemy.

What is next? AFWA recently teamed with STRATOS to run a proof of concept test using the regional broadband global area network in-theater for a first in, on the move, Internet access capability. While deployed, Master Sgts. Larry Green and Donald West, integrated a FInWS laptop with STRATOS provided software and transceiver and were able to log on to the Internet on the move, and quickly download and upload products to and from the Joint Air Force Army Weather Information Network and Operational Weather Squadron Web sites. "Within minutes we had satellite lock and access to all the data we needed," said Sergeant West.

Col. David Handle, Director of AFWA Communications and Information said, "The BGAN capability is our next step in supporting the first-in/mobile battle field airman. Moving from a FInWS warrior push to an on the move Internet access is definitely a leap forward and will be closely looked at as a future warfighting capability."



Staff Sgt. Dominique Atkins AFWA Plans and Programs, a volunteer during the AFWA Annual Open House demonstrates weather equipment functions to Adrienne Nelson sister of Airman 1st Class Brandon Nelson, AFWA SCSA during the AFWA Annual Open House, July 2. Sergeant Atkins explains the varied functions of deployable weather equipments. Photos by Tech. Sgt. Claudette Hutchinson.

AFWA open doors to employees, families, friends

by Air Force Weather Agency Public Affairs
Staff Report
Offutt AFB, Neb.

The Air Force Weather Agency opened its doors to friends and family members of its employees as it hosted its first Annual Open House, July 2.

The open house was a success with more than 60 guests of AFWA employees visiting 11 locations. This success was attributed to the volunteers of the sections who conducted the briefings, explaining the important mission of each section.

They were briefed on AFWA's solar mission as well as the various equipment Air Force weather technicians take to the

field during a deployment.

The aim of the Open House was to familiarize visiting friends and family members with the diverse functions of Air Force Weather, the units they support and the critical role of the active duty member on the success of the entire mission.

Mr. Richard Penc a contractor at AFWA said this is a good experience for daughter Heather to learn about jobs in the Air Force. "One of her goals for the future is to join the Air Force," he said.

According to Ms. Jodie Grigsby, AFWA Public Affairs deputy director, the event, with the help of the 24 volunteers, showcased to the family members the critical role of the active duty members in getting the job done.



(Above) Capt. Herb Keyser (right) and Staff Sgt. Robert Cook AFWA Space Weather Operations Center briefs Ms. Arline Rockwood and grandson, Thaddeus Richerson on the SpaceWOC mission, what space weather is and how they monitor it, and how it impacts the Department of Defense customers.



(Photo left) Staff Sgt. Dominique Atkins, AFWA plans and programs, demonstrates the wear of the deployable gear to 9 year old Heather Penc, daughter of Richard Penc, an AFWA contractor, during the Annual AFWA Open House July 2.

(Right) Master Sgt. Daniel George AFWA XPSD disseminations branch project officer demonstrates the functions of the T-VSAT to Maj. David Holt, AFWA XOG, wife Debbie, son Garrett, 12, and daughter Alyssa, 10. The Holt family was one of the 60 families who attended the AFWA Annual Open House, July 2.



AFW team supports sister service

by Maj. Sabrina J. Taijeron
1st Cavalry Division
Baghdad, Iraq

Weather support to the Army's 1st Cavalry Division is just one of the missions of the 9th Expeditionary Air Support Operations Squadron stationed at Fort Hood, Texas, while deployed.

Two four-person combat weather teams support the 1st CD; one team responsible for the division staff located at Camp Victory North Baghdad, Iraq and the second team supports the division's Aviation Brigade located at Al Taji, Iraq. This also includes the support of five geographically separated Brigade Combat Teams, seven helicopter pads, two surveillance balloons, eight Tactical Unmanned Aerial Vehicles, 4,000 tracked/wheeled vehicles and 29,000 soldiers located at 36 camps.

Weather forecasters provide 24-hour weather observations, which are used by every unit in the area of responsibility and transmitted worldwide for other weather agencies and military services. The CWT also provides climatological weather analysis to the division planners as well as weather forecasts up to five days out. The team shares weather support for the Shadow tactical unmanned aerial vehicles with the Aviation Brigade CWT, and for the Aerostat surveillance balloons, located at Camp Victory North and the other in Baghdad's Green Zone. This is a first for this type of weather support.

One of the most important support services the weather team provides is the alerting of units in the AO of incoming hazardous weather. Advisories for thunderstorms, lightning, high winds, heavy rain and extreme temperatures are issued and transmitted well in advance.

Each CWT maintains two tactical vehicles and more than \$2 million in tactical weather equipment. The Air Force forecaster's proficiency in the basic combat skills such as vehicle operations, Night Vision Goggles usage, terrain navigation, aviation weather operations, weapons, field skills as well as first aid procedures, contributes greatly to the mission of the 1st CD.

The four-person combat weather team supporting the Aviation brigade services all aviation assets in the 1st CD. The forecasters stationed at Al Taji produce more than 30 products a day for a wide variety of customers. They provide relevant and current information through various methods such as pilot flight briefings, radio transmissions, telephone and e-mail.

Most importantly they are extremely familiar with the local weather patterns and how the terrain will affect the area and how the weather will affect each aircraft they support. Their expertise ensures the communication channels and transfer of information are never broken.

UAV Icing

One possible solution

by John F. Polander
88th Weather Squadron
Wright Patterson AFB, Ohio

The extent to which an icing event negatively impacts the performance of an aircraft depends largely on many factors. One big factor includes atmospheric conditions such as ambient temperature and the size of cloud droplets. Others are associated with the design of the aircraft and its components such as size and shape of the leading wing edge.

However, the main impact is that these factors cannot be controlled or changed during flight.

This is especially true of the unmanned aerial vehicles. Without a pilot in the cockpit, UAV operators aren't always aware that the aircraft is flying in clouds and accumulating ice.

There are other factors, however, that can be altered in order to mitigate this potentially hazardous situation. Among these is the pilot or operator's ability to change direction, altitude, and even airspeed. In addition, they may choose to take other steps to lessen the danger. The simplest of these is to avoid penetrating and remaining in the clouds if icing was in the forecast along the route of flight. Unfortunately, mission accomplishment, especially during wartime, may preclude this as an option.

Among the many and diversified responsibilities of staff meteorologists at Wright-Patterson AFB,



TAMDAR is designed to measure in-situ temperature, relative humidity and flight level winds.

Ohio, the ability to locate and recognize commercial off-the-shelf hardware and software is key to the successful integration of new technology that will improve warfighter

capability. Once we've determined that a technology is mature and assess its military utility, we disseminate this information to various special program offices who may have a documented a deficiency or requirement. It's then up to the program managers, within those SPOs, to make a determination as to the risk and costs associated with incorporating the new technology into their weapon system.

Another important feature of this technology is that it has been flight tested for more than two years on several aircraft to include the NOAA P3, Cessna Citation II, Twin Otter, and the Piper Seminole. Also, NASA is supporting the regional deployment of TAMDAR sensors in the Great Lakes region. The test period for this deployment is projected to last six months and should result in the collection of more than 80,000 in-flight observations.

Staff meteorologists at Wright-Patterson are ready to assist with the post-analysis and processing of data, and if the final results are verified then the TAMDAR could be one possible solution to the UAV icing problem.



Uniform Test

Air Force Weather shares in uniform transformation, test

by Air Force Combat Weather Staff report
Hurlburt Field, Fla.

Ever been called a “funny looking critter” in uniform? Tech Sgt. Wayne Hardesty, a member of Air Force Combat Weather Center has. He’s one of 44 people at Hurlburt Field, Fla., selected to wear-test the new Field Dress Uniform.

Hurlburt Field is one of nine bases Air Force wide testing the FDU, with more than 300 people participating in the test.

Selected base participants began wearing the FDU in late April, trading in their traditional Battle Dress Uniforms for the next five months. Wear testers have to keep a laundry wear log as well as fill out periodic surveys on the wear and conformability of the uniform.

According to Sergeant Hardesty, the uniform is more comfortable to

wear than the current BDU and so he finds that it’s cooler in hot weather, which he said he’ll give a true test in Florida’s summer sun.

A big advantage of the uniform is that it is extremely low maintenance. It’s made of permanent press materials, which makes it truly a wash and wear uniform. The boots come in dark or light grey suede and a no-shine leather option, keeping them low maintenance as well.

As with anything new and unfamiliar Sergeant Hardesty has had a wide range of comments from the local community, such as the “funny looking critter” comments, to former and active duty members commenting that, “it is about time we had our own uniform.”

The Air Force uniform board launched a Web site (<http://www.uniforms.hq.af.mil/>) for all Air Force members to provide comments about the new uniform.



This airman wears a set of well worn cotton sateen fatigues. The cotton sateen was worn from the 1960s to the mid-1970s



The wash and wear, permanent press fatigues were worn in the late 1970s to late 1980s



Staff Sgt. Wayne Hardesty, from the Air Force Combat Weather Center, puts the Air Force test utility uniform through its paces at the combat weather center. The blue, gray and green tiger-stripe camouflage ensemble includes many new features intended to increase functionality while providing a distinctive look for the 21st century airmen. The uniform’s wear-testing began in January. Airmen from a cross section of Air Force career fields will provide feedback on the fit, durability and functionality of the proposed ensemble which will come in men’s and women’s cuts. Courtesy photo.



The Battle Dress Uniforms (BDU) was introduced in the early 1980s. It replaced the fatigues and is worn currently. The individual on the far right has the Aircrew Style Name Patch worn briefly in the early 1990s and the officer in the center has the subdued insignia which was initially and is currently worn with the BDUs. Photos courtesy of Air Force Weather History Office.

Shadow UP Above

by Senior Airman
Teresa Colwell
9th Expeditionary Air Support
Operations Squadron
Baghdad, Iraq

Think of a pilot sitting in a dark shelter on the back of a High Mobility Multi-Wheeled Vehicle, with joystick in hand, and flying an aircraft that is more than 50 kilometers away. You may probably think this is a flight simulator, however, that's not the case, as this is a normal day for the tactical unmanned aerial vehicle pilots and payload operators in Iraq.

They have, literally, gone where no man has gone before. The UAVs are considered a great success in the Iraqi theater with their ability to fly into areas unseen and unheard of without endangering the pilots.

The 1st Cavalry Division's Combat Weather Teams, located at Camp Cooke in Al Taji and Camp Victory North

in Baghdad, provide the necessary weather support required for the UAV to perform its mission successfully.

According to Master Sgt. Joseph L. Nichols Jr., 9th Expeditionary Air Support Operations Squadron, this is the first time they have provided weather support to the Shadow UAV in a combat zone.

"Back at Fort Hood, the 'Shadow' is just one of the hundreds of aviation customers we support, but for Operation Iraqi Freedom II we have become intimately familiar with the daily operations and weather limitations of one of the Army's newest TUAVs and the missions it is tasked to perform," said Sergeant Nichols.

Weather support in the combat zone for the 1st CD Shadow TUAVs is very detailed. Therefore, it needs two weather teams to support it; one team is responsible for the weather during launch and

recovery, and the second team is responsible for in-flight weather.

As one of the smallest in the UAV class, the 'Shadow' is 11 feet 4 inches long, with a wingspan of 12 feet 8 inches, according to Sergeant 1st Class Robert E. Miller, senior TUAV Non-commissioned officer, Bravo Company TUAV Platoon, 312th Military Intelligence Battalion, 1st Cavalry Division.

During the time since the 1st Cavalry Division has been in Iraq, pilots of Bravo Company TUAV Platoon, 312th Military Intelligence Battalion have flown eighty missions and have more than three hundred flight hours on the logs, explained CW2 Christopher Green, TUAV Platoon senior technician.

"The numerous missions have included target area of interest surveillance, route area reconnaissance, intelligence preparation of the battlefield, situational development, raid security, convoy security, and battle damage assessment," CW2 Green said. Their mission is critical and by having the TUAVs in the air, many lives have been saved by the images they transmit."

Due to its small size the

aircraft is prone to weather sensitivities. They need winds of 25 knots or more at launch and recovery.

Sometimes these conditions can be waived to keep, 'The Bird,' as the TUAV operators refer to it, over the area of interest, explained CW2 Green.

"There are times when a commander may decide to leave 'The Bird' up, even after knowing the forecast that winds would pickup during takeoff and while flying if it is in the best interest of protecting the coalition forces," he said.

Unlike most aircraft that have autopilot, the Shadow must always land in autopilot and the pilots are unable to bypass this system. The autopilot will abort the landing if there is too much of a change in the weather from one altitude to another.

Wind conditions are important to the success of this aircraft, however, there are many other aspects forecasters need to be aware of when supporting the Shadow, such as cloud cover and lightning. Lightning can generate an electrical charge that can disrupt the signal from the pilot to the aircraft. The Shadow TUAV support is very weather intensive and the job requires constant weather updates. Forecasters receive immediate feedback on their forecasts by watching the real-time video feed.

"The job is extremely rewarding and we are proud to be a part of mission that saves life and provides valuable intelligence to the soldiers of the 1st Cavalry Division," said Senior Airman Luis A. Matos-Ramos, 9th EASOS Weather technician.



Did you know?

The aircraft is only 340 pounds with a payload and full load of fuel.
The maximum (dash) speed

is 110 knots. A knot is 1 nautical mile, or 6,076.10 feet, per hour.

Normal cruising speed is 70 knots.

It is equipped with two kinds of cameras: an Electro-Optical daytime camera and an infrared camera. They both have a range of 30 kilometers (18.6 miles).

The aircraft's maximum fuel load is 37 liters (9.62 gallons) of Motor Gas,

which allows it to fly a little more than five hours per flight.

The maximum flight altitude is 14,000 feet.

The Shadow is launched by a pneumatic launcher utilizing compressed nitrogen and a five to one cable pulley system, which catapults the aircraft at 70 knots with a 10-degree climb at the press of a button.

Eye in the Sky



Aerostat balloons conduct surveillance, provide troop security

by Senior Airman
Luis A. Matos-Ramos
9th Expeditionary Air
Support Squadron
Baghdad, Iraq

Before deploying to Iraq for Operation Iraqi Freedom II, the U.S. Air Force's 1st Cavalry Division Combat Weather Team, out of Fort Hood, Texas had no idea they would be supporting two 45-foot long surveillance balloons. The U.S. Army Aerostat surveillance balloon is similar to a mini Goodyear blimp.

They are flown above the compound with visual sensors aboard which are used to watch the surrounding landscape. The balloons have become a welcome fixture both at Camp Victory North and at the 3rd Brigade Combat Team's headquarters.

The on-board camera has visual sensors that target suspicious activity along the perimeter of the compound. It can view vehicles, buildings or any other devices that can be used as targets.

The main mission of the balloons is reconnaissance; providing leaders with real-time video footage of

possible enemy activity. The balloon provides an "eye in the sky," to help protect the forces. It also provides extra security while soldiers perform raids. It is also useful in assessing battle damage sustained from mortar or rocket attacks to the compound. Along with the division's helicopters and Tactical Unmanned Aerial Vehicles, it provides aerial surveillance to the camp and the surrounding areas.

The Aerostat stays airborne continuously except for scheduled maintenance or during inclement weather.

However, according to Senior Airman Teresa Colwell, 9th Expeditionary Air Support Squadron weather forecaster, the Aerostat, like other aviation equipment, has its weather limitations.

"In Baghdad, winds and thunderstorms are the most significant weather impacts. During the summer months, thunderstorms are almost nonexistent, however, during the transitional periods of the year, such as the spring and fall, thunderstorms occur with cold fronts moving through Iraq about every five to seven days. Severe thunderstorms are also possible during the transition

season," said Airman Colwell.

In April, a severe hailstorm hit the Camp Victory North compound; with one and one-half inch size hail falling, according to Air Force Master Sgt. Joseph L. Nichols Jr., 9th EASOS weather NCO-in charge.

"Thunderstorms were present earlier that day, so the Aerostat was not in the air. Had the Aerostat been hovering, it could have suffered damage from the hail and become inoperable. Other than the hail and lightning, winds continue to be most common weather impacts to the Aerostat during the winter and the transitional periods," Sergeant Nichols explained.

The Aerostat has become an effective tool for coalition forces, and an irritant to Anti Iraqi Forces waging terrorist acts against coalition troops. Iraqi insurgents have succeeded in shooting holes in the Aerostat on several occasions. Fortunately, the balloon can sustain some bullet holes. For the coalition forces the balloon is a much-needed "eye in the sky."

This is why members of the 1st CD Weather team all echo the same sentiment, that whether it's the winds, turbulence, lightning and in some rare instances hail, the 1st CD Combat Weather Team is always prepared to support the guardian balloons that watch over the soldiers of, 'The First Team.'



Tech. Sgt. John Dick (standing) 26th OWS weather technician trains 2nd Lt. John Hurley, 26th OWS weather on conducting flight weather briefings. Courtesy photo.

26th OWS - A history of transformation

Squadron welcomes new roles, challenges

by Tech. Sgt. Suzanne F. Miller
26th Operational Weather Squadron
Barksdale AFB, La.

The 26th Operational Weather Squadron has a very proud history, with a long heritage of innovation and adaptation to new challenges. The Squadron was first constituted Sept. 20, 1943 and activated at Orlando Army Air Base, Fla. It was then assigned to the Army Air Forces School of Applied Tactics, Oct. 10, 1943.

The Squadron's mission was to send prospective staff weather officers to school to meet the growing demands in combat theaters. The school familiarized these officers with

not only tactics but also their role in briefing aircrews and to foster relationships between the operations, intelligence officers and each other.

The squadron was deactivated in

1943 and reconstituted numerous times. It was transformed to its current configuration, Oct. 1, 1999 and moved to Barksdale AFB, La., with the responsibility to provide weather support in Kansas, Missouri, Oklahoma, Arkansas, Texas, Louisiana and Mississippi - the seven-state region known as "Tornado Alley."

With its new role, the 26th OWS quickly demonstrated an inherited tradition of innovation and adaptation as it repeatedly answered the nation's call to meet an ever-changing, but always expanding, range of unique missions.

The need to quickly transition trainees to become qualified forecasters was critical, as the entire US military surged, following the September 11, 2001 terrorist attacks. Members of the 26th OWS jumped

into action to support the combat weather teams, which displayed the united efforts of all squadron members. At the same time they tackled a new mission of collecting and coordinating daily weather support packages in support of Operation NOBLE EAGLE, combat air patrols defending the US homeland – which later designated as the unit’s NORTHCOM support mission.

The key to making this happen was the training. Dedicated supervisors provided guidance during on-the-job training and mentored their apprentices to ensure continued progress during their career development courses. This work was vital for apprentices to successfully upgrade to journeymen forecasters.

But other challenges were on tap for the 26th OWS. From May to Jun 2002, all CONUS OWSs assumed point weather warning responsibility for Air Force and Army active duty, reserve, and guard installations in their respective areas of responsibility. The 26th OWS Systems Flight rapidly developed the Theater Resource Protection System to disseminate and track weather-warning support.

Later, in October 2002 the new USNORTHCOM was designated, assuming responsibility for homeland defense and leading the military support for civilian authorities, with the 26th OWS being designated as the primary agent for supporting NORTHCOM.

It didn’t stop there. As with all the OWSs, the mission support of the 26th OWS for “Tornado Alley” regions remain constant during both peace and wartime, coupled with the urgent needs of the Global War on Terrorism. This means that the squadron is not immune from deployments. Therefore, consistent and continuous training must still be conducted in areas such as chemical warfare; self-aid and buddy care and weapons qualifications to ensure the 26th OWS is ready to respond at a moment’s notice. This proved

invaluable during the build-up and execution for Operation Iraqi Freedom.

These new mission requirements, deployments, and a shortage of experienced technicians forced the 26th OWS to surge into action, as they were also challenged by a record-breaking year of severe weather. They rallied in style, running up a tremendous record with 78 percent of their warnings exceeding customer-desired lead-time.

In April 2003, during the height of OIF and the severe weather season, the squadron assumed responsibility for producing aviation hazard charts for the western North Atlantic. This tasking was done to fill the “Atlantic Gap” left by the stand-down of Air Force Weather Agency XOGP in January 2003. The 26th OWS answered the call once more, developing concepts of operation and training packages to handle the new mission. While the plan was placed on hold, the western Atlantic issue remains an ongoing challenge for Air Force Weather and may be part of the 26th OWS’s future.

The 26th OWS has continued to push the envelope with new innovations to accelerate AFW into the future. The pace has been fast and furious. However, because of the dedicated work by the 26th OWS and its coalition team members AFW is poised to revolutionize how weather information is integrated into mission planning and execution decisions.

The key to this success has been the men and women of the 26th OWS. Their continued ability to innovate, adapt, and get the mission done has led to numerous individual and group recognitions. Many Air Force Weather units have done remarkable things in service to our nation over the past few years. However, despite its short history, the 26th OWS has proven itself worthy of its proud heritage of innovation and adaptation.

From the never-ending challenge of forecasting the weather in “Tornado Alley,” to helping to shape the future of AFW, the 26th OWS continues to push the envelope at full afterburner to make things happen.

Weather and War

Fast Facts

The Air Force Weather Agency provides data collection, dissemination, and computer modeling. The operational weather squadron provides forecasts for the particular area of responsibility. The Combat Weather team deploys with their unit, and tailors the forecast to a specific combat mission. The CWT also provides environmental information back to AFWA.

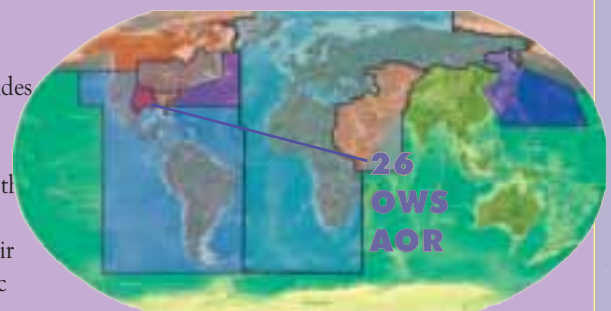
Air Force Weather’s vital role in military operations is to arm decision makers with timely, accurate environmental situational awareness.

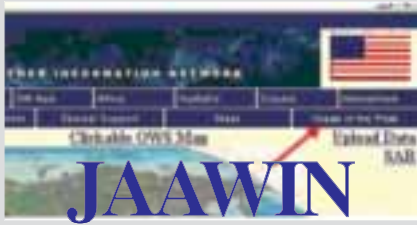
Weather technicians are often among the first people on the ground and the last to leave. To give you an example, within 13 days of September 11th, Special Operations Weather Teams were on the ground in South West Asia. Within three hours of touching ground they were

generating products.

There are approximately 350 Air Force Weather forecasters and meteorologists – active duty, reserve and guard - deployed in support of the war.

Air Force Weather relies on the latest technology and a superb team to create timely, accurate forecasts. Air Force Weather technicians provide weather support to both Air Force and Army operations. Whenever Air Force and Army troops deploy, Air Force weather technicians are on the ground, providing day-to-day environmental situational awareness.





It's worth a closer look

by Mr. Ken Smith
Air Force Weather Agency
Offutt AFB, Neb.

Have you ever clicked our “*Image of the Week*” button? There’s a lot of useful information, especially in the archives. We use the “*Image of the Week*” to spotlight unusual weather events, such as flooding rains, a massive dust storm in Iraq at the start of Operation Iraqi Freedom, Arabian Sea dust, etc. We also use the “*Image of the Week*” to market current and new capabilities that are on JAAWIN or the Air Force Combat Climatology Center’s Web page.

To access the “*Image of the Week*,” go to JAAWIN’s main front page at <https://weather.afwa.af.mil/> or SIPR version at <http://weather.offutt.af.smil.mil/>. The link is just below the scrolling banner. The weekly submissions primarily come from our Metsat Applications and the Technology Exploitation Branch. The archive section goes back to January 2002.

Listed below is a sampling of the topics we’ve had within the last 12 months:

- ◆ 5km MM5 Support for NORTHCOM
 - ◆ Large Smoke Plume in Iraq
 - ◆ IGRADS Flight Level Visibility
 - ◆ Iraqi Dust Storm and the Dust Transport Application
 - ◆ Spotlight on the DCF Cloud Model
 - ◆ Heavy Snow in Korea
 - ◆ Air Force Combat Climatology Center’s Spatial Climatology
 - ◆ Twin Ecuador Volcano Eruptions
 - ◆ Winter Snowstorms Pound USAF Bases (Winter Precipitation Product)
 - ◆ Heavy Rain in Kirkuk—Spotlight on Satellite-Derived Precip Products
 - ◆ Snow Depth Analysis Products
- So, next time it’s a quiet day at work, surf on over to our *Image of the Week*.

Weather Cell - vital to CAOC mission

by Senior Airman Amanda Currier
U.S. Central Command Air
Forces-Forward Public Affairs
Al Udeid AB, Qatar

It really does all depend on the weather when it comes to planning air operations. This holds true at the combined air operations center here, the central hub for air and space operations dealing with operations Iraqi Freedom and Enduring Freedom and in the Horn of Africa region.

The CAOC weather cell staff boosts the effectiveness of air missions in this area of responsibility by offering timely and accurate weather forecasts to operational planners in the center. The planners use the weather information to help them determine the daily air tasking order, or schedule of planned flight missions for the entire AOR.

“We support the planning and execution of the air tasking order,” said Maj. Karl Pfeiffer, chief of the CAOC weather cell. “We deliver daily, and sometimes hourly, information to every division in the CAOC.”

Working together, the CAOC weather cell staff continuously monitors and predicts changes that could benefit or compromise the success of these air missions. They then relay relevant weather information to all those who have a hand in preparing air tasking orders.

Inclement weather such as heavy rain, sand storms or fog can create problems that could jeopardize mission success. By informing CAOC operations planners about these conditions, the weather cell helps planners determine how and when to set up air missions. The weather staff helps planners decide what course of action to take should the weather negatively affect an ongoing air mission.

Bad weather and heavy cloud cover can play havoc with the sensors on intelligence, surveillance and reconnaissance platforms. In such cases, operational planners have to decide which platform will work best for the prevailing weather conditions.

“Part of my job is to schedule [RQ-1] Predator flights,” said Staff Sgt. Wes Quast, CAOC Predator liaison officer. “The weather cell lets me know if it is safe for my aircraft to fly. We also work with them to make sure we get the best use of the (Predator) asset.”

The weather cell works hand in hand with the CAOC Joint Search and Rescue Center. The JSRC is responsible for coordinating the recovery of injured and distressed personnel. The weather staff lets JSRC members know if Mother Nature will pose any problems for their personnel recovery plans and helps the center work around those problems.

“We respond to a number of Joint Search and Rescue Center taskings,” Major Pfeiffer said. “In fall 2003, flash-flooding in Afghanistan stranded friendly forces. Our weather team worked closely with the JSRC to find the best route of flight to the site and then provided constant updates on the weather while the mission was in progress.”

Ultimately, this team effort led to the rescue of 21 soldiers and the successful medical evacuation of three wounded, the major said. The weather cell uses Web-based technology from larger centralized weather facilities such as the Central Air Forces Command Weather Flight at Shaw Air Force Base, S.C.; the Air Force Weather Agency at Offutt AFB, Neb.; and the Air Force Combat Climatology Center in Asheville, N.C.

The center’s weather cell is able to support the entire area of responsibility with a relatively small five-person staff by leveraging the work of weather and computer personnel at Shaw AFB, AFWA, AFCCC and other Department of Defense weather organizations.

“We’re standing on the shoulders of a lot of great people to make weather support happen at the CAOC,” Major Pfeiffer said. “A very rewarding part of this job is seeing mission planning responding to the weather forecast. When our customers have enough confidence in us to make operational decisions based on our outlooks, we know we’re doing the right things.”

Blowing in the wind



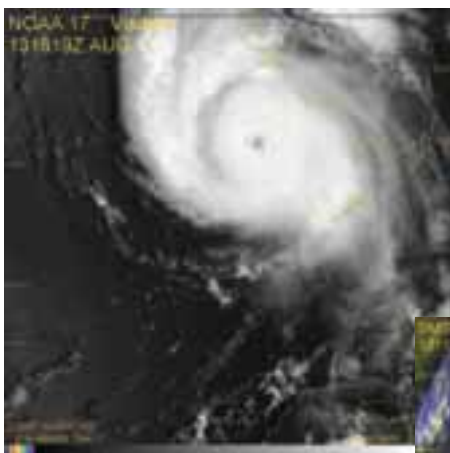
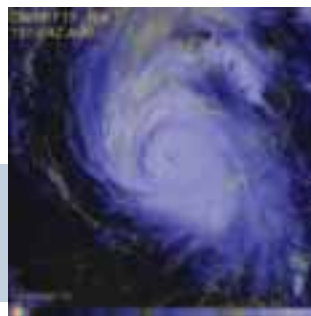
Staff Sgt. Jessica Dahlquist taking observations during a dust storm in Kuwait prior to troops advancing into Iraq. U.S. Air Force photo.

Hurricane Charley hits home

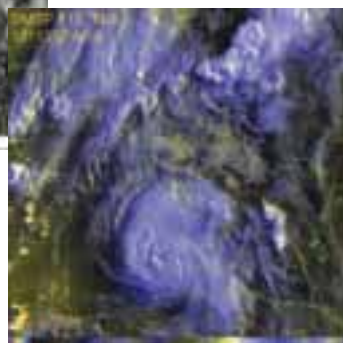


Graphic display of the warning issued by the National Hurricane Center, Miami Fla.

Defense Meteorological Satellite Program image of the hurricane as it develops. Photos courtesy of Air Force Weather Agency Operations directorate.



Photos of Hurricane Charley as it approaches Florida showing the eye wall of the hurricane experiencing significant development and organization within a five hour period, from 7a.m. (image below) to 11a.m. (image to the left). The system continues to intensify vigorously as it approaches the Florida Coast.



Answers to Hurricane Naming Trivia from Page 35.

1. *Storm* by George R. Stewart published by Random House in 1941.
2. 1979
3. WMO – World Meteorological Organization
4. Alex, Bonnie, Charley and Danielle

Tropical Storm Charley strengthened into a Hurricane Aug. 11, and headed for the Islands of Jamaica, Cayman Islands, Cuba and the Florida Keys.

Tropical Storm Bonnie approached hurricane strength in the Gulf of Mexico Aug. 11 as it headed toward what was an already-wet Florida Panhandle.

Information taken from the NWS Tropical Prediction Center Web site at <http://www.nhc.noaa.gov/aboutnames.shtml>

Tech. Sgt. Richard E. Koch
72nd OSS, Tinker AFB, Okla.
Weather Technician

Years In Service: 9 years

Hometown: Tulsa, Okla.

Role Model: Pat Tillman. The man was set for life with his job in the NFL but when his country was attacked he wanted to do something about it and didn't hesitate in his actions.



Hobbies: Golf, travel, and watching as much football as possible

Most Memorable Air Force Weather Experience: Numerous tornado incidents, but May 8, 2003 stands out. This was the largest tornado I had ever seen and prior to this occasion all other tornadoes I've witnessed were not headed straight for my location. As the tornado approached it was as though I was watching King Kong coming towards the flight line. The ground was rumbling slightly as the tornado passed within a mile of the weather station to the south. I could see cars flying into the air as it struck an auto assembly plant south of the base. It was surreal.

Weather Warriors



Tech. Sgt. Terry Prime

615th Air Mobility Squadron, Travis AFB, Calif.

Years in service: 11 years 4 months

Role model: My role model isn't a specific person, but a type of person. I admire people that have a can-do attitude without arrogance; people that are unassuming and successful.

Hobbies: My hobbies include participating in triathlons, mountain biking, and whitewater paddling, spending time with my girlfriend and keeping up with world events.

Most memorable weather experience: My most memorable weather experience was my Tactical Airlift Control Element deployment for OIF. My job satisfaction was at an all-time high because operational controllers were making some big decisions based on my input. All the years of peacetime training really felt justified.

PROMOTIONS

The following AFW Warriors were selected for promotion to:

SENIOR MASTER SERGEANT

Kirk Bailey, Davis Monthan AFB, Ariz.
 Jorge Benavides Jr., Sembach, Germany
 Michael Butrovich, Dyess AFB, Texas
 Gary Carter, Offutt AFB Neb.
 Stephen Dombek, Yokota AB, Japan
 Rick Gardner, Offutt AFB, Neb.
 Lawrence Grass, Scott AFB, Ill.
 Andrew Henderson, Kessler AFB Miss.
 Robert Hirl, Yokota AB, Japan
 Joseph Kost, Offutt AFB, Neb.
 Stephen Lebrun, Vandenberg AFB, Calif.
 Duane Limberg, Offutt AFB, Neb.
 Ernest Luoma, Fort Lewis, Wash.
 Scott MacDonald, Yokota AB, Japan
 Patrick McGuffin, Mountain Home AFB, Idaho
 James Moffitt, Patrick AFB, Fla.
 Gregory Myers, RAF Mildenhall, UK
 Dennis Ohm, Offutt AFB, Neb.
 Laurence Pederson, Offutt AFB, Neb.
 Robert Silvernail, Keesler AFB, Miss.

MASTER SERGEANT

Cassandra Ableiter, Laughlin AFB, Texas
 Dennis Anglin, Scott AFB, Ill.
 Brady Armistead, Pope AFB, N.C.
 Sven Atkins, Offutt AFB, Neb.
 Shannon Barker, Asheville, N.C.
 John Battig Jr., Seymour Johnson AFB, N.C.
 Russell Black, Vance AFB, Okla.
 Thomas Briggs Jr., Shaw AFB, S.C.
 Kenneth Brookshire, Shaw AFB, S.C.
 Richard Carden, Scott AFB, Ill.
 Thomas Cardinal, Hurlburt Field, Fla.
 David Carrier, MacDill AFB, Fla.
 Michael Cassidy, Asheville N.C.
 Jose Cortez, Indian Springs AAF, Nev.
 William Cowgill, Osan AB, Korea
 John Crain, Heidelberg, Germany
 Daniel Culbertson, Fort Carson, Colo.
 Debra Davis, Offutt AFB, Neb.
 Greg Espinosa, Kadena AB, Japan
 Timothy Fields, Hurlburt Field, Fla.
 William Figgins, Keesler AFB, Miss.
 Richard Fry, Hanau, Germany
 Stephen Heywood, Scott AFB, Ill.
 Charles Hoffman, Barksdale AFB, La.
 Matthew Howard, Holloman AFB, N.M.
 Brian Jones, Ramstein AB, Germany
 Scott Kenny, Ramstein AB, Germany
 John Kovachich, Asheville, N.C.
 Gabriel Lacayo, Keesler AFB, Miss.
 Leonard Laforest, Sembach AB, Germany
 Thomas Lane, Katterbach, Germany
 Kimberly Lester, Kadena AB, Japan
 Bradley Levesque, Elmendorf AFB, Alaska
 Gary Lewis, Fort Bragg, N.C.
 David Lomack, Davis-Monthan AFB, Ariz.
 Richard McCarthy, Learmonth, Australia
 Scott McCormick, Edwards AFB, Calif.
 Robert McFadden, Asheville, N.C.
 James McMullen, Offutt AFB, Neb.
 Ronald Meadows, Andersen AFB, Guam
 Michael Miller, Offutt AFB, Neb.
 Jeffrey Mitchell, Scott AFB, Ill.
 Phuoc Phan, Barksdale AFB, La.
 Dorothy Posey, Langley AFB, Va.
 Daniel Powell, Offutt AFB, Neb.
 Paul Reeves, Offutt AFB, Neb.
 Bradley Riffle, Asheville, N.C.
 Kevin Ritzer, Fort Lewis, Wash.
 John Robertson, Scott AFB, Ill.
 James Rogers Jr., Travis AFB, Calif.
 Randy Sabin, Barksdale AFB, La.
 Donald Shane Jr., Scott AFB, Ill.
 Robin Sharpton, Hurlburt Field, Fla.
 John Sievers, Luke AFB, Ariz.
 Gary Silvia, Davis Monthan, AFB Ariz.
 Samuel Simmons, Whiteman AFB, Mo.

Valerie Smith, Sembach, AB, Germany
 Laura Stiverson, Shaw AFB S.C.
 Gary Sweet, Elmendorf AFB, Alaska
 James Tart, Keesler AFB, Miss.
 Joseph Taylor, Kirtland AFB, N.M.
 Robert Tebben, Andrews AFB, Md.
 Brian Thomas, Torii ANX, Japan
 Eric Thoresen, Asheville, N.C.
 Milton Threet, Robins AFB, Ga.
 Claude Tranter, Fort Bragg, N.C.
 Daniel Tucker, Moron AB, Spain
 James Tyus, Offutt AFB, Neb.
 Gina Vorce, Asheville, N.C.
 Kelly Watren, Offutt AFB, Neb.
 Alan Wortkoetter, Davis Monthan AFB, Ariz.
 Christopher Yeazell, Keesler AFB, Miss.

TECHNICAL SERGEANT

Heath Alexander, Offutt AFB, Neb.
 Jeffrey Arbogast, Elmendorf AFB, Alaska
 Annie Arias, MacDill AFB, Fla.
 Alan Arnold, Scott AFB, Ill.
 Isabelle Atkins, Offutt AFB, Neb.
 Shaun Autrey, Yokota AB, Japan
 James Bauman, Offutt AFB, Neb.
 Jeremiah Beckmann, Offutt AFB, Neb.
 Bryan Bell, Dover AFB, Del.
 Jason Beyer, Pope AFB, N.C.
 Edgar Black, Offutt AFB, Neb.
 Jason Bowe, Offutt AFB, Neb.
 Jason Bowry, Dover AFB, Del.
 Tonya Mylynh Brace, Offutt AFB Neb.
 Patrick Brennan, Osan AB, Korea
 Melissa Bridges, Keesler AFB, Miss.
 Ashleigh Brown, Hohenfels, Germany
 James Brown, Patrick AFB, Fla.
 Robert Buecker, Offutt AFB, Neb.
 Randy Burk, Sembach AB, Germany
 Edward Burke, Ramstein AB, Germany
 Shane Byrd, Ellsworth AFB, S.D.
 Christine Cardenas, Offutt AFB, Neb.
 Bryan Carnes, Fort Bragg, N.C.
 Thomas Clark, Little Rock AFB, Ark.
 Ronald Combs, Fort Drum, N.Y.
 Westley Cornett, Sembach AB, Germany
 Amy Craine, Robins AFB, Ga.
 Noel Cumberland, Offutt AFB, Neb.
 Stacey Cummings, Wheeler AAF, Hawaii
 Michael Daughtrey, Sembach AB, Germany
 Kristine Dawson, Andrews AFB, Md.
 Joel Decker, Vicenza, Italy
 John Deehan, Langley AFB, Va.
 Tia Derr, Etelson AFB, Alaska
 Aaron Diaz, Tinker AFB, Okla.
 Millette Estonina, Offutt AFB, Neb.
 William Everett, Elmendorf AFB, Alaska
 Gina Ellen Faulds, Wiesbaden AB, Germany
 Charles Fenoglio, Offutt AFB, Neb.
 Brian Fjeld, Hickam AFB, Hawaii
 Richard Gagne, Keesler AFB, Miss.
 Bryan Garton, Kirtland AFB, N.M.
 Marcia Gomez, Lackland AFB, Texas
 Derek Gosney, Nellis AFB, Nev.
 Asha Gray, RAF Mildenhall, UK
 Richelle Greer, Kadena AB, Japan
 Ricky Guzman, Camp Blanding, Fla.
 Charles Hall, Robins AFB, Ga.
 Janel Heidebrink, Patrick AFB, Fla.
 Matthew Insko, Ellsworth AFB, S.D.
 Jodi Janssen, Giebelstadt, Germany
 Rafael Kaup, Keesler AFB, Miss.
 Fred King, Learmonth, Australia
 Laurie Kline, Pope AFB, N.C.
 Andrew Kowal, Dover AFB Del.
 Scott Lacroix, Incirlik AB, Turkey
 Michelle Lammers, Shaw AFB, S.C.
 Tanna Langueyarnell, RAF Mildenhall, UK
 Derrell Lankford, Scott AFB, Ill.
 John Lee, Vicenza, Italy
 David Mack, Hunter AAF, Ga.
 Lois Marin, Asheville N.C.
 Michael Marston, Keesler AFB, Miss.
 Barbara Marting, Tinker AFB, Okla.



Manuel Matute, Asheville, N.C.
 Jenny Mcatee, Luke AFB, Ariz.
 James McKenzie, Mountain Home AFB, Idaho
 Julie Moretto, Hunter AAF, Ga.
 Darrin Moses, Offutt AFB, Neb.
 Bernard Moyer Jr., Barksdale AFB, La.
 Jason Nuy, Heidelberg, Germany
 Leslie Orr, Langley AFB, Va.
 Gregory Parker, Hurlburt Field, Fla.
 Melinda Parker, Keesler AFB, Miss.
 Ralph Parker, Fort Polk, La.
 Tracy Pete, RAF Lakenheath, UK
 Dennis Ryan Pierce, Davis Monthan AFB, Ariz.
 Pichai Polprasert, Asheville, N.C.
 Demetrius Poole, Fort Hood, Texas
 Jon Portillo, Norman City, Okla.
 Todd Preimesberger, Travis AFB, Calif.
 Clinton Presley, Keesler AFB, Miss.
 Ninfa Ramirez-Conroy, Hill AFB, Utah
 Amber Ramsdell, Pope AFB, N.C.
 William Reinsner, McChord AFB, Wash.
 Allen Richardson, Offutt AFB, Neb.

PROMOTION TO STAFF SERGEANT

Samuel Adams, Shaw AFB, S.C.
 Louis Antonellis, Camp Humphreys, Korea
 Justin Baier, Sembach AB, Germany
 Laura Barth, Sembach AB, Germany
 Dolores Barrita, Offutt AFB, Neb.
 Bobby Baum, Eglin AFB, Fla.
 Erika Bentler, Elmendorf AFB, Alaska
 Charles Beran, Elmendorf AFB, Alaska
 Veronica Bird, Hickam AFB, Hawaii
 Timothy Blake, Shaw AFB, S.C.
 Matthew Bolin, Grand Forks, N.D.
 David Bond, Eglin AFB, Fla.
 Robert Bowler, Andrews AFB, Md.
 Susan Brennan, Camp Humphreys, Korea
 Antisha Brown, Barksdale AFB, La.
 Nathan Campbell, Cannon AFB, N.M.
 David Carlson, Offutt AFB, Neb.
 Larice Carter, Robins AFB, Ga.
 Christoph Caughill, Eglin AFB, Fla.
 Brooke Chance, RAF Mildenhall, UK
 Kasie Chang, Camp Stanton, Korea
 Magen Chitwood, Misawa AB, Japan
 Nathan Chrestensen, Scott AFB, Ill.
 Rebecca Church, Yongsan AIN, Korea
 Stephanie Clark, Minot AFB, N.D.
 Jeremy Coleman, Hickam AFB, Hawaii
 Jason Conner, Holloman AFB, N.M.
 Howard Cordingley, Scott AFB, Ill.
 David Craig, Malmstrom AFB, Mont.
 Adam Danthony, Camp Red Cloud, Korea
 Renato Dapat, Shaw AFB, S.C.
 Christoph Davidson, Yokota AB, Japan
 Arlana Deleo, Elmendorf AFB, Alaska
 Tasha Diaz, Fort Hood, Texas
 Todd Dighton, Offutt AFB, Neb.
 Christy Dinger, Grafenwohr AB, Germany
 Taneasha Evans, Indian Springs, Nev.
 Timothy Faircloth, Patrick AFB Fla.
 Christopher Faure, Sembach AB, Germany
 Joshua Ford, Scott AFB, Ill.
 Patricia Ford, Fort Wainwright, Alaska
 Anthony Fountain, Tyndall AFB, Fla.
 Tania Garza, Davis-Monthan AFB, Ariz.
 Michael Gerlach, Holloman AFB, N.M.
 Raymond Gibson, Davis-Monthan AFB, Ariz.
 Michael Goetschius, Sembach AB, Germany
 David Golobic, Yokota AB, Japan
 Marsha Gonzalez, Little Rock AFB, Ark.
 Kimberly Green, Yokota AB, Japan
 Joshua Gregory, Sembach AB, Germany
 Stephanie Gregory, Davis-Monthan AFB, Ariz.
 Linton Hampton, Sheppard AFB, Texas
 Angela Hemphill, Elmendorf AFB, Alaska
 Stephen Herring, Camp Stanley, Korea
 Sarah Howard, Offutt AFB, Neb.
 Jaime Howlett, Shaw AFB, S.C.

Grant Hubbard, Beale AFB, Calif.
 Erika Huff, Kadena AB, Japan
 Michael Jackson, Little Rock AFB, Ark.
 Jillian Jaykoski, Hickam AFB, Hawaii
 David Jones, Shaw AFB, S.C.
 Keith Kaminski, Offutt AFB, Neb.
 James Klusener, Beale AFB, Calif.
 Crystal Larose, Barksdale AFB, La.
 Richard Lawson, Yongsan AIN, Korea
 Kyle Mack, RAF Mildenhall, UK
 Joshua Maloy, Scott AFB, Ill.
 Loveatta Manley, Barksdale AFB, La.
 Rachel Marshall, Shaw AFB, S.C.
 James McCarthy, Offutt AFB, Neb.
 Jason McClish, Fort Hood, Texas
 Treska Mccullough, Sembach AB, Germany
 Jewaun Mcelroy, Barksdale AFB, La.
 Molly McKenzie, Minot AFB, N.D.
 Daniel Mike, Barksdale AFB, La.
 Mathew Miller, Offutt AFB, Neb.
 Kelly Mills, Hickam AFB, Hawaii
 Heath Minnick, Yokota AB, Japan
 Candace Mitchum, MacDill AFB, Fla.
 Matthew Morey, Davis-Monthan AFB, Ariz.
 Christopher Mullen, Aviano AB, Italy
 Chase Neill, Offutt AFB, Neb.
 Jason Osborn, RAF Mildenhall, UK
 Ramon Otero, Offutt AFB, Neb.
 John Owen, Offutt AFB, Neb.
 Paul Pascoe, Sembach AB, Germany
 Jason Perry, Shaw AFB, S.C.
 C.J. Petty, Barksdale AFB, La.
 Matthew Pogreba, Osan AB, Korea
 Joshua Rapp, Travis AFB Calif.
 Jeremy Reynolds, Sembach AB, Germany
 Kylee Reynolds, Fort Hood, Texas
 Lisa Richardson, Scott AFB, Ill.
 Kipp Richburg, Shaw AFB, S.C.
 Eric Roberts, Hunter AAF, Ga.
 William Robinson, Offutt AFB, Neb.
 Joseph Round, Misawa AB, Japan
 Alison Rudicel, Fort Drum AIN, N.Y.



Sarah Sabins, Yokota AB, Japan
 Jay Sablan, Offutt AFB, Neb.
 Melissa Safreed, Shaw AFB, S.C.
 Adam Saunders, Yokota AB, Japan
 Michael Schneider, Offutt AFB, Neb.
 Jennifer Schultz, Sembach AB, Germany
 Anthony Scott, Heidelberg AB, Germany
 John Semanick, Elmendorf AFB, Alaska
 Breanna Serrano, Dyess AFB, Texas
 Clarissa Shearer, Seymour Johnson AFB, N.C.
 Michael Shema, Travis AFB Calif.
 Ricky Silva, Scott AFB, Ill.
 Jasson Sjoberg, Pope AFB, N.C.
 Brian Smith, Fort Eustis, Va.
 Jamica Smith, Incirlik AB, Turkey
 Joshua Smith, Davis-Monthan AFB, Ariz.
 Michael Smith, Sembach AB, Germany
 Shannon Sowerwine, RAF Lakenheath UK
 Henry Sparks, Offutt AFB, Neb.
 Tabitha Spruill, Ramstein AB, Germany
 Robert Stacy, Hill AFB, Utah
 Paul Summey, Davis-Monthan AFB, Ariz.
 Michael Theos, Scott AFB, Ill.
 Sean Thomas, RAF Mildenhall, UK
 Brian Thompkins, Camp Page, Korea
 Matthew Thompson, Barksdale AFB, La.
 Joshua Uhl, Yokota AB, Japan
 Randall Vink, Barksdale AFB, La.
 Justin Wallace, Fort Carson, Colo.
 Ryan Watts, Camp Stanley, Korea
 Cody Wood, Fort Carson, Colo.
 Laci Wood, Eglin AFB, Fla.
 Christo Wratchford, Camp Stanton, Korea
 Jessie Wudtke, Offutt AFB, Neb.
 Doug Wright, Vance AFB, Calif.
 Guiller Ybarra, Offutt AFB, Neb.
 Monica Yoas, Barksdale AFB, La.
 George Zambrana, Sembach AB, Germany
 Matthew Zilisch, Offutt AFB, Neb.

Salutes

RETIREMENTS

Col. Charles Benson Jr., HQ AFWA, Offutt AFB Neb.
Lt. Col. Kevin Witte, HQ AFWA, Offutt AFB Neb.
Capt. Mark Vanvoorhis, HQ AFWA, Offutt AFB Neb.
Master Sgt. Dennis Ohm, HQ AFWA, Offutt AFB Neb.
Master Sgt. Todd Stephenson, HQ AFWA, Offutt AFB, Neb.

AWARDS AND DECORATIONS

BRONZE STAR

Maj. Douglas Clark, HQ AMC/A36W, Scott AFB, Ill.
Capt. Robert Moelter, 19th ASOS, Fort Campbell, Ky.
Master Sgt. James Karr, 19th ASOS, Fort Campbell, Ky.
Master Sgt. Steven Scudder, 19th ASOS, Fort Campbell, Ky.
Master Sgt. Matthew Wiatt, 19th ASOS, Fort Campbell, Ky.

DEFENSE MERITORIOUS SERVICE MEDAL

Maj. Douglas Clark, HQ AMC, Scott AFB, Ill.
Maj. Patrick Rothbauer, 25th OWS OL-A, Fort Sam Houston, Texas
Maj. Brett Scholten, HQ AFWA, Offutt AFB, Neb.
Master Sgt. Scott MacDonald, 20th OWS, Yokota AB, Japan
Master Sgt. Todd Stephenson, HQ AFWA, Offutt AFB, Neb.
Tech. Sgt. Robert Honadle, 20th OWS, Yokota AB, Japan

JOINT SERVICE COMMENDATION MEDAL

Maj. Brett Scholten, HQ AFWA, Offutt AFB, Neb.

AIR FORCE COMMENDATION MEDAL

Capt. Martin Sipula, HQ AFWA, Offutt AFB, Neb.
Tech. Sgt. Richard McCarthy, 20th OWS, Yokota AB, Japan
Tech. Sgt. Antony Stagers, 51st CBCS, Robins AFB, Ga.
Staff Sgt. John Thompson III, 20th OWS, Yokota AB, Japan
Senior Airman Brandie VanLanduyt, 20th OWS, Yokota AB, Japan

ARMY COMMENDATION MEDAL

1st Lt. James George, 19th ASOS, Fort Campbell, Ky.
1st Lt. Patrick Gioia, 19th ASOS,

Fort Campbell, Ky.
Master Sgt. Nate Roen, 208th WF, St. Paul, Minn.
Master Sgt. Terry Upchurch, 159th WF, Camp Blanding, Fla.
Tech. Sgt. Kurt Rohl, 19th ASOS, Fort Campbell, Ky.
Tech. Sgt. Aaron Thomas, 19th ASOS, Fort Campbell, Ky.
Staff Sgt. Greg Bianchi, 19th ASOS, Fort Campbell, Ky.
Staff Sgt. Charles Burdick, 19th ASOS, Fort Campbell, Ky.
Staff Sgt. Warren Labare, 19th ASOS, Fort Campbell, Ky.
Staff Sgt. James Storr, 19th ASOS, Fort Campbell, Ky.
Staff Sgt. Jeremiah Story, 19th ASOS, Fort Campbell, Ky.
Staff Sgt. David Strickland, 19th ASOS, Fort Campbell, Ky.
Senior Airman Brandon Bartley, 19th ASOS, Fort Campbell, Ky.
Senior Airman Tierra Huth, 19th ASOS, Fort Campbell, Ky.
Airman 1st Class Matthew Stroud, 19th ASOS, Fort Campbell, Ky.

AIR FORCE ACHIEVEMENT MEDAL

2nd Lt. Travis Longmire, 45th WS, Patrick AFB, Fla. (IOLC)
Senior Master Sgt. John Carroll, 20th OWS, Yokota AB Japan (1st OLC)
Tech. Sgt. Jason Clemens, 45th WS, Patrick AFB, Fla. (IOLC)
Staff. Sgt. James Emery, 208th WF, St. Paul, Minn.
Staff Sgt. Gerardo Jaime, 25th OWS/OL-A, Fort Sam Houston, Texas
Staff Sgt. Patrick Stevens, 154th WF, Little Rock Ark.
Senior Airman Timothy Faircloth, 45th WS, Patrick AFB, Fla.
Senior Airman Bridgett Rocheleau, 208th WF, St. Paul, Minn.
Senior Airman Allen Thill, 208th WF, St. Paul, Minn.

ARMY ACHIEVEMENT MEDAL

Senior Airman Matt Carlson, 208th WF, St. Paul, Minn.
Senior Airman Bridgett Rocheleau, 208th WF, St. Paul, Minn.
Senior Airman Allen Thill, 208th WF, St. Paul, Minn.

ARMED FORCES EXPEDITIONARY MEDAL

Maj. Brett Scholten, HQ AFWA, Offutt AFB, Neb.
Capt. Charles Spicer, HQ AFWA, Offutt AFB, Neb.

KOSOVO CAMPAIGN MEDAL

Maj. Brett Scholten, HQ AFWA, Offutt AFB, Neb.

Master Sgt. Nate Roen, 208th WF, St. Paul, Minn.
Senior Airman Matt Carlson, 208th WF, St. Paul, Minn.
Senior Airman Bridgett Rocheleau, 208th WF, St. Paul, Minn.
Senior Airman Allen Thill, 208th WF, St. Paul, Minn.

NATO MEDAL

Maj. Brett Scholten, HQ AFWA, Offutt AFB, Neb.
Master Sgt. Nate Roen, 208th WF, St. Paul, Minn.
Senior Airman Matt Carlson, 208th WF, St. Paul, Minn.
Senior Airman Bridgett Rocheleau, 208th WF, St. Paul, Minn.
Senior Airman Allen Thill, 208th WF, St. Paul, Minn.

GLOBAL WAR ON TERRORISM EXPEDITIONARY MEDAL

Lt. Col. Christopher Strager, 146th WF, Coraopolis, Pa.
Capt. Michael Graf, 146th WF, Coraopolis, Pa.
Capt. Valentina McNamara, 146th WF, Coraopolis, Pa.
Chief Master Sgt. Forrest Hendricks, 146th WF, Coraopolis, Pa.
Senior Master Sgt. Michael Gardner, 146th WF, Coraopolis, Pa.
Senior Master Sgt. James Malia, 146th WF, Coraopolis, Pa.
Tech. Sgt. Clayton Eyster, 146th WF, Coraopolis, Pa.
Tech. Sgt. Scott Frickey, 146th WF, Coraopolis, Pa.
Staff Sgt. Frank DeFina, 146th WF, Coraopolis, Pa.
Staff Sgt. Michael Gaither, 146th WF, Coraopolis, Pa.
Staff Sgt. Anthony Gionta, 146th WF, Coraopolis, Pa.
Senior Airman James Hilton II, 146th WF, Coraopolis, Pa.
Senior Airman Joshua Monteleone, 146th WF, Coraopolis, Pa.

PRESIDENTIAL UNIT CITATION

Master Sgt. David Oginski, 154th WF, Little Rock Ark.

EDUCATION

DEFENSE ACQUISITION UNIVERSITY

Maj. Brett Scholten, HQ AFWA, Offutt AFB, Neb.
Capt. Charles Spicer, HQ AFWA, Offutt AFB, Neb.

USAF JAG SCHOOL - FISCAL LAW COURSE

Maj. Brett Scholten, HQ AFWA, Offutt AFB, Neb.

SQUADRON OFFICER'S SCHOOL
Capt. Justin Mokrovich, HQ AFWA, Offutt AFB, Neb., (Distinguished Graduate)

CONTINGENCY WARTIME PLANNING COURSE

Maj. Douglas Clark, HQ AMC, Scott AFB, Ill.

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Tech. Sgt. Robert Lenahan, 72nd OSS, Tinker AFB, Okla.
Staff Sgt. Marjorie Afra, 20th OSS, Shaw AFB, S.C.
Staff Sgt. James Albin, 203rd WF, Fort Indiantown Gap, Pa. (ANG)
Staff Sgt. Angela Banks, 3rd WS, Fort Hood, Texas
Staff Sgt. Jeremiah Banks, HQ AFWA, Offutt AFB, Neb.
Staff Sgt. Jason Bazin, 9th OSS, Beale AFB, Calif.
Staff Sgt. William Benford, 62nd OSS, McChord AFB, Wash.
Staff Sgt. Jason Beyer, 24th STS, Pope AFB, N.C.
Staff Sgt. Levy Bland, 86th OSS, Ramstein AB, Germany
Staff Sgt. James Brown, 20th OSS, Shaw AFB, S.C.
Staff Sgt. Laura Bryant, 341st OSS, Malmstrom AFB, Mont.
Staff Sgt. Scott Capodice, 1st OSS, Langley AFB, Va.
Staff Sgt. Stephen Dabkowski, HQ AFWA, Offutt AFB, Neb.
Staff Sgt. Casey Dawley, 55th OSS, Offutt AFB, Neb.
Staff Sgt. Elijah Edwards, 18th WS, Fort Bragg, N.C.
Staff Sgt. Nathanael Farrington, HQ AFWA, Offutt AFB, Neb.
Staff Sgt. Alec Ferguson, 21st OSS, Peterson AFB, Colo.
Staff Sgt. Raymond Ford, USAFE OWS, Sembach, Germany
Staff Sgt. Michael Gaither, 146th WF, Pittsburgh, Pa. (ANG)
Staff Sgt. Chad Gawel, 28th OWS, Shaw AFB, S.C.
Staff Sgt. Erik Gilliland, Det 5, 10th CWS, Pope AFB, N.C.
Staff Sgt. Kevin Goff, 436th OSS/OSW, Dover AFB, Del.
Staff Sgt. Shane Groth, 52nd OSS/OSW, Spangdahlem AB, Germany
Staff Sgt. Melody Goode, 614th OWS, Vandenberg AFB, Calif.
Staff Sgt. Patrick Gray, 35th OSS, Misawa AB, Japan
Staff Sgt. Daniel Hayes, 374th OSS, Yokota AB, Japan
Staff Sgt. Jimmy Henninsen, 72nd OSS, Tinker AFB, Okla.
Staff Sgt. Latoya High, 354th OSS, Eielson AFB, Alaska
Staff Sgt. April Hires, 14th OSS, Columbus AFB, Miss.
Staff Sgt. Dustin Hoffman, 52nd CST, Ohio National Guard, Ohio

Staff Sgt. Melanie Hurst, 15th OSW, Hunter AAF, Ga.
 Staff Sgt. Edward Jackowski, 11th OWS, Elmendorf AFB, Alaska
 Staff Sgt. Sara Kah, 92nd OSS, Fairchild AFB, Wash.
 Staff Sgt. Warren Labare, 19th ASOS, Fort Campbell, Ky.
 Staff Sgt. Della Lanier, 1st OSS, Langley AFB, Va.
 Staff Sgt. Melissa Lopez, 13th ASOS, Fort Carson Colo.
 Staff Sgt. April Owens, 97th OSS, Altus AFB, Okla.
 Staff Sgt. Terri Palmer, 15th ASOS, Fort Stewart, Ga.
 Staff Sgt. Tiffany Perone, 56th OSS, Luke AFB, Ariz.
 Staff Sgt. Barbara Marting, 72nd OSS, Tinker AFB, Okla.
 Staff Sgt. Melissa Mardis, HQ AFWA, Offutt AFB, Neb.
 Staff Sgt. Jessica Moore, 2nd OSS, Barksdale AFB, La.
 Staff Sgt. John Moore, 25th OWS, Davis Monthan AFB, Ariz.
 Staff Sgt. Jeremy Nault, HQ AFWA, Offutt AFB, Neb.
 Staff Sgt. Alicia Nelson, 375th OSS, Scott AFB, Ill.
 Staff Sgt. Ryan Noetzelman, 320th Special Tactics, Kadena AB Japan
 Staff Sgt. Nathan Nylander, HQ USAF, Washington, D.C.
 Staff Sgt. Dasveer Parhar, 15th RS, Nellis AFB, Nev.
 Staff Sgt. Michael Passananti, Det 11, 7th WS, Heidelberg, Germany
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 Staff Sgt. Lionel Proctor, HQ ACC, Langley AFB, Va.
 Staff Sgt. Thomas Quates, 25th OWS, Davis Monthan AFB, Ariz.
 Staff Sgt. John Radford, 46th WS, Eglin AFB, Fla.
 Staff Sgt. Brian Raphael, 140th WF, Willow Grove, Pa. (ANG)
 Staff Sgt. Andrew Ray, 60th OSS, Travis AFB, Calif.
 Staff Sgt. Victor Renderos, 1st WS, McChord, AFB, Wash.
 Staff Sgt. Michael Rittner, Det 5, 10th CWS, Fort Bragg, N.C.
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 Staff Sgt. Mark Savallo, 81st OSS, Keesler AFB Miss.
 Staff Sgt. Robert Scheel, 18th WS, Fort Bragg, N.C.
 Staff Sgt. Ronald Sherard, 374th OSS, Yakota AB, Japan
 Staff Sgt. Donald R. Sill, 26th OWS, Barksdale AFB, La.
 Staff Sgt. Kevin A. Smith, 25th ASOS, Wheeler AAF, Hawaii
 Staff Sgt. Samuel Smith, 21st ASOS, Fort Polk, La.
 Staff Sgt. Mark Sterling, 18th WS, Fort Bragg, N.C.
 Staff Sgt. Amber Tarver, 25th OWS, Davis Monthan AFB, Ariz.
 Staff Sgt. John Thompson, 20th OWS, Yokota AB, Japan
 Staff Sgt. Timothy Verville, 5th OSS, Minot AFB, N.D.
 Staff Sgt. Jason Tye, Det 2, HQ AFWA, Sagamore Hills, Mass.
 Staff Sgt. Jessica Valianos, HQ AFWA, Offutt AFB, Neb.
 Staff Sgt. Jason Warner, 49th OSS, Holloman AFB, N.M.

Staff Sgt. Manuela Weisser, Det 10, 7th WS, Giebelstadt AAF, Germany
 Staff Sgt. Jesse Wilcox, 36th OSS/OSW, Anderson AFB, Guam
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 Staff Sgt. Jayson Wilson, 18th WS, Fort Bragg, N.C.
 Staff Sgt. Corey Worster, 81st OSS, Keesler AFB, Miss.

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 Tech. Sgt. Janice J. Holloway, N.C. ANG, Raleigh ANGB, N.C.
 Tech. Sgt. Joseph Stachouse, 26th OWS, Barksdale AFB La.
 Staff Sgt. Christian Hendrick, 25th WS, Davis Monthan AFB, Ariz.
 Staff Sgt. Jose R. Irazarry, 15th OWS, Scott AFB, Ill.
 Staff Sgt. Nathan Oda, 199th WF, Wheeler AAF, Hawaii (ANG)
 Staff Sgt. Gary Romkey, 28th OWS, Shaw AFB, S.C.
 Staff Sgt. Anthony Snyder, 127th WF, Forbes Field, Kan.
 Staff Sgt. Henry Taylor, 107th WF, Selfridge ANGB, Mich.
 Staff Sgt. Jason R. Walters, 15th OWS, Scott AFB, Ill.
 Senior Airman Thaddeus Krutka, 104th WF, Camp Fretterd, Md.
 Senior Airman Sonny Richardson, 15th OWS, Scott AFB, Ill.
 Senior Airman Kerry Yndestad, 126th WF, Milwaukee, Wis.
 Airman 1st Class Javier Acosta, 25th WS, Davis Monthan AFB, Ariz.
 Airman 1st Class Audrey Anderson, 25th WS, Davis Monthan AFB, Ariz.
 Airman 1st Class Robert Appiah, 11th OWS, Elmendorf AFB, Alaska
 Airman 1st Class Jason Belt, 15th OWS, Scott AFB, Ill.
 Airman 1st Class Adam Bernhardt, 20th OWS, Yokota AB, Japan
 Airman 1st Class Chad Brink, USAF OWS, Sembach, Germany
 Airman 1st Class Patricia Buck, 25th WS, Davis Monthan AFB, Ariz.
 Airman 1st Class Rebecca Collins, 26th OWS, Barksdale AFB La.
 Airman 1st Class Shelby Compton, 26th OWS, Barksdale AFB, La.
 Airman 1st Class Justin Conte, 15th OWS, Scott AFB, Ill.
 Airman 1st Class Mark Dellaquila, 15th OWS, Scott AFB, Ill.
 Airman 1st Class Kaia DeMatteo, 131st WF, Barnes ANG, Ma. (ANG)
 Airman 1st Class Jonathan Dunlany, 26th OWS, Barksdale AFB La.
 Airman 1st Class Steven Fanis, 15th OWS, Scott AFB, Ill.
 Airman 1st Class Michael Farnsworth, 26th OWS, Barksdale AFB, La.
 Airman 1st Class Nicholas Feagans, 104th WF, Baltimore, Md.
 Airman 1st Class Richard Fisher III, 107th WF, Selfridge ANGB, Mich.
 Airman 1st Class Cassandra Flanigan, 26th OWS, Barksdale AFB La.
 Airman 1st Class Stacey-Lee Fletcher, 28th OWS, Shaw AFB, S.C.
 Airman 1st Class Jessika Hill, USAF OWS, Sembach AB, Germany
 Airman 1st Class Eric Jaeger, 25th WS, Davis Monthan AFB, Ariz.
 Airman 1st Class Robert Johnson, 26th OWS, Barksdale AFB, La.
 Airman 1st Class Aaron Jones, 26th OWS, Barksdale AFB, La.

Airman 1st Class Collin Jones, USAF OWS, Sembach AB, Germany
 Airman 1st Class James Kutzch, 11th OWS, Elmendorf AFB, Alaska
 Airman 1st Class Joshua Leggett, 26th OWS, Barksdale AFB La.
 Airman 1st Class Donald Lewis, 11th OWS, Elmendorf AFB, Alaska
 Airman 1st Class Michael Norton, 26th OWS, Barksdale AFB La.
 Airman 1st Class Thomas Nunn, 26th OWS, Barksdale AFB La.
 Airman 1st Class Stephen Pêche, 26th OWS, Barksdale AFB La.
 Airman 1st Class Jennifer Pou, 17th OWS, Hickam AFB, Hawaii
 Airman 1st Class Brigitte Powell, USAF OWS, Sembach, Germany
 Airman 1st Class Bryan Reed, 26th OWS, Barksdale AFB, La.
 Airman 1st Class Nicholas Rhoades, 15th OWS, Scott AFB, Ill.
 Airman 1st Class Jennifer Roach, USAF OWS, Sembach, Germany
 Airman 1st Class Heather Ross, 26th OWS, Barksdale AFB, La.
 Airman 1st Class Daniel Rygiel, USAF OWS, Sembach AB, Germany
 Airman 1st Class Michelle Scott, 15th OWS, Scott AFB, Ill.
 Airman 1st Class Trenton Seegmiller, 28th OWS, Shaw AFB, S.C.
 Airman 1st Class Jessica Sepulveda, USAF OWS, Sembach, Germany
 Airman 1st Class Vernell Shelton, 25th WS, Davis Monthan AFB, Ariz.
 Airman 1st Class April Smith, 26th OWS, Barksdale AFB La.
 Airman 1st Class Jason Thrall, 15th OWS, Scott AFB, Ill.
 Airman 1st Class Brenda Thompson, 15th OWS, Scott AFB, Ill.
 Airman 1st Class Phillip Tori, 26th OWS, Barksdale AFB La.
 Airman 1st Class Thomas Volpe, 11th OWS, Elmendorf AFB, Alaska
 Airman Zachery Bernard, 26th OWS, Barksdale AFB, La.
 Airman Aaron Cleveland, 25th OWS, Davis Monthan AFB, Ariz.
 Airman James Hartley, 26th OWS, Barksdale AFB, La.
 Airman Sarah Kagg, USAF OWS, Sembach, Germany
 Airman Christian Leary, 28th OWS, Shaw AFB, S.C.
 Airman Kenneth Malawey, 28th OWS, Shaw AFB, S.C.
 Airman Christopher McClintock, 15th OWS, Scott AFB, Ill.
 Airman Stephanie Meyers, 11th OWS, Elmendorf AFB, Alaska
 Airman Lee Nguyen, 20th OWS, Yokota AB, Japan
 Airman Jennifer O'May, 17th OWS, Hickam AFB, Hawaii
 Airman Justin Pate, USAF OWS, Sembach, Germany

Airman Marilyn Riley, 15th OWS, Scott AFB, Ill.
 Airman Chad Tieman, USAF OWS, Sembach, Germany
 Airman Greggari Tucker, 11th OWS, Elmendorf AFB, Alaska
 Airman Jennifer Weisman, USAF OWS, Sembach, Germany
 Airman Cassia Wilson, 26th OWS, Barksdale AFB La.
 MST2 Kevin Collins, USCG, CGC Polar Star, Seattle Wash.

SPACE ENVIRONMENTAL COURSE

Capt. Brent Levi, 15th OWS, Scott AFB, Ill.
 Capt. Christopher Lovett, 80th OSS, Sheppard AFB, Texas
 Capt. Mike McAleenan, 45th WS, Patrick AFB, Fla.
 1st Lt. Brian Butler, 78th OSS, Robins AFB, Ga.
 2nd Lt. William Lane, 341st OSS, Malmstrom AFB, Mont.
 Senior Master Sgt. Timothy Todd, 45th WS, Patrick AFB Fla.
 Master Sgt. Mickey Hayes, 46th WS, Eglin AFB, Fla.
 Staff Sgt. Robert Cook, HQ AFWA, Offutt AFB, Neb.
 Staff Sgt. Trevor Crane, HQ AFWA, Offutt AFB, Neb.
 Staff Sgt. Carl Densford, 14th OSS, Columbus AFB, Miss.
 Staff Sgt. Ninfa Ramirez-Conroy, 75th OSS, Hill AFB, Utah
 Staff Sgt. John Rivera, 47th OSS, Laughlin AFB, Texas
 Senior Airman Michael Goetschius, USAF OWS, Sembach AB, Germany

SPACE ENVIRONMENT FORCASTER COURSE

Master Sgt. Dennis Huggins, HQ AFWA, Offutt AFB, Neb.
 Tech. Sgt. Trevor Crane, HQ AFWA, Offutt AFB, Neb.

AIRMAN LEADERSHIP SCHOOL

Senior Airman Corey Simonson, 48th OSS/OSW, RAF Lakenheath, UK, (Distinguished Graduate)

COINS

Master Sgt. Jody Rogers, 16th OSS, Hulbert Field, Fla.
 Tech. Sgt. Ron Kessler, AMC, Wright Patterson AFB, Ohio
 Tech. Sgt. Terrell Rice, AMC, Wright Patterson AFB, Ohio
 Staff Sgt. Jennifer Chance, AMC, Wright Patterson AFB, Ohio
 Staff Sgt. Barry M. Lott, 16th OSS, Hulbert Field, Fla.
 Senior Airman Preston Rice, 16th OSS, Hulbert Field, Fla.



A step above
 Congratulations to Michael D. Richardson, Air Force Weather Agency Communications and Information Directorate, who was selected for promotion to Master Sergeant under the Stripes for Exceptional Performers program, July 20.

*America's Air Force is an
innovative, adaptive force.
Real transformation is not a
result of a one-time improvement,
but a sustained and determined effort.*

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