

Your Magazine for Air Force Weather

OBSERVER

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OBSERVER

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SPOTLIGHT

We failed to give the proper credit for the cover photo on the Almanac edition. The photo was taken from a power point briefing and the originator couldn't be identified. We've since learned that the photo is the property of the National Oceanographic and Atmospheric Association. Thanks for the magnificent photo and pointing out our omission.

Cover photo courtesy of U. S. Air Force

Total Force Weather teamwork on Target!

By Brig. Gen. Fred P. Lewis

Air Force Director of Weather

We teamed up with our NATO coalition and other Service partners in Operation ALLIED FORCE's air operations in the Balkans and our Air Force Weather operations were "Right On Target"! The terrain couldn't have been tougher, the weather couldn't have been more challenging, and yet each and every one of you on our Total Force (Active, Guard, and Reserve) team performed magnificently! We've all worked hard and in a "hurry up mode" in Air Force Weather and the rest of the Air Force over the past few years to posture ourselves to very effectively respond to just these kind of crises.

All of you in Air Force Weather need to know that you, as an integral part of our Air Force, made a significant, positive impact on joint and combined air operations in the Balkans. The results of your hard work definitely helped impact when, where, and how we fought, and the mission effectiveness of our air operations. Due to your outstanding, collective efforts, we put real-world meaning to the capability we have been building for our warfighters and operators all along: the capability to *anticipate and exploit the weather for battle*.

As Air Force Weather Forecasters and Observers, this was one of our greatest moments. This is what we have trained for, this is why we are an integral part of the Air Force operations team. This is what our Nation — and the world — relied on us to do and do well. And we need to be proud of what we did!

Certainly, we still can make improvements in our ability to observe and forecast mission impacting weather. And we continue to put the resources and people against making those improvements so we can do an even better job at meeting the operators, the trainers, and the warfighters weather needs in the future.

We've all worked hard to understand and stay ahead of the tough weather challenges. We make weather decisions every day that impact operations. So very often, these decisions are both important and extremely difficult, given the weather regimes and the missions. But our newly expanding tools and our newly developing teamwork philosophy are giving us an advantage we've never had before. We now can, to use a football term, "gang tackle" the weather with

people and forecast/observing tools!

Our new and expansive library of fine scale weather products, such as: high-resolution satellite imagery; observations; TAFs; Operational Weather Squadron fine-scale, accurate products and target forecasts; Combat Weather Team mission forecast products; meteograms; and high-resolution cloud, wind, moisture, precipitation, instability, hazard, and vorticity charts; are giving us unique, precision capabilities never before available during combat operations.



These tools are extremely helpful but we've also confirmed something we've known all along: There is no substitute for experienced forecasters and observers, working as a team, producing mission-specific, fine-scale weather products and making timely, accurate, and relevant calls for specific missions. To best understand the full impact that we in AFW had on operations in the Balkans, we need only take a look at what occurred behind the scenes.

While the world focused on the affects of our air operations and the politics of the day, the Air Force Weather Agency at Offutt AFB was hard at work running our weather computer models to capacity. They created and refined a myriad of up-to-date strategic- and theater-level, fine-scale weather products while monitoring weather impacts to worldwide operations.

AFWA's weather operations provided direct support to the USAFE Operational Weather Squadron and the many Combat Weather Teams who were supporting operations forward, and these CWTs covered areas spread across the CONUS to England, to Germany, to Italy, and beyond.

By the same token, at the USAFE OWS at Sembach AB, our round-the-clock teams of forecasters provided an ever-expanding and highly accurate suite of fine-scale weather products to the CWTs at forward staging and operating bases. The USAFE OWS is to be commended for their unrelenting quest for accuracy and service — and this complement comes directly from the many CWTs throughout the AOR, who relied

See **TARGETED** on page 5

AFWA to assume responsibility for space weather mission

By Maj. Michael Bonadonna
Chief, Space Operations Plans

HQ Air Force Space Command (AFSPC) approved a Strategic Plan in April 1999 to realign the space weather strategic center function under AFWA. This realignment will occur in Fiscal Year 2000 with the establishment of an operating location co-located with the 55th Space Weather Squadron. This strategic center function will be relocated to Offutt AFB and merged with the Air Force Weather Agency's operational systems. The merger should be completed by 2003.

The 55th Space Weather Squadron will be realigned under the 14th Operations Group and refocused on providing support to Department of Defense space missions. There are discussions underway to consider renaming the unit as the 614th Space Weather Squadron. Other units directly affected by this action are the SEON sites, the operating locations at National Oceanic Atmospheric Administration's Space Environment Center, and the Peterson AFB Weather Flight.

There are several reasons for undertaking this reorganization. First, the USAF is smaller than it used to be and the consolidation of two weather centers into one makes good sense. It will also allow users of weather information in the field to only have to go to one place for complete "mud to sun" weather support. Secondly, from an operational point of view, space weather support needs to be incorporated into the AFW reengineering concept. One of the historical difficulties in providing space weather support was the absence of field expertise to apply space weather support products to the customer's mission. Operational weather squadrons and combat weather teams will play vital roles in applying space weather support products to help their customers anticipate and exploit space weather and terrestrial weather information.

A third compelling reason for reorganizing the space weather support structure is to "normalize" the technology insertion and training components of the space weather system. AFWA Aerospace Sciences Division has made tremendous advancements in terrestrial weather support over the past few years while the development of space weather technology has been a little slower. AFWA's leadership and understanding of warfighters needs will help

lead the advancement of space weather technology and the training efforts of our weather forces and customers.

Part of this restructuring will be building upon this brand new capability. As its refined it will be integrated with NOAA SEC in Boulder, Colorado, and intertwined into AFWA's architecture. The result will provide a single place for customers to go for strategic center weather support products. The 614th SWXS will serve as the dedicated space weather OWS to all units providing direct support to the space mission.

Because of its complexity, some people may not be aware of what space weather is all about. After all, the effects of space weather aren't immediately apparent in people's daily lives. Solar winds have never blown off anyone's hat!

Space weather is caused by the sun's electrical and magnetic radiation as it interacts with the earth's atmosphere and magnetic field. X-ray and Ultraviolet radiation from the sun can vary in intensity by as much as 1000 times in a matter of minutes. This radiation can cause the ionosphere, the electrically charged layer of the atmosphere, to change very rapidly. The rapidly changing ionosphere can have significant negative impact on military and civil high frequency radio and radar systems, ultrahigh frequency satellite communications systems, global positioning navigation systems, spacecraft systems and health of people in space or in high altitude aircraft.

The National Security Space Architect estimated that space weather caused about a dozen satellite failures of key military systems during the last 10 years. Those failures translate into the loss of billions of dollars of our nation's military capability. Aircraft, precision guided munitions, and all other systems relying on GPS for guidance can be degraded in distance ranges up to 100 meters due to ionospheric effects.

This is more than just interesting science. Customers may be coping with impacts they don't even recognize as weather related. AFW's goal is to minimize space weather's impact on operations.

As part of AFW reengineering, operational weather squadrons and combat weather teams will be responsible for working with operators to identify needs and help apply support products to reduce space weather's negative impact.

In order to do this, AFW personnel will have to learn how to use and apply Space Weather support products. Better training procedures are being developed to help field technicians master those skills. Space weather training is being incorporated into the weather schoolhouse in the apprentice, journeyman, CWT and OWS courses. Additionally, specialized space weather training for those who will produce space weather products or manage space weather support within their OWS will be available through a two-week course at Vandenberg AFB, CA. Meanwhile, check out the excellent training material found on the Air Force Space Command Director of Weather's home page at: <http://midway.spacecom.af.mil/weather/index.htm>, and the AFW Today Space Team homepage at: <http://afwtoday.tinker.af.mil/AirForce/private/Teams/space/space.htm>.

The Space Weather Strategic Plan also describes a new suite of warfighter-focused, graphically based products under development. This will make space weather more understandable and accessible to AFW personnel and its customers.

TARGETED cont. from page 3

heavily on the OWS's relevant and accurate products!

This "teamwork in action" was the real world example of how we are now able to take advantage of the expertise of many of our people with their broad and diverse backgrounds to contribute to our total effort of supporting the operators with mission specific weather.

As the result, on the front lines our CWTs performed superbly as they provided accurate target- and mission-scale observations and forecasts to operators using their products to drive the air operations.

The CWTs are also to be commended for their operations focus and unrelenting desire to provide the operators with the absolute best weather information possible for each and every mission – GREAT JOB! The culmination of all three levels of this new weather teamwork — a Total Force team of

active, Guard, and Reserves – was outstanding weather support for the operators, and that's what "job 1" is for AF Weather!

Along with our NATO allies and other Service partners, we were most effective in meeting our objectives by remaining persistent, patient, and smart in our precision employment of Air Power. With regard to weather operations, we balanced the urgency of the day-to-day operations with preparation for the longer haul.

Our folks at the Air Staff, the AFWA, the MAJCOMs, and especially at USAFE, did a great job of solving the problems to ensure our Total Force Team had the people and products to do their jobs well. Through it all, we continued to work together as a team. Reliance and trust proved to be absolutely essential. As a Total Force Weather Team we were truly powerful – and definitely better than if we had tried to go-it-alone. As a

One of the more important space weather product initiatives taking place is the development of a computer application called the Space Weather Impact Matrix. Slated to be built at AFWA, SWIM uses rule-based logic to give the operator a go/no-go and caution output for individual weapon systems use for specific times and locations. This weapons effects matrix will be incorporated into similar systems and products already in use for terrestrial weather support.

Another exciting new product coming on line is the high frequency effectiveness map. Charts will be generated for user selected areas, times and frequencies rather than the current method of getting a text message describing HF radio propagation conditions over a broad area. This new mapping technique will greatly enhance AFW's ability to support USAF and Army high frequency communications applications.

With this new support structure, training, and product suite, Air Force Weather is taking one small step to ensure warfighters are prepared to take a giant leap into the 21st Century.

team we met our objectives and continued to serve our Nation and our community of nations well. We were an integral and important part of the air operations team and the many successes that air power provided in Operation ALLIED FORCE.

Be proud of yourselves out there in Air Force Weather, we are! You made a big difference and did very well even though you did not have enough trained people or the perfect observations, satellite data, or forecast tools. You have proven that our reengineering CONOPS works and works very well. Now we need you to stay with the AFW TEAM and help us implement this proven CONOPS across the Air Force and the Army.

THANKS for your many and tough sacrifices and thanks for all your very hard work, we really appreciate each and every one of you – and so does your Nation – BE PROUD! WEATHER ON TARGET – OPS NORMAL!

Technology promises improved military forecasting capabilities

HANSCOM AIR FORCE BASE, Mass. — Worldwide Air Force and Army weather forecasts will become much more precise with the implementation of a completely new operating architecture, including sophisticated hardware and software upgrades to the current weather system.

Electronic Systems Center, in concert with the Air Force Director of Weather, Brig. Gen. Fred Lewis, has developed an architecture which will completely re-engineer military weather operations by 2003. Weather forecasting is a critical element of every military operation, from infantry campaigns to air and space operations, and the new, worldwide architecture will address this need when fully implemented.

Recent operational tests validated the effort and were so successful that delivery of key elements of the new system was accelerated to sev-

eral European sites in support of the current Kosovo operations, according to program officials.

Currently, worldwide weather information is transmitted over telephone lines from the global weather center at Offutt AFB, Neb. to 168 Air Force and Army regional and base level units worldwide. The new architecture will not only use satellites and the worldwide web to instantaneously transmit information, but will also create a much more efficient operating structure.

“Our new architecture establishes 12 regional Air Force Operational Weather Squadrons which get their information from Offutt Air Force Base and transmit it to our stations worldwide,” said Col. Bruce Hevey, ESC’s Director of Combat Air Forces Command and Control Systems. “Our goal is to provide these squadrons, and through them, each worldwide location, with the most up-to-date weather

data processing capability possible.”

The new structure includes a series of weather information-processing upgrades which provide state-of-the-art weather data processing capabilities to all 168 worldwide Air Force base and regional level weather offices. ESC is using phased-imple-

mentation for the weather project, acquiring the latest technologies through an 18-month “spiral development” process developed and perfected at the Center. Hardware and software components are ordered through existing pre-competed government vehicles, such as ESC’s Command and Control Product Line.

ESC’s Weather Systems, a part of the Combat Air Forces Command and Control System Program Office, has worked closely with the Center’s Command and Control Product Line program office in assembling a collaboration of system integration contractors.

Defense contractors are responsible for integrating the numerous hardware, software and network components of the weather architecture. The six-year cost of weather architecture completion is \$325 million.

“We have engineered a weather forecasting system that will allow us to focus on local and regional information so that more precise weather forecasts can be produced to meet real-time missions,” said Alexander Kelley, Weather System Program manager at ESC. “By structuring our operation in this manner, we have ensured that each local forecast will be exactly that - local.”

“The network we have created, linked with existing military and commercial satellite data networks and the world wide web, gives weather operators the ability to transmit meteorological data almost instantaneously,” Kelley said. An operational assessment for the Advanced Meteorological Information System, an integral element of the upgrade, was recently held at ESC’s Weather System Rapid Prototyping Facility here.

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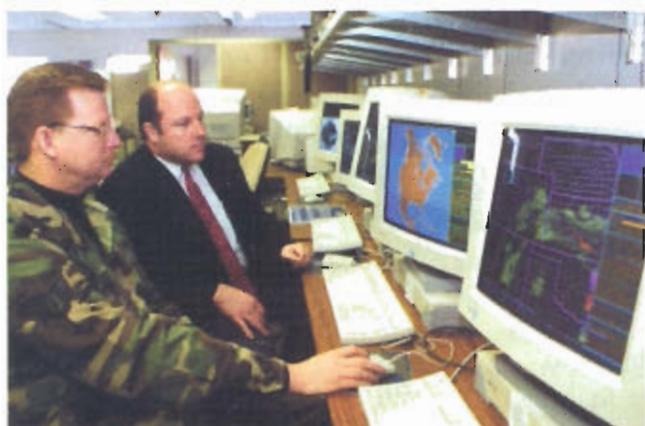


Photo by Walt Santos

Alexander Kelley (right), ESC’s Weather Systems Program Manager, observes Staff Sgt. Ken Dixon, 611th Operational Weather Squadron at Elmendorf AFB Alaska, as he demonstrates the New Tactical Forecasting System software during an operational certification at Hanscom. This software is the first release which begins the weather transition to open systems architecture. It will be fielded worldwide in support of Air Force and Army operations.

Testing ensures global positioning system survives potential ills from millennium bug

By Paul Stone

American Forces Press Service

WASHINGTON—Final Y2K testing on the Global Positioning System indicates Jan. 1, 2000, will be a non-event, according to Air Force officials involved in the project.

“We are very confident these tests will show that the Global Positioning System will function properly into the year 2000 and beyond,” said Mike Filler, command lead of Y2K testing for GPS at the Air Force Space Command, Peterson Air Force Base, Colo. Department of Defense fielded and maintains the GPS, which can tell users their location anywhere in the world within a matter of feet.

The Year 2000 problem, nicknamed “Y2K” and “millennium bug,” refers to a past computer industry practice of programming years with just two digits — 1999 would be “99”. The shorthand means some computer systems and equipment on Jan. 1, 2000, might read “00” as “1900”. The error could generate more inaccurate data and even cause systems to shut down. Systems that won’t handle the year change correctly must be fixed or replaced; those that will work correctly are called “Y2K-compliant”.

Continued functioning of the GPS into the next millennium is critical to DoD’s warfighting mission, Filler said. For example, the Navy and Air Force employ the system for sea and air navigation, while the Army and Marines use it to pinpoint positions during ground operations. “We could not have done what we did in Desert Storm without GPS,” Filler pointed out. “When we initially went into Kuwait, and then Iraq, we were essentially moving in featureless terrain. GPS was the feature that gave commanders the ability to maneuver effectively—to know where all forces were at any given moment in time.”

Although a DoD system, the GPS is used heavily by many major businesses and industries worldwide. Almost all transportation sectors use it, including the airline, rail, sea and trucking industries, as well as individuals, said Capt. Zannis Pappas, Space Command’s GPS operations section chief. “It’s become very affordable and very easy to use,” he added. “Anyone can buy a handheld receiver nowadays, and it’s often used by people hiking, fishing, boating, camping or cross-country skiing. It’s even becoming standard in some automobiles.”

The system consists of three major segments, Pappas said. The first, referred to as the “space segment,” is a constellation of 24 operational satellites that circle the earth. He said the system currently includes three additional satellites, which gives the command the flexibility to take satellites off-line temporarily for routine maintenance or testing, such as the current Y2K tests.

The second component consists of monitor stations at Hawaii and Kwajalein Atoll in the Pacific, Ascension Island in the Atlantic, Diego Garcia in the Indian Ocean, and Colorado Springs, Colo.; ground antennas at Ascension, Diego Garcia, Cape Canaveral, Fla., and Kwajalein; and a master control station at Schriever [formerly Falcon] Air Force Base, Colo.

The monitor stations track all satellites and accumulate data. The Schriever control station processes data to determine satellite orbits and to update each satellite’s navigation message. Updates are then transmitted to each satellite through the ground antennas.

The third segment is users, who receive the navigational and positioning information through a receiver. Filler said two classes of GPS satellites successfully passed tests conducted in late April and early May. Tests on a third class are being conducted throughout July. The classes vary slightly in their technological sophistication and functions.

Y2K testing this month focuses on three key dates, Filler said. First, the test satellite’s clock will be advanced to Jan. 1, 2000, to make sure the system doesn’t read the year as 1900. It will also be tested to successfully read what Filler called “rollover dates” that occur in February 2000 — because many computer systems weren’t programmed to recognize 2000 as a leap year, the test ensures the satellites work properly between February 28 and March 1.

Testing will also verify a non-Y2K-related phenomenon known as “end-of-week rollover.” Filler said the GPS system counts in weeks. When fielded, the GPS satellites’ clocks were set to count only up to 1,023 weeks—about 20 years—from January 1980. At midnight on Aug. 21 this year, the first 1,023 weeks end.

See Y2K TESTING on page 14

Space gets greater role in Joint Expeditionary Force Experiment '99

By Capt. LeWonnice Belcher
Air Force Space Command
Public Affairs

PETERSON AIR FORCE BASE, Colo. (AFP) — Looking at ways space systems can help in “Forging a Decisive Edge” in future conflicts is one of the prime objectives during the upcoming Joint Expeditionary Force Experiment 1999. JEFX '99 began Aug. 18 through Sept. 3, and is the second in a series of Air Force experiments that examines advanced technologies and new operational concepts to determine how the military will operate in the 21st century.

This year's event will feature an even larger role for space, according to Lt. Col. Matt Mills, Air Force Space Command's chief of exercise and employment branch. During the course of JEFX '99, C2 technology integration and process development will be examined closely, and actual air and space systems will be augmented through modeling and simulation technologies—some representing advanced future capabilities, Mills said. One of the main objectives of the experiment will be to test “reach back” capabilities, the ability to support con-

tingency operations anywhere in the world from the continental United States, from a command and control perspective.

Feedback on the results of JEFX '99 will be provided by an assessment team and then published in a final report that will go to the chief of staff of the Air Force. According to Maj. Russ Smith, the experiment project officer for JEFX '99, space systems capabilities are crucial to ensuring the success of AEFs as it relates to the overall expeditionary aerospace force. “In fact, without space the EAF cannot occur,” he said. “The simplest example is communications. Without satellite communications to enable the en route updates to the CFACC and the en route reprogramming—or actual programming—of a weapons platform, the EAF just cannot occur. Period.”

Additionally, the less obvious role of space is the intelligence preparation of the battlefield, or the IPB, according to Smith. “Without the capabilities of overhead assets being brought to bear on any type of battlespace, there is no situational awareness,” Smith said. “The people making the plans that the warfighter will implement have no information from which to build their plan without space. Those systems enable the CFACC and the senior planners and their senior decision-makers to have a more complete picture.

“We'll be looking at providing space data from the 14th Air Force Aerospace Operations Center as well as providing operational support that the theater requests.” James said other things that will be looked at during JEFX '99 include the integration and

coordination of Air and Space Tasking Orders. “We're working to ensure that the Space Tasking Order that we put out on a daily basis is properly formatted and able to be integrated into the Air Tasking Order so that someday we will be able to work from an integrated ATO.”

The ultimate gain for the role of space in JEFX '99 may be the increased awareness among those in Air Force Space Command about their role in the aerospace force. “The EFX environment is now allowing space command to educate space operators that what they do has impact and what they do actually supports a different wartime effort than what they are used to thinking about,” according to Smith.

Conversely, JEFX is letting the “air breathers” know what capabilities space brings to the fight. “Space command understands the power of space systems, but we've got to edu-

“The people making the plans that the warfighter will implement have no information from which to build their plan without space...”

cate the rest of the world,” Smith said. “What's in it for the rest of the Air Force is that they get to see a whole new tool box of what's out there. That's the beauty of JEFX. It's insti-

tuting a cultural shift.”

JEFX '99 is the culmination of a year-long effort that includes three mini-experiments, or “spirals,” and concludes with a two-week “execution period” that began on Aug. 18. The spiral system helps to field new and emerging technologies quickly using commercial and government “off-the-shelf” equipment. Spiral development brings the developers and operators side-by-side to review and improve the systems.

See JFX '99

Air Force, NASA test in-flight weather notification system

By Capt. Joel Hagan

Test and Engineering Flight

EDWARDS AIR FORCE BASE, Calif. (AFPN)

— The 412th Flight Test Squadron is helping NASA test a new system that could improve aircrew situational awareness and reduce weather delays and accidents. The coordinated effort responds to a call by President Bill Clinton for a five-fold reduction in the rate of fatal aircraft accidents within the decade.

The Aeronautics Safety Investment Strategy Team found weather is a factor in approximately 30 percent of aviation accidents and is responsible for approximately two-thirds of air carrier delays—a \$4 billion cost, of which \$1.7 billion is considered avoidable. The goal of the weather accident prevention group, a sub-element of the team, is to develop technologies to reduce aviation weather-related accidents.

To help meet this goal, two major programs were funded under a NASA research announcement to develop worldwide weather information systems. The 412th Flight Test Squadron agreed to support the Aviation Weather Information Implementation Team, or AWIN, evaluation with its C-135C aircraft, also known as Speckled Trout.

Prior to a flight, Air Force aircrews normally receive weather information an hour or more before takeoff. On an extended sortie, such as those flown by airlift, tanker and bomber aircraft, this weather information becomes increasingly outdated and less useful to the aircrew as the flight progresses. Although aircrews are capable of updating this weather information, this capability is limited based on the route of flight.

Unfortunately, even under the best of conditions, air-

crews are forced to build a mental picture of the weather ahead of the aircraft based on conversations with air traffic controllers. The AWIN system is designed to decrease aircrew workload by providing the actual weather picture ahead of the aircraft without forcing them to perform the mental gymnastics required to synthesize such a picture based on information gathered over the radio.

In real-time, the AWIN system uplinks weather information, similar to data an aircrew would receive from a ground-based weather squadron, to an aircraft, and continues to update this information on a regular basis. Basic weather information such as temperature, pressure and dew point is gathered by private companies or government organizations such as the Air Force Weather Agency. The weather agency develops weather products such as composite radar images, lightening strikes and satellite images. These weather products are sent to a ground station which then uplinks the information to an International Maritime Satellite, or INMARSAT, commercial satellite system. The weather products are then downlinked to the Speckled Trout and displayed on a laptop computer located on the flight deck.

The 412th is working closely with the Air Force Flight Standards Agency, which, as a participating test organization, is supporting the 412th FLTS AWIN test program with an NC-21A aircraft and aircrew. Along with acting as the responsible test organization for the AWIN program, the 412th will also install the AWIN system aboard the NC-21A aircraft. The Speckled Trout and the NC-21A will fly a combination of continental U.S. and overseas flight test sorties along standard commercial flight routes, to evaluate AWIN weather products.

JFX '99

The first spiral tested command and control, or C2, systems software used in the experiment. The second integrated and tested C2 system and process initiatives at experiment sites. The third, which occurred from July 14 through the 21st, was a dry run for the JEFX execution phase that kicked off in August.

The experiment includes live and simulated flying operations and related military activities designed to add realism to stress-filled combat-like environments. All live-fly operations will occur at Nellis AFB, Nev. The “crisis” scenario for this year’s event involves a simulated attack by a border rogue nation against one of America’s overseas allies. At the request of the embattled nation, the United States will

send an aerospace expeditionary force to counter the attack.

The 366th Wing from Mountain Home AFB, Idaho, forms the core of the Aerospace Expeditionary Force needed for the response. As part of the exercise, Mountain Home must prepare aircraft and personnel for deployment and coordinate with the 53rd Wing from Eglin AFB, Fla., the core wing for an already in-place AEF.

Newest addition to weather family stands up

15th OWS Now Operational

By Maj. Don Berchoff

15th OWS/DO

The 15th Operational Weather Squadron Mission Support Cell at Scott AFB officially began supporting four Guard/Reserve flying units on 24 Mar 99 (128 ARW, 115 FW, AASF#2, Madison WI, and 95 AS) and has taken on an additional 30 flying units since then. In this, the first stage of hub operations, the 15th OWS is assuming flight briefing responsibility for all Air Force and Army guard and reserve flying units not co-located on active duty bases throughout the Northeast Continental United States region.

Support to more than 40 remaining flying units, currently provided by active duty weather flights, will complete their transfer by the end of September 1999. Thus far, the transition has gone fairly smoothly and customers appear pleased with the support. A total reengineering of mission support processes has been the primary reason for our early success.

The 15th OWS web page <http://15ows.scott.af.mil> is the main dissemination method for weather information to the flying units. Most fighter and Army units with .mil access are now downloading a suite of regional graphics from their customized web page along with forecasts/observations and other weather data. Soon, .com access will be available for those requiring it.

Hand-drawn unique flimsies, provided by weather flights in the past, have been successfully eliminated across the region and have evolved into a standardized suite of regional flimsies/graphics locally produced by our lead forecaster. Bringing up this function has proven challenging since most of our forecasters are becoming acquainted with forecasting on a regional scale for the first time.

Additionally, it will take at least 6-12 months to gain a good understanding of the mesoscale effects throughout

the NE CONUS. Already, we've had bouts of lake-enhanced snow, upslope fog and stratus in the high plains, and some dry air funneling east of the Appalachians that slowed the progress of precipitation up the East Coast.

We have a lot to learn, and encourage folks in the field to call and share some of those mesoscale rules when you see that our products may not be right on track. The experience and knowledge our forecasters will gain from producing these graphics will pay dividends later this year and early next year when we begin picking up forecast and warning support.

Maintaining a handle on such a vast and diverse region as the NE CONUS is extremely challenging. The graphics products for the morning missions are available on the web page by 10Zulu Time and by 11Zulu Time for the afternoon and evening missions. The morning products are metwatched and amended if necessary beginning at 10Zulu Time. The most challenging morning product has been the ceiling and visibility chart, which requires constant care during the early morning hours. The afternoon products are updated (if needed) by 16Zulu Time and amended thereafter (if necessary). The evening products are updated by 21Zulu Time and amended thereafter.

Briefing support out of the cell also started off well. A majority of the flying units are inputting their flying schedules into a web page scheduling system. Customers can receive 175-1-like briefings in a variety of ways to include electronic fax, email, or through the web page.

These are tremendous manpower savers and have led to a nearly paperless work center. The processes and vision we laid out for the web page, graphics, and briefing system are falling into place. Despite many challenges, it has been an encouraging start. The 15th OWS is extremely proud of what our forecasters have accomplished thus far.

If anyone is interested in talking with the lead forecaster or a briefer, please call DSN 576-9755. We encourage everyone's feedback.

TECHNOLOGY cont. from page 6

Testers ran the system through a comprehensive, simulated, operational environment which duplicated conditions at Air Force weather units worldwide.

"We simulated conditions that a

forecaster would encounter anywhere in the world, from simple to complex scenarios, and the system, with just some fine tuning, performed magnificently," said Kelley.

"We are creating a seamless, worldwide weather forecasting system

that will keep our operational forces completely up-to-date on weather conditions, as they change," Kelley said. "Our efforts are setting the cornerstone for the Air Force weather needs of the 21st Century."



WeatherScene Cameras and Sensor Pod with precipitation gauge

By Master Sgt. Mike Thompson
Air Force Combat Weather Center

Headquarters, Forces Command and the Air Force Combat Weather Center recently combined efforts to field a new concept in weather observing and data collection. The initial FORSCOM requirement was to gather meteorological data and camera views of the surrounding sky condition from a remote site to a fixed in-country location for use by local weather personnel.

The requirement also dictated the data be accessed remotely by the

to the basic WeatherScene system, bringing the total to four, and a radio relay to increase the original transmission distance.

In September 1998, the science advisor to FORSCOM contacted AFCWC's Tactical Solutions Branch requesting a January-February 1999 evaluation of the COTS system prior to deployment. AFCWC customized an evaluation plan for the WeatherScene and provided status reports to FORSCOM throughout the

New observation project employs video cameras

gram.

FORSCOM elected to purchase WeatherScene, a commercial off-the-shelf system built to monitor traffic and road weather conditions, to achieve this goal. FORSCOM added two additional cameras

tem and developed a concept of operations for deployment use. Some of the recommended changes included incorporating a wider camera angle lens (from 15 to 45 degrees each), a precipitation gauge, greater capacity solar panels and batteries, AC power conversion, RF cabling, and software modifications. These were completed at the end of March 1999.

After considerable research, AFCWC elected to develop its own software program, AutoObs, to automatically generate meteorological automated aviation weather reports from WeatherScene log files, encode the information, and transmit it via file transfer protocol to the Tinker Weather Network.

Developed by Staff Sgt. Tom Cardinal, AFCWC/DOR (cardinat@hurlburt.af.mil), the "AutoObs" program also formats a web page containing the METAR observation, standard and derived meteorological data, and the four camera images, then sends it to an FTP server of choice for inclusion into a unit homepage.

The concept of camera views to improve the meteorological understanding of a remote location continues to gain interest throughout the military weather community. However, the gem of this work by AFCWC has been the automated generation, encoding, and transmission of weather sensor data into proper meteorological format for worldwide military use.

Testing of the web page developed by the "AutoObs" program continues and can be viewed by military users at www.hurlburt.af.mil/afwc/ under "Programs" and "Beta Test."



WeatherScene modified camera view

Courtesy Photos

Shaw Air Force Base Operational Weather Squadron. AFCWC implemented a new automated method of reporting and sending meteorological data and site environmental conditions with images of the remote sky condition through recommended modifications and developing a new observation encoding and transmission pro-

clearances for both the Continental United States and OCONUS and certifying and accrediting the system. Both processes took more than a month to coordinate.

During the course of the evaluation, AFCWC made a number of recommendations for correction or improvement to the WeatherScene sys-

period.
Two of the greatest difficulties encountered prior to actual testing involved frequency

Explorers make contributions to tornado victims

By Jane Key

Public Affairs Intern

A group of active weather-enthusiasts and future meteorologists from Weather Explorer Post 999 recently witnessed exactly how devastating severe weather damage can be. Four of the Post's explorers, plus Maj. Ken Carey and Mr. Gordon Brooks, Explorer adult leaders, visited Norman, Oklahoma, in June to assist in tornado damage relief for Norman-area high school students. The group collected monetary donations in Nebraska to present to the tornado victims. They also learned a little more about meteorology.

The Post's purpose for being there was to present the donations they had collected to Ms. Nancy Spencer, Del City High School Emergency Coordinator. The presentation included a check for \$315. The Post was also able to witness in person the damage the severe tornadoes had done to the Norman area. "Until you are able to see it firsthand, you don't realize the extent of the damage severe weather can do to a community," said Maj. Carey.



Along with making contributions to a community in need, the Post wanted to learn more about meteorology and the area. The group visited the Alfred E. Murrah Building Memorial and several weather forecasting headquarters.

The group began their first day with a few hours of weather-related activities at the Doppler Weather Radar Operational Support Facility and then moved on to tour the Oklahoma City National Weather Service Office. After stopping for a quick lunch, the group was off and running to the National Severe Storms Laboratory. One of the most interesting stops on the trip, the NSSL provided the group with information on how research is applied to developing forecasts all over the world.

The group was fortunate enough to visit and tour the Meteorology Department of the University of Oklahoma; the students were able to learn a little more about the study of meteorology. The group was also given a two-hour tour of the entire University. "It's a great opportunity to link up these potential meteorologists with professionals in this career field, and a good learning experience for the students," Maj. Carey commented.

The students were also able to visit the Oklahoma



Top photo

(From left to right) Mr. Rich Rasmussen, WSR-88D Operational Support Facility, Mr. Gordon Brooks (Explorer adult leader), AFWA/DNXT, with Explorer members Becky Lord, Megan Forsee, Matt Johnson, Maj. Ken Carey (Explorer adult leader), AFWA/SCSA and Joe Smith (sitting). Photo at left shows the damage caused by the tornado that ripped through Oklahoma in May.

Climate Survey Mesonet Project, where a dense coverage of sensors measure all kinds of weather and states of atmosphere, the only facility of its kind in the nation.

The Norman, Oklahoma trip was one of the Post's many group activities. Weather Explorer Post 999 consists of 23 boys and girls ranging in age from 14-20 who have a strong interest in weather and meteorology, and is the only active weather post in the United States. It is also the only post sponsored by both the Boy Scouts of America and The Weather Channel.

The Post is headed mainly by Air Force Weather Agency personnel, and is advertised through Omaha-Metropolitan area high schools. Interested students participate in meetings held every other Monday night throughout the months of September through May, and through various field trips and activities. More information on Weather Explorer Post 999 can be found on the Internet at www.erh.noaa.gov/oax/explorer.htm. If interested, please contact Maj. Ken Carey at (402) 294-1396, or email Explorer@afwa.af.mil.

AIR FORCE

WEATHER WARRIOR



NAME/RANK: Kimberly W. Kreis (Kim) , Capt.

UNIT: 55th OSS/OWS, Offutt AFB

JOB TITLE: Flight Commander

YEARS IN SERVICE: 10

HOMETOWN: Fayetteville, NC

FAMILY STATUS: Married to

Andy, one son, Greyson

HOBBIES: Cooking,

Homebrewing, Reading

REASON JOINED THE AIR FORCE:

Knew what a rewarding life it was from my father's Air Force career

PERSONAL MOTTO: Taking care of your people will get your mission taken care of!

MOST MEMORABLE AIR FORCE WEATHER EXPERIENCE:

As a 1Lt. supporting U2s in Saudi during Desert Storm. It was great knowing and seeing that I was making a real operational impact.



PHOTO CONTEST

The public affairs office is soliciting photos from readers who are closet shutterbugs. Please forward photos of mission/human interest prints.

Photos selected will be used as front/back covers of the magazine. Photographers will receive recognition in the SPOTLIGHT section of page 2. Please call DSN 271-3115 with questions/idea submissions. Email photos in .tif format to observer@afwa.af.mil

Behind the Kwang Ju weather forecast

KWANG JU AIR BASE, Republic of Korea (AFPN) — While it may seem like a moist fingertip and a little bit of luck is all it takes to forecast weather, there's actually a lot more involved.

The best resource the 3rd Air Expeditionary Group weather team has in calculating the often-unpredictable weather systems in South Korea is experience. Staff Sgts. Robert Tebben and Brian Hearn have both been previously stationed or deployed to various bases in Korea, which helps, according to Hearn.

The team routinely briefs aircrews flying from Kwang Ju Air Base, Republic of Korea, on anticipated weather conditions, thermal properties of practice targets, alternate landing sites and, of course, leaving and returning to the airfields in South Korea.

Prior to an air crew's departure, the weather team provides information on expected weather conditions to include hazards, wind speeds and weather conditions expected at the destination, according to Hearn, a forecaster here. "This information

helps the crews determine how much fuel they will need and what to expect," said Hearn.

If the mission is a real-world or training combat mission, the weather team also provides thermal data which enables aircrews to pin-point targets on their scopes.

"To make sure the weapons system officer can find his target, we provide a forecast showing the difference in temperature between a target and its background," said Staff Sgt. Robert Tebben.

"To accomplish that, we obtain information on the target's operational status from the intelligence people. They may tell us there's machinery within the structure generating heat. With that information, we've got one part of the equation.

"Next, we look at the terrain and atmosphere surrounding the structure to determine the background temperature. When we have all the information, we can then provide the WSO with the thermal properties of a target," said Tebben.

"I rely on the weather team to provide information on what type of

weather ceiling we'll encounter, which governs our target attack," said Capt. Kyle Koncak, weapons systems officer.

Forecasting the weather for a destination takes a bit of research, according to Hearn. "When the air crew is ready to begin (its) descent, (it will) need information on visibility to determine if it's necessary to use instruments to land or if (it will) be able to land using a visual approach," said Hearn. "Knowing the local forecast in many cases won't be enough."

The weather team provides weather data to aircrews on alternate landing sites in the event an alternate is needed due to inclement weather at Kwang Ju. Most often, aircraft diverted from Kwang Ju will land at Osan or Kunsan air bases, in South Korea, Hearn said.

The team also utilizes weather data provided by other sources to help prepare aircrews departing from Kwang Ju. Among them are other base weather units and official World Wide Web weather information sites. **(Courtesy of Pacific Air Forces News Service)**

Y2K TESTING cont. from page 7

"From our perspective and the testing we've done, we don't anticipate any problems," Filler said. "What we expect is that the clocks will revert back to zero and then begin counting the weeks all over again. That would place the next rollover at April 6, 2019."

Although the rollover and Y2K are not expected to affect the satellites or ground control operations, Filler warned that GPS receivers may experience problems. The individual services are testing their receivers and upgrading and replacing them as needed. Personal GPS receivers also need to be checked.

"Most receivers made in the past five years should be OK, but it wouldn't hurt to check," Filler said. The Federal Communications Commission and Department of Transportation are advising users of personal GPS receivers to contact the manufacturers to determine compliance.

For manufacturer contact information, use the federal government's toll-free Y2K consumer hot line, 1-800-USA-4-Y2K, or visit the Consumer Information gateway at the Federal Trade Commission Web site at www.consumer.gov/y2k/index.html. The site has direct links to most manufacturers of consumer electronics.

Observer accepts challenges of 'remote' tour

By Staff Sgt. Scott Davis

401st Expeditionary Air Base
Group Public Affairs

TUZLA AIR BASE, Bosnia-Herzegovina (USAFENS) — Tuzla Air Base is the center of American activity in the U.S. sector of post-war Bosnia-Herzegovina, but not everyone serves their temporary duty time surrounded by familiar uniforms. Weather observers can be stationed here or at six other locations in the sector. In most cases, they end up going above and beyond their assigned duties.

Senior Airman Sean Bryan, on temporary duty from the 52nd Operations Support Squadron at Spangdahlem Air Base, Germany, reaches his office a little past 5 a.m. each day and begins collecting data for his daily briefing. He works along side field grade officers from various countries and, at 7:45 each morning, he stands in front of the NORDPOL Brigade commander and 70 other of-

ficers to give the weather report.

"Not too many airmen get to brief a foreign general," said Senior Master Sgt. Gerald Claycomb, 401st Expeditionary Weather Squadron superintendent. "This is not his normal job. The observers aren't trained at tech school to give these briefings." It took Bryan a couple of days to get used to this high-level visibility, but his nervousness didn't last long.

"It feels great," Bryan said of his opportunity to be in the spotlight. "The first day was kind of awkward, but after that it began to flow smoothly." The NORDPOLE Brigade headquarters is in Doboj and includes military members from Denmark, Estonia, Finland, Latvia, Lithuania, Norway, Poland and Sweden. The briefings are in addition to his other duties at the base.

He observes and records hourly weather observations and special observations as needed. Using data pro-

vided by weather forecasters at Eagle Base, Bryan creates PowerPoint slides of two- and five-day forecasts. In his briefings, he adds weather information from the Internet on the capital cities of each country represented at the brigade headquarters. During his personal time he's made friends by joining in the activities around the base, and even finished second in a local pool tournament.

"Everybody here speaks English, and that's a good thing," Bryan said. "It's nice to sit down and have a cup of coffee with them in the afternoons." The assignment is giving Bryan some great experience, according to Claycomb.

"Air Force weather observers at the other five base camps also do more than they are asked to do," he said. "We throw them to the wolves out there, and they rise to the occasion and show the world they are the best airmen in the Air Force." (USAFENS)



Submit your questions, ideas, concerns by 27 August for the Oct/Nov issue to observer@afwa.af.mil

TEAMWORK!

As I looked over the latest Observer, I was pleased to see the article concerning teamwork. However, one "hub" not mentioned is near and dear to me; the Special Support Operations Weather Operations Center (SOFWOC). Hooah!

SOFWOC is the worldwide hub for all Air Force and Army special operations support. Established on 1 Nov 97, we provide round-the-clock support to special operations forces, *anytime, anyplace!* We have one of the finest teams of weather forecasters in AFWA. We can only boast this capability through teamwork. This attitude permeates our operation 365 days a year making us the epitome of teamwork!

Daily telephone weather discussions with Sembach to coordinate Operation ALLIED FORCE forecasts. TEAMWORK! Operation Directorate-wide forecast discussions that keep all personnel up-to-date on current and forecast weather for the world. TEAMWORK! Discussions on weather conditions with a SOF weather warrior in an isolated spot in South America. TEAMWORK! It even extends down to shift-change briefings where all participants are encouraged to offer opinions on forecasts and model interpretation. TEAMWORK! We can never stress teamwork enough in our unit.

Thanks for letting me give a shout out for SOFWOC (Hooah!) in your new "Letters to the Editor" section. Please encourage all Air Force Weather members to write to the editor or submit articles to the Observer. I enjoy reading news items from weather facilities I have been stationed at or visited!

MSgt Richard Nieman
Superintendent, AFWA/XOGS

Feature

Warning! Forecasting unit exhibits Warning! predictable expertise

Warning!

Warning!

Warning!



Technical Sgt. Charles Elford, chief of continental U.S. Severe Forecast Operations, and Robert Curran, Air Force Weather Agency lead forecaster, discuss point weather warnings for thunderstorms in effect over southern Alabama.

By Technical Sgt. Michael Jones
AFWA Public Affairs

We're in that season again where regional weather conditions can be extremely unpredictable. Although weather forecasters don't yet own crystal balls, the 27-member forecasting team in Air Force Weather Agency's severe weather section do possess state-of-the-art forecasting equipment that helps identify potentially dangerous weather conditions before they happen.

"We're part of an extensive U.S. weather warning network whose principal objective is to provide military and civilian communities as much advance warning time as possible," said Technical Sgt. Charles Elford, chief of CONUS Severe Forecast Operations. "Whenever extreme weather conditions develop we try to provide the most precise warnings and advisories we can to help prevent loss of both life and property."

AFWA's severe forecasters work around the clock

in five-person teams. Two noncommissioned officers handle all administrative, operations, and training functions. A portion of their mission requires production of two military weather advisories three times per day. These advisories go out to base weather forecasters at all Air Force, Army, Guard, and Reserve units. Base forecasters use information contained in these advisories to help prepare local forecasts and brief aircrews.

The nucleus of the forecasting system is the WSI WEATHERworkstation®. It performs the bulk of forecasting calculations and gives the severe weather section its impressive capabilities. Similar to a system used by the National Weather Service, the WEATHERworkstation is state-of-the-art capable of automatically tracking and displaying information for up to 20 storms simultaneously. Forecasters can define parameters and set configurations for the Doppler radar, lightning, satellite, observational, and model information



Photos by Amn Jeremy Smith

Elford and Curran review a severe weather report bulletin received via high-speed teletype.

they wish to display. Elford said this puts a vast amount of forecasting information at the operator's fingertips.

"Advance warning of potential severe weather conditions becomes extremely important when considering the unique capabilities many military bases possess. Losing military members or highly specialized aircraft and equipment can have a negative impact on U.S. national security," said Col. Charles French, AFWA commander. "Increased lead times for weather warnings allows base commanders time to execute aircraft and personnel evacuation procedures. It also gives base disaster preparedness folks additional time to coordinate their response and minimize threats to assigned personnel."

Commanders get this advance notification through Point Weather Warnings. More than 300 sites in the U.S. receive PWWs. These sites include all service branches, the Pentagon, White House, Camp David and many other Department of Defense agencies. Elford said sites request warnings be transmitted to them when potentially severe weather conditions meet specific criteria. The desired lead time is 30 minutes for tornado warnings and two hours for severe storms and all other warning criteria.

"PWWs mirror NWS capability," said Elford. "Both are designed to provide advance notification of severe weather conditions. PWWs essentially give commanders more time to react and take preventative measures to protect personnel and resources. Radar data is gathered from 145 NWS radar sites spread throughout the U.S. We access that information and use our workstations to come up with warning times based on potentially dangerous weather conditions. It's very similar to the county weather warnings issued by the NWS." Elford explained that the difference between the

two is that the military issues warnings based on potential threats while NWS's warnings are issued based on actual sightings, radar indications, or imminent occurrence.

Because of its magnitude and location, the Oklahoma tornado generated a flurry of activity. Since the NWS Storm Prediction Center is located in Norman, Oklahoma, the staff initiated command transfer procedures with AFWA's Severe Weather Section. The severe section has served as command backup for almost 14 years. "We're keenly aware of our backup responsibilities, that's why we practice these transfers quarterly," said Elford, "So when they called us, we went into an immediate ready mode. We've had to actually assume NWS command functions for a few times during this year because of weather conditions or other reasons."

Elford said the tornado that ravaged Oklahoma City provides a very recent example of how the PWW system works and helps to emphasize their command partnership with NWS. Working with all the information available via the WEATHERworkstation and other systems the severe weather section issued its tornado warning for Tinker AFB two hours and 16 minutes before it hit the base. "Tinker AFB forecasters issued their tornado warning 27 minutes prior to occurrence. Forecasting right up until the last minute, forecasters stayed at their consoles until the tornado was one-mile out. That's true dedication because they were putting their duty above personal safety. If that tornado hadn't veered away from the base, it could have cost more lives in addition to doing incalculable damage."

AFWA and NWS provide a two-pronged approach for ensuring military and civilian communities receive the earliest, most precise warnings of potential severe weather conditions possible. Continued employment of this warning system technology will help keep both loss of life and property damages to a minimum.



Elford checks forecast frontal positions on the WSJ WEATHER Workstation at the Air Force Weather Agency Severe Weather Section. The WSJ WEATHER Workstation is a state-of-the-art weather monitoring, analysis and forecasting system.

MEDALS

MERITORIOUS SERVICE MEDAL

Master Sgt. John Fritz, HQ AMC/DOW, Scott AFB IL

AIR MEDAL

Staff Sgt. Cameron D. Thomas, Ft. Bragg, NC

AIR FORCE COMMENDATION MEDAL

Capt. Keith Vickers, 46th WS, Eglin AFB, FL

Staff Sgt. James K. Haavisto, Det 1 607 WS, Camp Red Cloud, Korea

Staff Sgt. Wayne Hardesty, 57 OSS/OSW, Nellis AF, NV

Staff Sgt. Stephen Beaupre, 45th WS

Senior Airman Rachel Ramos, 45th WS

JOINT SERVICE ACHIEVEMENT MEDAL

Technical Sgt. Tunney, John C., 146 WF Pittsburgh, PA

Senior Airman Branham, Robert G., 146 WF Pittsburgh, PA

AIR FORCE ACHIEVEMENT MEDAL

1Lt. Aaron M. Kinser, 57 OSS/OSW, Nellis AFB, NV

2Lt Lee A. Nelson, 18th WS, Ft. Bragg, NC

Senior Airman Andrea Henderson, 46th WS, Eglin AFB, FL

Senior Airman Alicia Scovill, 13th ASOS/WF

Senior Airman Angel L. Abdullah, 57 OSS/OSW, Nellis AFB, NV

Airman First Class Laura C. Graham, 57 OSS/OSW, Nellis AFB, NV

ARMY ACHIEVEMENT MEDAL

Staff Sgt. Richard Cummings, 13th ASOS/WF

Senior Airman Brad Miller, 13th ASOS/WF

ARMED FORCES EXPEDITIONARY MEDAL

Technical Sgt. Tunney, John C., 146 WF Pittsburgh, PA

Staff Sgt. Eyler, Calyton R., 146 WF Pittsburgh, PA

GOOD CONDUCT MEDAL

Staff Sgt. Amy L. Gill, 57 OSS/OSW, Nellis AFB, NV

Senior Airman Jennifer A. Dorn, Dragon Flt, Ft. Bragg, NC

NATO MEDAL

Staff Sgt. Eyler, Clayton R., 146 WF Pittsburgh, PA

PROMOTIONS

TO LIEUTENANT COLONEL

Thomas A. Meyer, 126 WF Milwaukee, WI

TO MAJOR

Anthony D. Moninski, 57 OSS/OSW, Nellis AFB, NV

TO CAPTAIN

Kenneth H. Campbell, 105 WF Nashville, TN

Jeffrey P. Leising, 126 WF Milwaukee, WI

TO 1ST LIEUTENANT

Charles Morgan, 13th ASOS/WF

Travis G. Doke, Dragon Flt, 18th WS, Ft Bragg, NC

TO 2nd LIEUTENANT

Christina M. Cox, 154 WF Little Rock AFB, AR

TO SENIOR MASTER SERGEANT

Robert N. Thomas, 104 WF Baltimore, MD

Larry D. Jackson, HQ AMC/DOW, Scott AFB, IL

TO MASTER SERGEANT

James P. Gary Jr., 104 WF Baltimore, MD

Joel J. Jordan, 113 WF Terre Haute, IN

TO TECHNICAL SERGEANT

Paul E. Buschow, 209 WF Austin, TX

James E. Rowe, 200 WF Richmond, VA

Terence G. Tomes, 203 WF Ft. Indiantown Gap, PA

Edward Acuaver, 113 WF Terre Haute, IN

TO STAFF SERGEANT

Danny L. Athanasaw, 200 WF Richmond, VA

Jessika Clarke, 412 OSS/OSW, Edwards AFB, CA

Suzanne E. Johnson, 125 WF Tulsa, OK

James Coker, 45th WS

John T. Harrison, Jr., 57 OSS/OSW, Nellis AFB, NV

Taylor B. Jacobs, III, 57 OSS/OSW, Nellis AFB, NV

Cameron D. Thomas, 18th WS, Ft. Bragg, NC

Preston L. Gibson, 325 OSS/OSW, Tyndall AFB, FL

TO SENIOR AIRMAN

Anastasia Brenan, 120 WF Buckley ANGB, CO

Andrew J. Hopkins, 120 WF Buckley ANGB, CO

Matthew R. Heline, 104 WF Baltimore, MD

Edward Ang, 45th WS

Richelle R. Bigata, 57 OSS/OSW, Nellis AFB, NV

Alicia Scovill, 13th ASOS/WF

TO AIRMAN FIRST CLASS

Krista Greider, 57 OSS/OSW, Nellis AFB, NV
Angel R. Portocarrero, 57 OSS/OSW, Nellis AFB, NV
Johanna T. Peltonen, 57 OSS/OSW, Nellis AFB, NV
Aaron Dagnes, 13th ASOS/WF
Joseph M. Andaya, 57 OSS/OSW, Nellis AFB, NV
Charles B. Jimerson, 18th WS, Ft. Bragg, NC

REENLISTMENTS

Technical Sgt. Manuel Carrasquillo, 13th ASOS/WF

Staff Sgt. David A. Dawson, 57 OSS/OSW, Nellis AFB, NV
Staff Sgt. Taylor B. Jacobs III, 57 OSS/OSW, Nellis AFB, NV
Senior Airman Earl A. Stoll, 57 OSS/OSW, Nellis AFB, NV
Senior Airman Brad Miller, 13th ASOS/WF
Senior Airman Adrian L. Freeman, Simmons Flt, 18th WS, Ft. Bragg, NC

1998 AIR FORCE WEATHER AWARDS

AIR FORCE WEATHER AGENCY, Offutt AFB, Neb. - The following individuals and units were selected as best of the best for 1998 Air Force Weather.

Individual Awards:

Outstanding Air Force Weather Company Grade Officer of the Year: Capt. Kimberly W. Kreis, 55 OSS/OSW, Offutt AFB, Neb. (ACC)

Outstanding Air Force Weather Senior Non-Commissioned Officer of the Year: Master Sgt. Alfredo Domingues III, 509 OSS/OSW, Whiteman AFB, Mo. (ACC)

Outstanding Air Force Weather Non-Commissioned Officer of the Year: Tech. Sgt. Douglas P. Anderson, 354 OSS/OSW, Eielson AFB, Alaska (PACAF)

Outstanding Air Force Weather Airman of the Year: Senior Airman William M. Barnwell IV, Detachment 5, 10th Combat Weather Squadron, Fort Bragg, N. C. (AFSOC)

Outstanding Air Force Weather Civilian of the Year: Dr. Christy L. Crosiar, 30th Weather Squadron, Vandenberg AFB, Calif. (AFSPC)

Outstanding Staff Support-Best Award, Officer Category: Major Jeffery R. Lenskens, HQ USAFE/DOW, Ramstein AB, Germany (USAFE)

Outstanding Staff Support-Best Award, Enlisted Category: Master Sgt. William H. Dennis, Jr., 7th Weather Squadron, Heidelberg AIN Germany (USAFE)

Outstanding Staff Support-Best Award, Civilian Category: Mr. Stanley W. Tkach, HQ ACC/XOWRP, Langley AFB, Va. (ACC)

Outstanding Air Force Weather Forecaster-Pierce Award: Senior Airman Michele L. Alexander, 16 OSS/

OSW, Hurlburt Field, Flo. (AFSOC)

Outstanding Air Force Weather Observer-Dodson Award: Senior Airman Martha B. Exum, 3rd Weather Squadron, Fort Hood AIN, Texas (ACC)

Most Significant Technical Contribution-

Mereweather Award: Capt. Robert P. Asbury, AFRL/DES, Kirtland AFB, N. M. (AFMC)

Best Application of Climatology-Zimmerman

Award: Mr. William P. Roeder, 4th Weather Squadron, Patrick AFB, Flo. (AFSPC)

Most Outstanding Air Force Weather Individual Mobilization Augmentee (IMA)-Spengler Award: Maj. Ann S. Hollis, 355 OSS/OSW, Davis-Monthan AFB, Ariz. (ACC)

Unit Awards

Outstanding Base/Post Weather Station-Williams Award: 30th Weather Squadron, Vandenberg AFB, Calif. (AFSPC)

Outstanding Specialized Weather Unit-Moorman Award: The unprecedented efforts and superb accomplishments of three units made selecting a single first place winner impossible. To honor these organizations for their outstanding contributions to Air Force operations and AF-W Reengineering, the following three units will share the Moorman Award: Air Force Weather Agency, Global Weather Center Division (AFWA/XOG), Offutt AFB, Neb.; USAFE Operational Weather Squadron, Sembach AB, Germany; and Alaskan Weather Operations Center, Elmendorf AFB, Alaska

Outstanding Tactical Weather Unit-Grimes Award: 62nd Airlift Wing Weather Flight, 62 OSS/OSW, McChord AFB, Wash. (AMC)



On the Cover

Two MH-60G Pave Hawks on a training mission. The MH-60G is equipped with an all weather radar which enables the crew to avoid inclement weather. The MH-60G's primary wartime missions are infiltration, exfiltration and resupply of special operations forces in day, night or marginal weather conditions.