

557TH WEATHER WING FLIGHT PLAN



FOREWORD

The mission of the 557th Weather Wing, the Air Force's only weather wing, is to exploit timely, accurate, and relevant weather information anytime and everywhere on the globe. We do this by providing around-the-clock authoritative terrestrial and space-environmental data, analyses, forecasts, threat-warning and threat-mitigation products and services for the Department of Defense, military services, all geographic and functional combatant commands, the National Intelligence Community, White House Situation Room, interagency, allied and coalition partners around the world across multiple security enclaves.

The men and women of the 557th embrace a proud heritage of maximizing America's military power. From the D-Day invasion to Operations ENDURING FREEDOM, IRAQI FREEDOM and INHERENT RESOLVE, our weather and cyber professionals have been enabling warfighters to achieve multi-domain decision superiority by mitigating atmospheric and solar threats to execution from the strategic to operational to tactical levels of warfare.

Headquartered at Offutt Air Force Base, Nebraska, the 557th is comprised of 1,450 personnel in two groups and 12 squadrons spanning 19 globally dispersed locations. Through the 1st and 2d Weather Groups, we integrate leading-edge threat-based weather forecasts and warnings, as well as climatological projection and solar-threat expertise, into all operational phases. From managing daily risk for protection of personnel and resources, to shaping warfighter planning and execution of kinetic and non-kinetic engagements, to enabling long-range strategic basing decisions, the 557th empowers decision makers to "Choose the weather for battle" and achieve our nation's objectives.

Transformation and innovation are inseparable tenets of the wing's approach to maximizing readiness and lethality to ensure battlespace dominance. Our 2015 transformation from a Field Operating Agency to a specialized-mission wing allowed us to become more operationally focused. Since then, we have continuously sought to increase operational synergy through cultivation of key joint, interagency, allied, and industry partnerships. Furthermore, we operationalized the Air Force's newest Global Air-Land Weather Exploitation Model; ramped up data assimilation to increase model fidelity and accuracy; expanded connectivity to additional networks to extend our reach to the warfighter; bolstered cybersecurity of our High Performance Computing Data Center; expanded our space weather services and outreach; and postured our personnel and resources to not only provide global weather reachback operations but also more direct boots-on-ground expeditionary base operating support through expansion of our deployable footprint. All these initiatives have one aim... maximize the 557th's ability to exploit global terrestrial and space-environmental intelligence to better meet the dynamic needs of Air Force, Army, combatant command, special operations, C2 and ISR activities in a contested, degraded, or operationally limited environment both today and tomorrow.

Of course, none of this would be possible without our Airmen... to "tell our story" is to tell theirs. The men and women of the 557th are proud to support and defend the interests of our great Nation. This wing and our Airmen approach each day as another opportunity to advance a proud history and leave a lasting legacy. We take pride in a culture of social, physical, mental, and spiritual resilience, and embrace our Airmen and their families.



557TH WEATHER WING

MISSION:

Maximizing America's Power through the Exploitation of Timely, Accurate, and Relevant Weather Information; Anytime, Everywhere.

STRATEGIC VISION:

World-Class Airmen...
the DOD's Provider of Choice for Innovative, Actionable,
and Authoritative Terrestrial and Space Weather Information
to Win the Fight... Today and Tomorrow.

PLACES

19 Locations Globally-Dispersed
1 Wing, 2 Groups & 12 Squadrons
5 Detachments & 5 Operating Locations

PEOPLE

1,450 Airmen
Active: 1,142
Civilian: 308

CAPABILITIES

- Support to every CCMD through unmatched 24/7 in-place & reachback weather
- The Air Force's sole Strategic Weather High-Performance Computing Center
 - DOD's only space weather provider
 - DOD's preeminent climate capability



557 WW VECTORS

Ready the Force:

- ◇ Define/increase squadron capacity based on emerging technologies, future threats, and new mission requirements
- ◇ Increase deployment opportunity by partnering with Air Operation Center Weather Support Teams and fulfilling deployed base operating support weather requirements for Air Force airfields
- ◇ Train the way we fight through a robust operational readiness exercise program based on the wing's unique mission and through quarterly adaptive basing exercises

Transform to Increase Lethality:

- ◆ Empower squadrons to innovate, take prudent risk to gain readiness, and “fail fast” in order to achieve long-term success
- ◆ Drive space and terrestrial weather “state of the science” through a relevant and focused operations-to-research process
- ◆ Leverage human/technology interfaces to improve efficiency, increase accuracy, and maximize squadron/wing capacity
- ◆ Meet the challenges of providing weather support to joint, allied, and coalition forces engaged in new warfighting concepts in multiple domains, against both asymmetric and near-peer enemies

Develop and Retain Amazing Leaders:

- ◇ Deliberately develop our Airmen through formal and informal programs starting in the squadron... grow the next generation of joint, multi-domain leaders
- ◇ Provide a safe workplace that welcomes families and recognizes their contribution to Airman fitness and to the Air Force
- ◇ Value diversity and cultivate an environment that promotes a positive workplace and formally, and informally, recognizes individual and team achievements

Solidify our Partnerships:

- ◆ Continue to expand global numerical weather modeling capability by leveraging our partnership with the UK Met Office
- ◆ Strengthen and codify our relationships with national entities through avenues such as the Committee for Operational Processing Centers (COPC) and other national forums
- ◆ Expand our relationships with key Allies and partners to enhance interoperability and leverage our collective strengths
- ◆ Be ready to partner with industry to make Air Force authoritative weather data available on commercial flight planning tools and other applications in use by the DOD

Tell Our Story:

- ◇ Learn, honor, and build on our wing and career field history and traditions while embracing all that the future holds
- ◇ Increase wing presence on social media as well as in local, regional, and national media outlets
- ◇ Build spokesmen out of every 557 WW Airman... the story of the wing is the story of our incredible Airmen!
- ◇ Communicate strategically and effectively at every opportunity... cultivate positive relationships with the community, our fellow Airmen, and our sister-service peers

The Warfighter's Choice



APPROACH & EXPECTATIONS

LEADERSHIP APPROACH

MISSION: There is no substitute for mission success. We must be ops-focused to meet the warfighters' needs. We must consider the consequences and impacts to the field before executing any action. We are vital to the success of the Air Force, Army, joint, interagency, coalition, and allied partners.

PEOPLE: We must strengthen our most precious resource by taking care of our Airmen and their families. We must guarantee our Airmen are trained, meet standards, and are prepared to execute our mission. We must ensure the workplace is professional, positive, safe, and respectful. Our Nation demands it, and our Airmen and their families deserve it.

DIVERSITY: We must foster acceptance and mutual respect for distinctive experiences, backgrounds, and abilities. By capitalizing on our differences, we maximize innovation and performance.

MENTOR: We must guide, develop, and prepare Airmen of all ranks and grades. We must continuously invest in the future by growing leaders at the first opportunity; the wing and the Air Force depend on it.

COMMUNITY: We must represent the 557th, Team Offutt, 12th Air Force, and the Air Force well. Respect and cultivate positive relationships with our local community partners. We are here to serve!

COMMITMENT: Lead by example. Recognize success. Extoll the Airman's Creed. Wingmen always.

EXPECTATIONS OF ALL AIRMEN

CORE VALUES: The Air Force core values guide every Airman to do the right thing every time, to put our Wingmen and mission before ourselves, and to ensure excellence in all our actions. We will never fail by serving in accordance with these common principles.

LEADERSHIP: Airmen of all ranks and grades are expected to be leaders. Leaders are selfless and focused on maximizing the performance of their subordinates, peers, and their team. Leaders must be actively engaged, create opportunities, provide solutions, and empower their Airmen. Our Air Force is the best in the world, because we expect leadership from everyone.

TEAMWORK: The 557th embraces teamwork. Common purpose and unity of effort within the wing and with our functional and mission partners will ensure mission success. Understand your role on the team. Understand the big picture and your invaluable contribution to our mission success.

READINESS: Our wing delivers weather decision superiority to commanders, decision makers, and warfighters to manage risk and achieve mission success anytime and everywhere on the globe and in space. We must be proactive and always prepared for today's and tomorrow's challenges.

Team 557: Global Synergy





World map showing the locations for all squadrons, operating locations and detachments in the 557th Weather Wing.



DECISION SUPERIORITY AND RISK MANAGEMENT FOR WARFIGHTER OPS



“In Military Operations, Weather Is The First Step In Planning And The Final Determining Factor In The Execution Of Any Mission.”

- Gen Carl “Tooy” Spaatz, First Chief Of Staff of the Air Force



1ST WEATHER GROUP



MISSION: Conduct weather operations in support of the Total Force executing combatant commanders' missions worldwide. Develop exceptional leaders to provide rapid exploitation of timely, accurate, and actionable weather intelligence to secure our future and enhance Total Force capability.

ORGANIZATION: We are nearly a thousand military and civilian Airmen executing global weather operations by providing decision-quality weather information with unprecedented accuracy and timeliness while transforming weather operations and training to meet emerging global demands. 1 WXG is comprised of six Operational Weather Squadrons (15 OWS at Scott AFB, IL.; 17 OWS at Joint Base Pearl Harbor-Hickam, Hawaii; 21 OWS at Kapaun, Germany; 25 OWS at Davis-Monthan AFB, Arizona.; 26 OWS at Barksdale AFB, Louisiana.; and 28 OWS at Shaw AFB, South Carolina) and an operating location (OL-K at the Radar Operations Center, Norman, Oklahoma).



OL-K operates out of the Radar Operations Center in Norman, Oklahoma.

OPERATIONS: We protect more than two million military personnel, their family members and almost a trillion dollars in Department of Defense assets around the world by delivering nearly 900,000 accurate, timely, and relevant weather forecast products each year. Additionally, the Air Force team at the interagency Radar Operations Center in Oklahoma represents the Department of Defense's commitment to support 159 global radar sites as part of the Next-Generation Radar Program. Finally, we continue a decade-long tradition of expertise in virtual, collaborative training environments and provide state-of-the-art network security with the best trainers and communicators in the Air Force.



26th OWS at Barksdale Air Force Base, Louisiana.

AIRMEN FUELING AIRPOWER

Vision: DOD's Premier weather operators providing senior leaders with decision-quality weather capabilities to mitigate risk and increase the lethality of the force.

Innovate: Integrate Airmen into a mission-focused, responsive weather operations team. Deliver threat-based weather forecasts early in decision cycles to increase relevance and effectiveness for leaders.

Optimize: Leverage the world's most experienced and powerful weather teams to communicate weather threats to global decision makers, 24/7. Standardize global weather operations to achieve maximum capacity to win any fight, any time.

1st Weather Group





Coverage areas for 1 WXG's operational weather squadrons, shown in relation to geographic combatant commands.

1 WXG

15th Operational Weather Squadron

North America



15 OWS Airmen performing Radar Interrogation.

ORGANIZATION: Our nation's defense begins at home. Department of Defense Operations Plans geographically link the 15 OWS to USNORTHCOM upon execution, building on close relationships developed through western hemisphere joint training exercises, and the execution of North American Aerospace Defense Command (NORAD) responsibilities. The 15 OWS, co-located with USTRANSCOM at Scott AFB, Illinois, provides and leverages weather support for their nonstop Global Reach missions. Internally, the 15 OWS is comprised of six flights. Three Regional Operations Flights are

responsible for airfield forecasts and resource protection. The Mission Execution Flight is responsible for aircrew weather briefings and flight hazard analysis. The Training Flight is responsible for overseeing all the initial skills training, qualification upgrade training, position qualification, and seasonal continuation training in the Squadron. Finally, a Systems Flight operates and maintains the \$30 million Air Force Weather Weapons System that powers our ability to conduct weather operations across an 11 million-square-mile region of the Northern Hemisphere.

OPERATIONS: We support 320 Total Force units across 24 states of the North Central and Northeast United States, to include direct support to the National Capital Region, District of Columbia. Additionally, we monitor weather conditions across Canada and Greenland in support of USNORTHCOM's homeland defense mission. In this capacity, we provide airfield forecasts for 21 locations and resource protection for another 130 sites across our area of responsibility. We also coordinate special weather support requirements for combat and emergency response exercises for five different Combatant Commands. Every year, the 15 OWS supports USNORTHCOM's largest catastrophic event response exercise, fusing active, reserve, and civilian components to form a consistent site picture that enables exercise success. Furthermore, members of the 15 OWS routinely provide backup operations for the National Weather Service's Storm Prediction Center and Aviation Weather Center, official government sites for civilian resource protection and civilian aviation weather hazards.



15 OWS Operations Floor.

17th Operational Weather Squadron

The Pacific

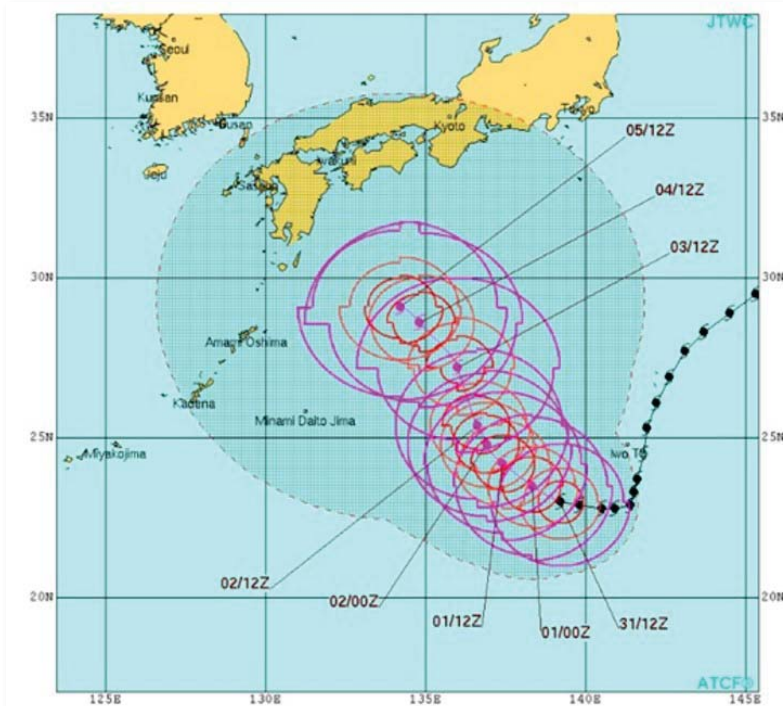


ORGANIZATION: The 17 OWS traces its lineage to World War II and the battlefields of the Pacific Theater. The Fightin' Geckos, which includes a U.S. Navy meteorology and oceanography detachment, monitor and predict the weather for half of the globe and 60% of the world's population. We deliver vital theater-scale weather forecasts, supporting U.S. military operations essential to building regional partnerships, maintaining continuous theater presence, and enhancing power projection for regional security and stability.

OPERATIONS: We provide 24/7 weather support for 98 sites across a 113 million square mile area of responsibility, protecting assets worth over \$90 billion. We work with the U.S. Navy to support naval aviation in the Pacific, and we partner with them at the Joint Typhoon Warning Center to provide tropical cyclone reconnaissance, forecast, and warning support for the Pacific and Indian Oceans, covering over two-thirds of the world's tropical cyclones. We support the full range of military operations: OPLANs, contingencies, exercises, and humanitarian assistance. We provide flight weather briefings for over a thousand Global Reach sorties a year and participate in exercises like ULCHI FREEDOM GUARDIAN, the largest exercise on the Korean Peninsula; COBRA GOLD in Thailand, enhancing multinational interoperability; BALIKATAN in the Philippines, a Marine Corps bilateral exercise; and RIMPAC, 2016's largest international maritime warfare exercise. In 2011, we helped airlift relief supplies to Japan after a devastating earthquake and tsunami, and in 2013, we helped deliver aid and evacuate 7,000 people after one of history's strongest tropical cyclones hit the Philippines.



17 OWS Airmen interrogating METSAT imagery and analysis charts.



TYPHOON 07W (NORU) WARNING #44
 WTPN31 PGTW 311500
 311200Z POSIT: NEAR 23.0N 139.2E
 MOVING 280 DEGREES TRUE AT 06 KNOTS
 MAXIMUM SIGNIFICANT WAVE HEIGHT: 46 FEET
 31/12Z, WINDS 125 KTS, GUSTS TO 150 KTS
 01/00Z, WINDS 125 KTS, GUSTS TO 150 KTS
 01/12Z, WINDS 120 KTS, GUSTS TO 145 KTS
 02/00Z, WINDS 115 KTS, GUSTS TO 140 KTS
 02/12Z, WINDS 100 KTS, GUSTS TO 125 KTS
 03/12Z, WINDS 100 KTS, GUSTS TO 125 KTS
 04/12Z, WINDS 100 KTS, GUSTS TO 125 KTS
 05/12Z, WINDS 100 KTS, GUSTS TO 125 KTS

CPA TO:	NM	DTG
IWAKUNI	323	05/12Z
KADENA_AB	374	05/12Z
SASEBO	333	05/12Z

BEARING AND DISTANCE	DIR	DIST (NM)	TAU (HRS)
CHICHI_JIMA	214	295	0
IWO_TO	227	158	0

○ LESS THAN 34 KNOTS
 ◐ 34-63 KNOTS
 ● MORE THAN 63 KNOTS
 PAST 6 HOURLY CYCLONE POSITS IN BLACK
 FORECAST CYCLONE POSITS IN COLOR

Typhoon Noru threatening 17 OWS area of responsibility.

1 WXG

21st Operational Weather Squadron

Europe & Africa



Threat Assessments for Europe & Africa.

ORGANIZATION: The men and women of 21 OWS, located at Kapaun Air Station, Germany, monitor the weather over an area that encompasses a third of the globe. We have fully integrated a U.S. Navy meteorology and oceanography detachment into our daily operations, and we leverage weather products generated by units across the 557 WW to ensure a consistent operational weather picture to optimize joint warfighter operations. The 170-member squadron consists of military and civilian meteorologists, forecasters, IT system specialists, trainers, and administrative personnel; all focused on providing weather support and resource protection to over 230K personnel and weapons systems valued at \$50 billion across EUCOM and AFRICOM.

OPERATIONS: We provide airfield aviation forecasts for 21 locations across Europe and Africa and resource protection to an additional 56 sites. We produce a full suite of aviation hazard products for operational planning and mission execution across the 51 million square mile area of responsibility. We build joint operation area forecasts in support of long term EUCOM and AFRICOM military activities. We expedite and deliver decision-grade planning products to key leaders charged with posturing combat-ready forces, building regional partnerships, and suppressing trans-national terrorist activities as shown in our support to Operations ATLANTIC RESOLVE and ODYSSEY RESOLVE. We support 38 joint and combined exercises annually, providing top-tier weather intelligence to partner METOC agencies within USAFE, AFAF, USAEUR, NAVEUR, SOCAF, and NATO, like exercises SABER GUARDIAN, SWIFT RESPONSE, and TRIDENT JUNCTURE. The 21 OWS operates and maintains the only OWS-controlled weather satellite downlink site, optimizing capabilities across the enterprise supporting worldwide operations. We leverage longstanding relationships with Western Europe's weather and climatology agencies, advancing both the science and exploitation of weather as operational force multipliers, which helps the United States strengthen our alliances throughout Europe and Africa while securing our future.



21st Operational Weather Squadron.

1 WXG

25th Operational Weather Squadron

Western United States, Central & South America



ORGANIZATION: The 25 OWS conducts 24/7 weather operations for DOD missions in western CONUS and throughout the USSOUTHCOM area of responsibility. Located at Davis-Monthan Air Force Base in Tucson, Arizona, the 166-member squadron consists of military and civilian meteorologists, forecasters, IT system specialists, trainers, and administrative personnel; all focused on providing science-based, decision-quality weather products and resource protection to over 441,000 personnel and weapons systems valued at \$141 billion at over 79 DOD sites and installations.



A U.S. Customs and Border Protection unmanned aircraft. The 25 OWS supports CBP's surveillance and interdiction missions.

OPERATIONS: 25 OWS weather operations allow operators and decision-makers to exploit favorable weather while mitigating adverse conditions in order to maximize joint training and operations. In western CONUS, we support joint readiness exercises at several major training ranges, provide specialized forecasts to commercial and DOD space launch operations from Vandenberg AFB, and provide forecasts and severe weather alerts to western ICBM missile complexes to safeguard the nuclear deterrence mission. Additionally, the 25 OWS maintains a unique relationship with the Customs and Border Protection Agency, pinpointing favorable weather windows for border surveillance and interdiction missions. In USSOUTHCOM, 25 OWS forecasts support joint humanitarian, disaster relief, stability operations, interoperability training, and counterdrug surveillance operations encompassing a 14.5 million square-mile AOR. Our forecasters also drive evacuation and sheltering decisions in response to tropical systems in the region and provide flight weather briefings to the 53d Weather Reconnaissance Squadron, the "Hurricane Hunters."



While deployed to Afghanistan in 2011, 25 OWS member Capt Nathan Nylander was killed in action during a "green on blue" attack while engaging a renegade Afghan officer. Capt Nylander was awarded the Silver Star for his life-saving actions. The facility at Davis-Monthan AFB, Arizona, bears his name.

1 WXG

26th Operational Weather Squadron

Southeastern United States & The Caribbean



Photo by Airman 1st Class Stuart Bright

26th OWS forecaster, Tech. Sgt. Jonathan Tucker, calculates Hurricane Irma impacts for DOD installations in Florida.

ORGANIZATION: We are a unit of 173 Airmen and civilians from multiple career fields united to be the provider of choice for actionable and authoritative terrestrial and space weather intelligence across the Southeast and Southcentral CONUS and the leader of weather innovation across the globe. The Squadron is comprised of four distinct functions: Command/Support Staff, Operations, Training, and Systems.

OPERATIONS: We provide 24/7 operations support to aircrew, planners, and senior leaders at 37 airfields and 113 Total Force locations across the Southeast and South Central CONUS. We also oversee weather-centric cyber support to 2,000 users and manage higher headquarters-directed coding projects and program upgrades. Further, we develop exceptional

leaders and maintain initial skills, upgrade training and position qualification courses. Finally, we direct timely, accurate and relevant weather information to 992,000 Air Force, Army, Guard and Reserve forces and NORTHCOM assets worth \$271 billion.



Photo by Airman 1st Class Stuart Bright

26 OWS forecasters, A1C Kathryn Green (left) and SrA Allison Segui (right) track Hurricane Harvey impacts along the Gulf Coast.

1 WXG

28th Operational Weather Squadron

The Middle East



ORGANIZATION: We have been “all in” since the first days of Operation ENDURING FREEDOM, as the men and women of the 28 OWS have spent over 17 years maintaining combat weather overwatch for millions of troops conducting hundreds of thousands of sorties and tens of thousands of joint, combined, and coalition operations. From the Afghanistan weather forecasts that synchronized SOCOM support for the Northern Alliance and the regional weather studies that helped reconstruction teams mitigate seasonal flooding, to the mission planning forecasts for the invasion of Iraq and the specialized support for the forces advising Iraqis combating ISIS, 28 OWS was and remains the focal point for USCENTCOM weather expertise.



28 OWS supports our deployed Weather Warriors in the USCENTCOM area of responsibility.

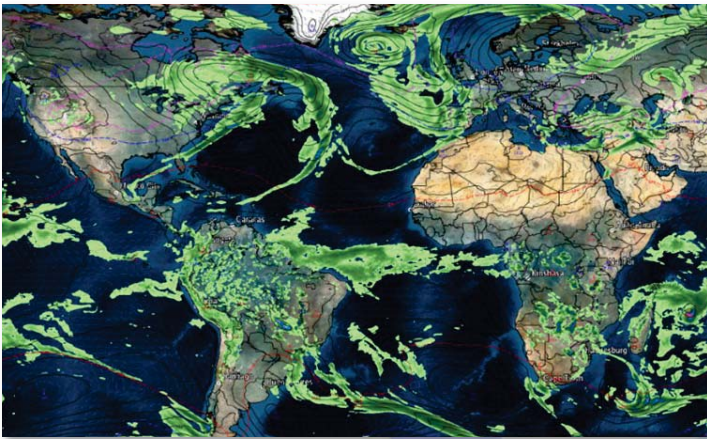
OPERATIONS: We have enabled senior leaders to “Choose the weather for battle!” in a vast number of major combat operations that have spanned first contact with the enemy in Operation ANACONDA, covering the troop surge/withdrawals on multiple fronts, and most recently with on-the-spot support to Operations INHERENT RESOLVE and FREEDOM’S SENTINEL, and the Resolute Support mission in Afghanistan.



A haboob approaches in southwest Asia.



2D WEATHER GROUP



Example of a surface chart from the Global Air-Land Weather Exploitation Model, known as GALWEM.

MISSION: Six unique squadrons optimizing joint military and intelligence readiness and operations.

ORGANIZATION: We are headquartered at Offutt Air Force Base, Nebraska and are comprised of over 500 active duty military members, civilians, and contractors, operating at 12 locations across three continents. The 2d Systems Operations Squadron, 2d Weather Squadron, 2d Weather Support Squadron and 16th Weather Squadron are all located at Offutt AFB. The 14th Weather Squadron is located in Asheville, North Carolina and is co-located with the Federal Climate Complex. The 2d Combat Weather Systems Squadron is located at Hurlburt Field, Florida.

OPERATIONS: The 2d Weather Group is the 557 WW's production center, providing specialized airpower — global, terrestrial, space, and climatological environmental intelligence — to the joint force, defense agencies, Department of Defense senior leaders, select members of the Intelligence Community, interagency partners, and allied nations. The 2 WXG operates, sustains, and maintains the AF's \$322 million strategic weather high-performance computing capability, making us a critical 24/7 reachback node for collection, processing, and dissemination of terrestrial and space weather data. We have the Air Force's only unit that evaluates, integrates, trains, deploys, and maintains the tactical components of the Air Force Weather Weapon System. Whether it's a volcano erupting with an ash cloud extending thousands of miles, a solar storm impacting the space environment, or the global impacts of climate change, 2 WXG stands ready to inform decision makers at the tactical, operational, and strategic levels with the best and latest environmental information — from the mud to the sun!

AIRMEN FUELING AIRPOWER

Vision: Enterprising Airmen, developing, operating, maintaining DOD's preeminent weather exploitation capabilities.

Innovate: Enable the world's brightest Airmen to leverage state-of-the-art technology to arm decision makers with on-time, on-demand, and accessible weather intelligence.

Optimize: Advance the Air Force's strategic weather enterprise to deliver authoritative environmental intelligence to decision makers, creating asymmetric advantages across the full spectrum of global operations.



Learmonth Solar Observatory. Learmonth, Australia

2 WXG

2d Systems Operations Squadron



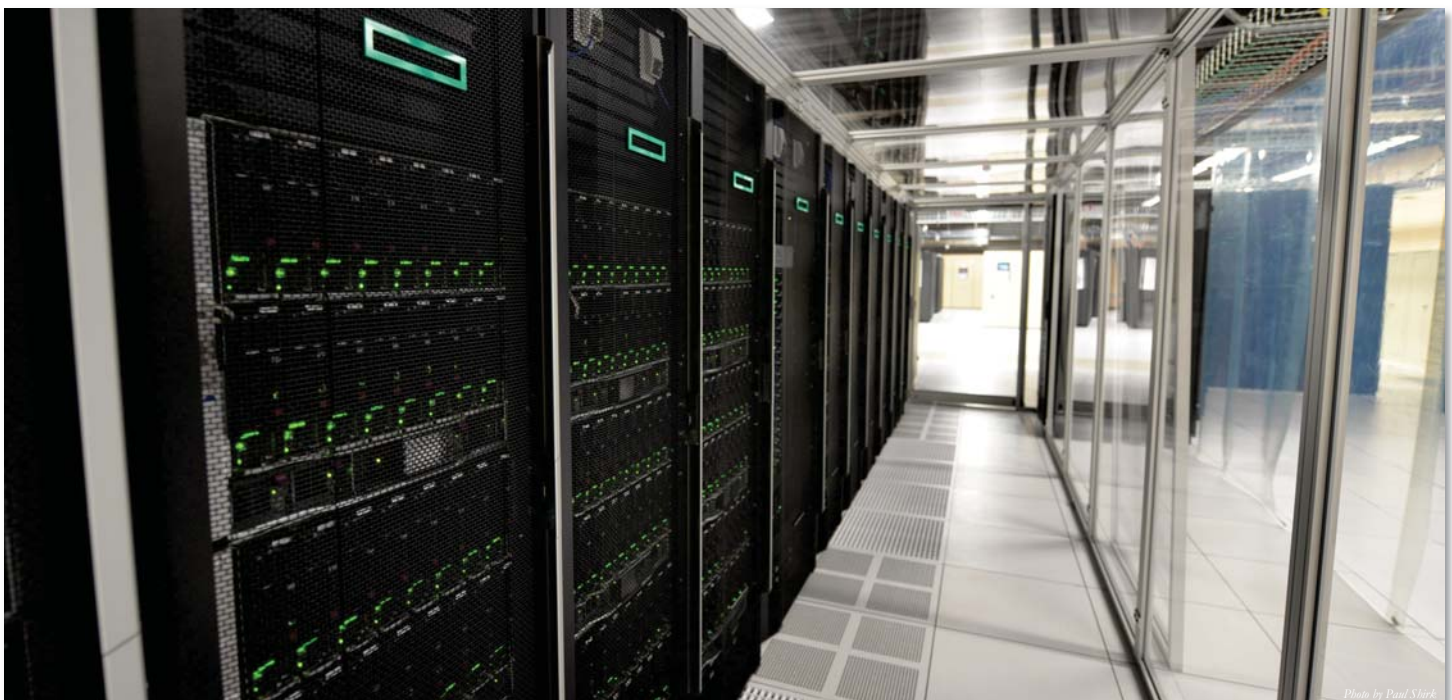
MISSION: Operate and sustain the Air Force's \$322 million strategic weather computing complex to deliver authoritative environmental intelligence to decision-makers across the full spectrum of global operations.

ORGANIZATION: We are a 135-member squadron of military and civilian professionals that provide strategic and operational level specialized airpower by uniquely supporting the communication, computing, and programming needs of the highly technical, data intensive Air Force Weather global enterprise. The squadron is comprised of three flights: Operations, Software Sustainment, and Change Management. Collectively, they form the core of the weather enterprise "engine."

OPERATIONS: We operate the Air Force's largest Special Purpose Processing Node — the linchpin force enabler for the Air Force weather enterprise, generating thousands of critical global environmental products and services to weather forecasters and operational end users every day. We maintain DOD's tactical weather location identifier program, which ensures transmission of and access to vital weather information at deployed and oftentimes austere operating locations across the globe. Our professionals operate 2 WXG's Change Management program that oversees 200 software projects annually and maintains 151 software baselines to deliver cutting-edge capabilities across the spectrum of military operations. We test and evaluate emerging and established weather capabilities associated with the strategic data center to provide authoritative weather data for DOD operations. We apply over 222,000 system patches annually to mitigate security vulnerabilities across the enterprise. We ensure data integrity across 109 databases, and we enable DOD's sole space weather warning capability to secure our country's \$104 billion strategic satellite fleet.



A technician replaces the raised flooring tiles in front of a computer room air conditioning unit.



Prod 10 is the primary production supercomputer in the 557 WW Data Center, the Air Force's largest Special Purpose Processing Node. Prod 10 is one of the 500 fastest supercomputers in the world with over 22,000 processors that can perform over 686 trillion (million million) floating point calculations per second.

2 WXG

2d Weather Squadron



Radio telescope maintenance at the Learmonth Solar Observatory, Learmonth, Australia.

MISSION: Deliver DOD-unique environmental capabilities to the joint force and Intelligence Community.

ORGANIZATION: We are a 162-member squadron maintaining global vigilance at seven worldwide sites in support of multiple national security mission sets. We are responsible to joint and interagency partners for a wide range of mission-tailored products essential to ongoing contingency operations. 2 WS provides meteorological conditions to the Intelligence Community, space weather situational awareness and environmental monitoring to combatant commanders as the DOD's sole space weather center, and volcanic ash alerts for the Defense Department. The squadron consists of five geographically-separated detachments, two 24/7 operations floors, a broadcast studio, and an overseas contract site.

OPERATIONS: We maintain around-the-clock vigilance in eight distinct strategic mission areas to include space environment analysis and prediction, satellite anomaly assessments, hourly worldwide cloud analysis and prediction, real-time response to sensitive environmental requests, global

volcanic ash monitoring and prediction, global snow and ice analysis, American Forces Network (AFN) Weather Center broadcast production, and Solar Electro-Optical Network (SEON) operations through both the four-site Radio Solar Telescope Network (RSTN) and the three-site Solar Optical Observing Network (SOON). Space environment operations include daily coordination with NOAA's Space Weather Prediction Center (SWPC) on three joint forecasts, facilitated by the squadron liaison officer integrated at their operations center in Boulder, Colorado.



Analyzing and predicting the space environment at the Space Weather Operations Center.

2d Weather Support Squadron



MISSION: Deliver vital mission support to DOD, interagency/international mission-partners through 24/7 monitoring and reporting for the wing's strategic weather high-performance computing systems, global and specialized numerical weather modeling capabilities, worldwide solar electro-optical observing network operations, communications and cyber security and return-to-service activities. We provide the 557th Weather Wing Commander with optimized command and control for operations and critical infrastructure, personnel support, and crisis response.



Lt Col Michael Norvell, 2 WSS Operations Officer, briefs the 2d Weather Group Commander Col Jason Patla on the status of 557 WW's High Performance Computing Center.

ORGANIZATION: We are a unit of 60 diverse Airmen from multiple career fields united to tackle broad-spectrum challenges for the wing. The squadron is comprised of two distinct functions: Weather Support Operations, and Cyberspace Operations.

OPERATIONS: We provide the 557 WW with effective military personnel program management, deployment readiness, and capability reporting. We deliver 24/7 vital mission support through monitoring and reporting of weather enterprise capabilities; warfighter advocacy within the wing for return-to-service mechanisms for its strategic center; and space and fielded capabilities. We also provide weather-centric cyberspace admin services and support; and wing-focused command, control, communications, and computers planning and implementation. We oversee the long-haul communications portfolio; execute a \$1.4 million cyber asset budget; provide cyber security support to ensure confidentiality, integrity, and availability of data for worldwide weather operations; as well as knowledge operations management.



557 WW Vice Commander Col Wagner and principal staff receive a current operations update in the Global Mission Support Cell.

16th Weather Squadron



Cloud tuners produce the best cloud analysis possible by correcting cloud detection tests provided by a constellation of geostationary and polar-orbiting weather satellites.

MISSION: Innovate, integrate, and operate cutting-edge environmental intelligence applications in support of DOD and National Agency operations.

ORGANIZATION: Our team of 57 military and civilian technical experts are organized into two flights that develop, demonstrate, and deploy innovative environmental intelligence products into global weather operations. The Numerical Models Flight integrates standard and specialized environmental characterization and prediction models. The Operations Exploitation Flight prototypes cutting-edge environmental intelligence applications and conducts model science and verification operations.

OPERATIONS: Servicing worldwide combatant command operations, the 16 WS tailors, integrates, and validates terrestrial and space weather intelligence products and services for the Air Force Weather Weapon System. We tune and advance the DOD's only worldwide cloud forecast and analysis capability, supporting an array of national agencies and DOD users. Recent accomplishments credited to 16 WS innovators are operationalization of the Global Air-Land Weather Exploitation Model, the Air Force's first global weather modeling system in 20 years; standing up a Support Analysis Request function that allows the 16 WS to provide technical solutions to emerging environmental science needs of the field and to assist in requirements development; and operationalized the "Weather Services: Live, Virtual, Constructive function" to provide customized environmental scenarios for more realistic exercises and simulations across the DOD.



Air Force Weather WEB Services, known as AFW-WEBS, allows users to view weather information that is tailored to their mission needs.

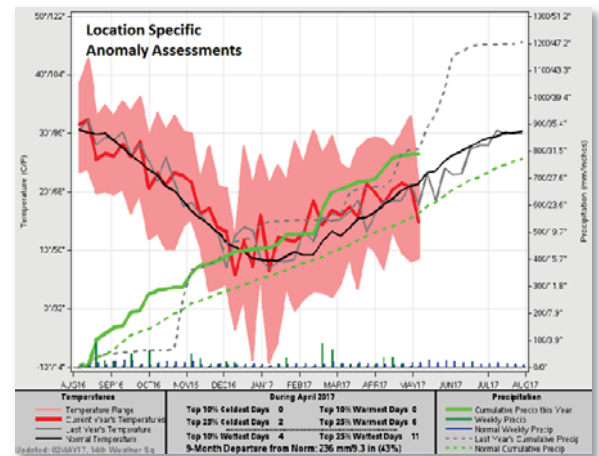
14th Weather Squadron



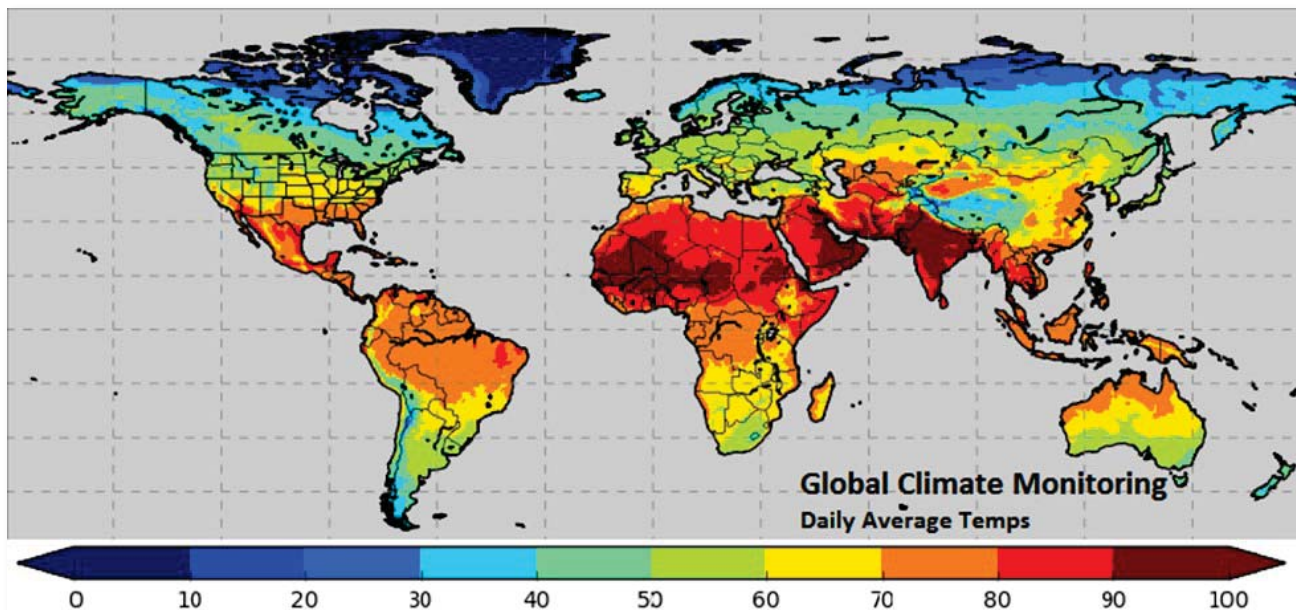
MISSION: Collect, protect, and exploit authoritative climate data to optimize military and intelligence operations and planning.

ORGANIZATION: We are the Air Force's only climate operations unit, co-located with the National Centers for Environmental Information (formerly the National Climatic Data Center) as part of the Federal Climate Complex in Asheville, North Carolina. We are structured as three flights, a Data Operations Flight, a Climate Operations Flight and a Systems Flight, with six distinct functions and 63 authorizations.

OPERATIONS: We are the Air Force and Army's go-to source for climate services and are the stewards of the Defense Department's only authoritative climatology archive! We ingest nearly two million weather observations and gridded climate datasets every day. Our data collection and quality control capabilities reach worldwide sources and ensure an ever-growing and accurate 45-terabyte database. We provide climatology subject matter expertise and leverage our archive to respond to over 1,000 climatology support requests and 400,000 web hits per year from joint forces, the Intelligence Community, and DOD strategic planners. The climate products and services we engineer refine weapons systems basing decisions, sensor fielding strategies and weather forecast operations. We also inform national-level decision makers about the current and projected impacts of climate change on the United States and our strategic international partners. Additionally, as the sole active duty military unit in western North Carolina, our Special Ceremonies Team fulfills traditional Honor Guard and Color Guard duties, representing the Air Force on a local level to a national stage.



Graphic format depiction of recent temperature and precipitation trends compared to their average conditions. The cumulative precipitation is useful for assessing the potential for water security issues. These charts are available globally on the 14 WS website and can also be tailored for regional use.



A spatial representation of the day's average temperature. By having a database of every day's average temperature (and precipitation), the 14 WS provides climate monitoring capability on time scales from days to seasons.

2 WXG

2d Combat Weather Systems Squadron



Assembling a TMQ-53 Tactical Meteorological Observing System.

MISSION: Perform operational test and evaluation of Air Force fixed-based and tactical weather systems, train joint weather forecasters for deployed operations, and provide combat weather system maintainers to enable worldwide military operations.

ORGANIZATION: We are 50 military and civilian professionals, aligned under the 2 WXG. We consist of two flights functionally aligned with our three distinct mission sets: Weather Systems Test and Evaluation, Weather Systems Training, and Deployed Weather Systems Support. Each capability of the 2 CWSS is unique to the global Air Force mission and impacts every facet of terrestrial-based Air Force weather support for the Department of Defense. The squadron is a tenant unit located at Hurlburt Field, Florida.

OPERATIONS: We are the sole force provider of the Weather Systems Support Cadre, which deploys mobile maintenance teams to rapidly restore the geographic combatant commander's theater weather sensing strategy during contingency operations. We test and evaluate both emerging and established weather technologies to inform global, regional, and tactical sensing strategies and enable strategic fielding decisions. We develop tactics, techniques, and procedures to properly employ and maintain the entire Air Force inventory of fixed-base and tactical weather systems. We develop and conduct Deployed Weather Systems Training where we teach joint weather forecasters how to use and maintain deployed weather systems to maximize joint warfighter capabilities.



Photo by Senior Airman Meagan Schutter

Inspecting a Portable Doppler Radar at Hurlburt Field, Florida.



OUR PARTNERS

The 557th Weather Wing values its many local and strategic partnerships across the DOD, interagency, international, and research communities. Some of them are:

Base and Installations

The 55th Wing provides vital mission support and services for the men and women of the 557 WW operating from the Lt Gen Thomas S. Moorman Building at Offutt Air Force Base. Furthermore, tremendous synergy exists with the two co-located operating locations from the Air Force Life Cycle Management Center, and Air Combat Command/A5W to deliver world-class weather capabilities. Finally, our 18 geographically separated units and offices are integral mission partners with their respective host installations.

Joint and Combatant Commands

In addition to supporting the Air Force and Army, the 557 WW is uniquely postured to provide a full spectrum of support and services to the joint warfighter and Combatant Commands. Furthermore, the 557 WW works closely with its U.S. Navy meteorological and oceanographic counterparts to deliver unsurpassed air-land-sea characterizations.

DOD Agencies

The 557 WW supports multiple DOD organizations, to include the National Geospatial-Intelligence Agency in their primary missions of collecting and analyzing geospatial intelligence. Additionally, the 557 WW enhances the missions of the National Air and Space Intelligence Center, and combat support agencies such as the Defense Threat Reduction Agency. Finally, we rely on research partners such as the Air Force Research Laboratory to accelerate our ability to innovate for tomorrow's fight.

Allied and Coalition

The 557 WW treasures its longstanding relationship with its international meteorological partners, such as the United Kingdom Met Office and Ministry of Defense, the Australian Bureau of Meteorology, and the Republic of Korea Air Force Weather Wing. Delivering unmatched weather support to the U.S. and its international partners is essential to the success of NATO and other alliances.

Federal Agencies

The 557 WW highly respects its relationships with other federal agencies to include the National Oceanic and Atmospheric Administration's National Weather Service, National Environmental Satellite, Data, and Information Service, Space Weather Prediction Center, as well as the U.S. Geological Survey. Our complementary, but distinct, roles and unique capabilities ensure the nation succeeds at home and abroad.

Air Force Weather Heritage



1937



1943



1997



2015



Weather Bureau balloon observations



Vilhelm Bjerknes



Col. Randolph Williams

1800-1939

- **1814:** Army surgeons begin to record weather data
- **1847:** First storm warnings are delivered via telegraph
- **1870:** National Weather Service is born; Army Signal Service Corps assigned observing and forecasting duties
- **Early 1900s:** Vilhelm Bjerknes developed equations to approximate atmospheric motion and developed the Norwegian model used today
- **1909:** Weather Bureau begins weather balloon observations
- **1914:** The weather emblem's fleur de lis represents military weather volunteers who served in WWI
- **1937:** Army Air Corps Weather Service is founded by Colonel Randolph "Pinkie" Williams; considered the beginning of Air Force Weather

1940-1949

- **1943:** Air Weather Service (AWS) activated as the Weather Wing
- **1944:** Superior upstream weather intelligence enabled UK, US, and allied meteorologists to out-forecast the Germans resulting in the successful June 6 D-Day invasion
- **1947:** US Air Force born; Air Force Weather (AFW) assumes weather support for AF and Army
- **1948:** USAF Air Weather Service meteorologists issue first tornado warnings from Tinker AFB, OK
- **1949:** AF Global Weather Central (AFGWC) activated at Offutt AFB, NE



1945 Weather Station



Allied forces at Normandy on June 6, 1944



TIROS I Satellite



Capt. Grimes (kneeling in center) in 1965

1950-1969

- **1952:** AFGWC re-designated Det 1, 1st Weather Group
- **1954:** The first radar specifically designed for meteorological use, the AN/CPS-9, is unveiled by the Air Weather Service, USAF
- **1956:** AFGWC re-designated Det 1, 3rd Weather Wing
- **1960:** The world's first weather satellite, the polar-orbiting TIROS I, successfully launched from the Air Force Missile Test Center at Cape Canaveral, FL, on April 1, followed by TIROS II on November 11
- **1965:** Capt Keith Grimes organized the First Air Weather Service Unconventional Warfare Detachment

1970-1999

- **1978:** Air Force Weather began supporting the NASA Space Shuttle program, which continued 30+ years through the shuttle's final mission, STS-135, in 2011
- **1990:** Operation DESERT STORM: weather personnel deployed from around the globe to meet the challenges of the war in Iraq, laying the groundwork for present-day expeditionary force support
- **1991:** AWS re-designated as a Field Operating Agency under Headquarters Air Force
- **1997:** Air Force Weather Agency (AFWA) activated at Offutt AFB, NE, combining AWS and AFGWC



Space Shuttle Atlantis at Offutt AFB, July 2007



Opened in 2008, the 557th Weather Wing headquarters building is named for Lt Gen Thomas S. Maorman (upper right). The auditorium honors CMSgt Peter Morris (lower right).



2000-Present

- **2001:** The September 11th attacks initiated AFWA's support to combat operations which continue today
- **2007:** 1 WXG and 2 WXG activated and assigned to AFWA
- **2012:** Air Force Weather celebrates its 75th anniversary
- **2014:** Launch of DMSP Flight 19, the 50th anniversary of the Defense Meteorological Satellite Program
- **2015:** AFWA re-designated as the 557th Weather Wing and moved under Air Combat Command; all Operational Weather Squadrons realigned under 1 WXG

NOTES



CHOOSE ^{the} WEATHER for BATTLE



557weatherwing.af.mil