



WEATHER OPERATIONS PRINCIPLES

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ACCURACY

Department of the Air Force (DAF) weather operations provide information to commanders to exploit environmental factors and mitigate weather effects during planning and through mission execution. Gaps in weather sensor coverage, limitations on the accuracy of weather observing systems and prediction models, and the complexity of atmospheric processes can all reduce accuracy. The DAF weather community constantly strives to overcome or lessen impediments. The supported community, including operators, should assist weather personnel by actively providing feedback and first-hand observations regarding the latest mission area weather conditions. For instance, post-strike inflight reports and post-mission debriefings should include target area and other relevant weather information. Mission reports, imagery, and ground observations (including augmentation of automated observation sensors), allow the weather community to improve the accuracy of weather and weather effects information for follow-on missions.

CONSISTENCY

DAF weather operations should provide consistent information on weather and its effects to all forces at all levels and echelons, resulting in “one operation, one forecast.” To achieve this result, weather personnel should derive products using the same basic data from designated analysis and forecasting sources to ensure consistent weather exploitation products. Weather information provided to decision makers and end-users should therefore be spatially and temporally consistent across the operational environment and provide a common operating environmental picture. Coordination and collaboration on an integrated, predictive weather product is required when many military units are operating in the same geographic area (e.g., the same airfield, air refueling routes, military operating areas, or drop zones). Coordinated weather operations ensure commanders at every level receive consistent weather information.

RELEVANCY

Weather information must be relevant for it to provide benefit to military operations. Air Force weather personnel ensure decision makers receive information on weather parameters that have the potential to degrade or enhance any mission prior to mission execution. Commanders should assess expected performance of assets in light of weather effects to determine the proper combination of delivery systems, munitions, platforms, and other resources to create desired effects. DAF weather operations are most relevant when integrated from the beginning of the planning process and when there is access to mission and platform data and parameters. Weather applies directly to planning, executing, assessing, and sustaining operations. DAF weather personnel should cultivate a two-way flow of information in which operators provide relevant mission data that enhances the applicability of weather information to operations.

Based on the mission requirements, weather personnel should consider the strengths, limitations, and time factors associated with specific missions and tailor weather products accordingly. For instance, weather that could negatively affect air refueling operations, such as excessive turbulence or cloud cover above 18,000 feet, may not appear to be relevant to Army helicopters operating below 500 feet, but could affect other platforms supporting the same mission objective. Thus, weather personnel possessing a detailed understanding of operations and mission profiles can ensure that weather information is relevant.

TIMELINESS

Weather information is perishable; therefore, it should be derived from the latest available data, disseminated quickly, and integrated at the appropriate time into the planning and execution of military operations. DAF weather operations should also be vigilant and responsive, informing commanders of potential weather effects on proposed and ongoing military operations in a timely manner.

A significant aspect of timeliness is how weather information is disseminated to the warfighter. Net-centric data repositories, using machine-to-machine dissemination, improve the chances that critical weather information and its impact on operations will reach decision makers in time to capitalize on time-sensitive opportunities. For instance, real-time information sent to an aircraft (such as images of targets affected by the weather and accounting for particular targeting sensors) enhances situational awareness for newly received time-sensitive targets. Similarly, [space domain awareness](#) requires timely integration of accurate and relevant space weather information into military space operations to help protect friendly forces, analyze and predict space system anomalies, differentiate between intentional and unintentional interference, and exploit adversary vulnerabilities. Weather entities and decision makers should maintain communication with one another to support and sustain the timely dissemination of weather information.