

**Graphical Airman's Meteorological Advisory (G-AIRMET)**  
**Product Description Document (PDD)**  
**March 16, 2010**

**Part I – Mission Connection**

The Aviation Weather Center issues Airman's Meteorological Advisories (AIRMETs) in support of the NOAA goal to support the Nation's commerce with information for the safe, efficient, and environmentally sound transportation (NOAA, 2005). The NWS develops and applies new technologies and methods to increase the capabilities, efficiencies, and accuracies of transportation-related products and services in order to promote the safe, secure, and seamless movement of goods and people in the U.S. transportation system (NWS, 2005b).

Escalating external demands continue to drive NOAA to improve the accuracy and frequency of its products and services geared toward safe and efficient movement of people and commerce in the air (NOAA, 2007).

The Federal Aviation Administration (FAA) and National Weather Service are responding to a call from the users of the National Aerospace System for better weather information by collaborating with industry to develop an en-route, aviation weather product called the Graphical Area Forecast (GFA) (NWS, 2007). The graphical AIRMET (G-AIRMET) is the first part of a phased approach towards implementation of the GFA.

- a. Product Description – The graphical Airman's Meteorological Advisory (G-AIRMET) is a BUFR-formatted time-series depiction of aviation hazards occurring with occasional or greater frequency throughout the conterminous U.S. and adjacent coastal waters (NWS, 2005a). The aviation hazards depicted in the G-AIRMET are:
- **Instrument Flight Rule conditions (IFR):** Areas of cloud ceilings with bases less than 1000 feet above ground level (AGL) and/or areas of surface visibilities below 3 statute miles, including the weather causing the visibility restriction. The cause of the visibility restriction includes only PCPN, FU, HZ, BR, FG, and BLSN.
  - **Mountain Obscuration:** Areas of widespread mountain obscuration where Visual Meteorological Conditions (VMC) cannot be maintained, including the weather causing the obscuration. The weather causing the obscuration includes only CLDS, PCPN, FU, HZ, BR, and FG.
  - **Icing:** Areas of moderate airframe icing, other than convectively induced, including the areal extent.
  - **Freezing level** information is included after AIRMETs for moderate icing or statements indicating that no significant icing is expected. Freezing level is defined as the lowest freezing level above the ground or at the SFC as appropriate. Freezing levels are delineated using high altitude VOR locations describing the location of the lowest freezing level above the ground or SFC as appropriate. Freezing levels above the ground are delineated at 4000 foot intervals

above mean sea level (AMSL). Multiple freezing levels above the ground are delineated using “BOUNDED BY” followed by high altitude VOR locations. The range of freezing levels across the forecast area is also included.

- **Turbulence:** Areas of moderate turbulence, other than convectively induced, including the vertical extent.
- **Low Level Wind Shear (LLWS):** LLWS is defined as wind shear below 2000 feet AGL, other than convectively induced, exceeding 10 knots per 100 feet (vector difference between two points in space). LLWS potential information is included after AIRMETs for moderate turbulence and/or sustained surface winds greater than 30 knots or statements indicating no significant turbulence is expected. LLWS Potential information includes the list of affected states, and the phrase “BOUNDED BY” followed by high altitude VOR locations to delineate the area affected.
- **Strong Surface Winds:** Areas of sustained surface winds greater than 30 knots. The direction and speed of winds are not be depicted; only the area where sustained surface winds greater than 30 knots will occur.

b. Purpose – The G-AIRMET will:

- 1) Provide graphical depiction of information contained in Airmen’s Meteorological Information (AIRMET) text messages.
- 2) Will be prepared and issued coincident with AIRMET messages four times daily: 0300, 0900, 1500, and 2100 Universal Coordinated Time (UTC) and updated as necessary.
- 3) Display supplemental 00, 03, 06, 09, and 12 hour snapshot graphics of aviation hazards depicted in the 00-06hr valid and 06-12hr “outlook” periods of the text AIRMET message.
- 4) Allow other government agencies (e.g., the Federal Aviation Administration) and user groups access to data with which usability, verification, and safety analyses can be conducted.
- 5) Provide users with data for use in developing products and displays.
- 6) Allow testing of internal production processes at the Aviation Weather Center and determine additional software requirements.

c. Audience – G-AIRMET is primarily intended for end-users directly related to aviation flight planning and safety of flight, including pilots and personnel who provide weather information to pilots.

d. Presentation Format – Web graphic consisting of base map with choice of product overlays and forecast times, viewable at the following URL <http://aviationweather.gov/products/gairmet/> This information can also be downloaded in BUFR format.

## Part II – Technical Description

- a. Format and Science Basis – BUFR-encoded data is generated from graphical objects depicting areas and attributes of AIRMET hazards. These objects are produced by forecasters at the Aviation Weather Center. G-AIRMET web graphics are displayable in modern browsers (e.g., Internet Explorer 7.0, Mozilla SeaMonkey 1.1.2, Firefox, 2.0) without the use of add-on software and are generated from the BUFR-encoded data. The website uses scripts to display the hazards and match each graphic to the appropriate valid time.
- b. Availability – The G-AIRMET is issued 4 times per day with advisories valid out to 12 hours.
- c. Additional information
  - (1) Click on the individual weather hazard buttons to see web graphics of G-AIRMET. (Figure 1).

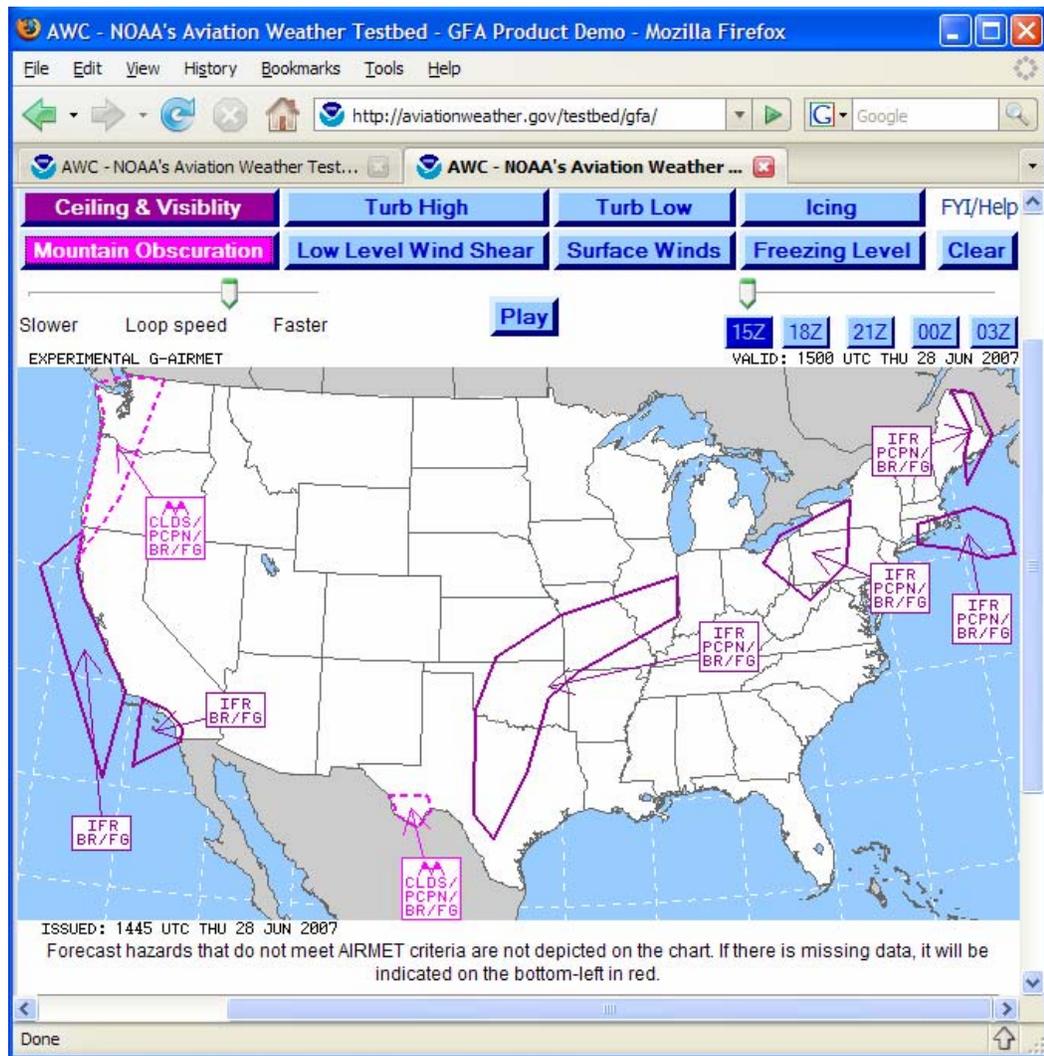


Figure 1. Screen capture of Graphical AIRMET demonstration display

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### (3) References

Federal Aviation Administration, 2006, March 14: Final Requirements Statement for a Text AIRMET and a Graphical AIRMET (G-AIRMET). In communication dated May 12, 2006, to D. McCarthy, Director, Office of Services, National Weather Service.

National Oceanic and Atmospheric Administration, 2005: *New Priorities for the 21<sup>st</sup> century – NOAA's Strategic Plan: Updated for FY2006-FY2011*. [Available online at [http://www.ppi.noaa.gov/pdfs/STRATEGIC%20PLAN/Strategic\\_Plan\\_2006\\_FINAL\\_04282005.pdf](http://www.ppi.noaa.gov/pdfs/STRATEGIC%20PLAN/Strategic_Plan_2006_FINAL_04282005.pdf).]

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National Weather Service, 2005b: *National Weather Service Strategic Plan for 2005-2010: Working Together to Save Lives*. [Available online at [http://www.weather.gov/sp/NWS\\_strategic\\_plan\\_01-03-05.pdf](http://www.weather.gov/sp/NWS_strategic_plan_01-03-05.pdf).]

National Weather Service, 2007: *Graphical Forecast for Aviation (GFA)—Statement of Need*. OSIP 07-006. [Available online at <https://osip.nws.noaa.gov>.]