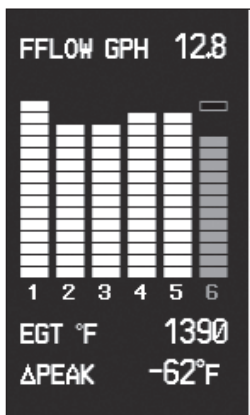


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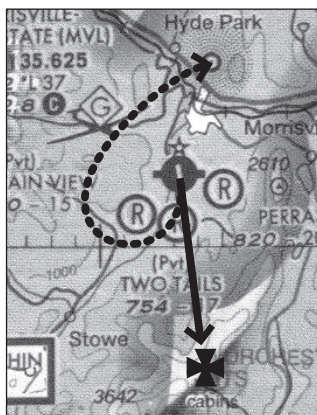
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AIRMETS GET GRAPHIC

Tired of AIRMETS for icing the size of Montana? Some relief is coming from the official weather channels.

by Scott C. Dennstaedt

Text-based forecasts made logical sense 20 or more years ago, when teletype and facsimile were the primary method of transmitting weather to pilots. Official weather has been slow in catching up with the capabilities of the common computer, but it's happening. Starting October 1, the Aviation Weather Center (AWC) launched a supplementary product called the Graphical-AIRMET or G-AIRMET, which removes some of the limitations inherent to the traditional textual AIRMET.

G-AIRMETS are more than the multi-sided polygons in the AIR/SIGMETs Java tool on ADDS. And your Flight Service and DUATS brief-

ings will still have the same textual discussion found in the traditional AIRMET. What's so special about the G-AIRMETS is their precision.

The AIRMET Problem

AIRMETS describe adverse weather affecting, or forecast to affect, an area of at least 3000 square miles in size—better than half the size of Connecticut. But you rarely see an AIRMET this small. This is especially true of AIRMET Zulu (issued for moderate icing) during the winter.

Textual AIRMETS are a “time-smearred” forecast. When an AIRMET is issued by the AWC, it's valid for six hours. So the graphic version constructed from the AIRMET text you see on ADDS must encompass a huge area to cover that entire six-hour period. According to the AWC, “It could be that only a small portion of this total area would be affected at any one time.”

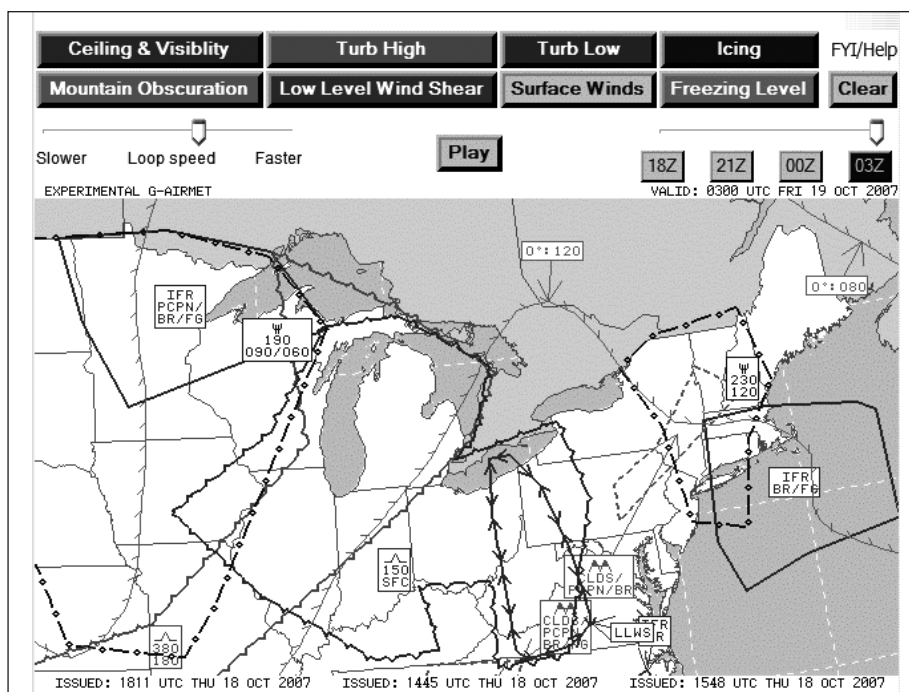
The G-AIRMET is more precise both temporally and spatially and extends beyond six hours. An AWC forecaster will create a visual snapshot of where the adverse weather will likely be at the issuance time, and then at three, six, nine and 12 hours in the future. Each snapshot will be valid at a specific time rather than smeared (valid) over a range of times.

Imagine an area of moderate icing that is affecting central and southern Michigan at 1500 UTC from the freezing level through 10,000 feet. Over the next six hours, that area of moderate icing is expected to deepen to 14,000 feet and expand in size covering most of Indiana and Ohio. This is a perfect example of why AIRMET Zulu can become a huge area. Since the AIRMET must cover the forecast window from 1500 UTC through 2100 UTC, the VOR line in the AIRMET text must include central and southern Michigan (early part of AIRMET) and most of Indiana and Ohio (later part of AIRMET). When depicted graphically, the AIRMET essentially triples in size and covers an altitude from the freezing level through 14,000 feet.

The G-AIRMETS for the same period would show an initial (0-hour) snapshot covering the lower-half of Michigan at 1500 UTC from the freezing level through 10,000 feet. Later snapshots valid at 1800 UTC and 2100 UTC would show the advance of the icing conditions southward with time. Depending on the predicted movement, the snapshot valid at 1800 UTC, for example, will be a bit larger than the initial snapshot encompassing central and southern Michigan and the northern and central parts of Indiana and Ohio with icing now extending up to 12,000 feet. Next, the six-hour snapshot valid at 2100 UTC will be even larger extending down through the remainder of Indiana and Ohio while extending up to 14,000 feet.

These three snapshots are more meaningful to the pilot, showing an obvious southward progression and thickening of the icing hazard.

Below: The new G-AIRMET tool lets you select from all types of AIRMETS and animate them or scroll through time.



Right: The traditional text AIRMET or its graphic equivalent (**top**) shows icing over most of Wisconsin somewhere between 15z and 21z. But the G-AIRMET (**bottom**) shows all of Wisconsin in the clear by 21z.

They provide a much clearer picture of where the moderate icing conditions are expected or not expected and give the pilot the best opportunity to plan the safest routes and altitudes. The AWC will also issue nine-hour and 12-hour snapshots for moderate icing valid at 0000 UTC and 0300 UTC, which may show the further progression of the icing southward, but dissipating conditions in Michigan.

The Big Picture

While it may sound easy to you and me, changing from a text to a graphical paradigm requires a shift in the way aviation meteorologists have worked for decades. Instead of preparing the forecasts using a typewriter or computer keyboard, forecasters at the Aviation Weather Center (AWC) will generate graphical forecasts from which text is automatically created. The G-AIRMET is a small step away from the text-based paradigm and a positive move towards a graphical implementation to generate forecasts to produce a win-win situation for both pilots and forecasters alike.

Initially, the G-AIRMET will be issued at the same time that AIRMETs are issued: 0245 UTC, 0845 UTC, 1445 UTC and 2045 UTC. This ensures consistency between the G-AIRMET graphics and the textual AIRMET in the first six hours. The AIRMET text will be generated by combining the zero-hour, three-hour and six-hour snapshots.

There's more to the story. The NWS and FAA plan to move away from strictly text-based forecasts to implement a graphical area forecast or GFA. The GFA will include the information currently in AIRMETs and FAs. SIGMETs and Convective SIGMETs will remain the same. Current text products (AIRMET and FA)

will eventually be replaced by the GAMET, an automatically-generated textual version of the GFA.

The NWS and FAA plan on phasing the product in, one step at a time. That first step was back on Aug. 15, 2006 and aimed to standardize the text in the AIRMET. Standardization was necessary to remove ambiguity, become more compliant with international standards and, most importantly, to allow text to be automatically generated from G-AIRMET graphics.

Some of the changes to the AIRMET text included the removal of OCNL or FRQ (for occasional or frequent), trend remarks such as CONDS SPRDG EWD (conditions spreading eastward), changes in intensity such as INTSF or WKN (intensifying or weakening), reasons for amendment or cancellation of the AIRMET, causes of turbulence, strong surface winds and low-level wind-shear potential, type of icing and location of icing with respect to clouds and precipitation. G-AIRMETs are the next step.

The G-AIRMET is intended to be displayed as a graphic and not as a text message converted into a graphic. The data can easily be integrated into portable or panel-mounted multi-function display

systems. It is intended to identify the weather hazard using latitude/longitude instead of VORs and uses more points to describe the hazard. As a result, the G-AIRMET is more precise in time and space and can provide more information than text can typically carry.

Will the traditional AIRMET text be discontinued? According to the NWS, no date has been set, and they do not see it occurring in the foreseeable future. So for now, if you are comfortable with the traditional AIRMET text, you'll have the less-precise forecast around for a while. For those who want a better approach, the G-AIRMET will prove to be a pleasant addition this fall.

Scott Dennstaedt is an IFR contributing editor. His new website is avwxworkshops.com.

