

Product Description Document

Experimental Graphical Forecasts for Aviation

Part 1 – Mission Connection

1. Product Description: The Graphical Forecasts for Aviation are a set of web-based displays that provide observations and forecasts of weather phenomena critical for aviation safety. This product covers the continental United States from the surface up to Flight Level 480 (FL480 or 48,000 ft. MSL). Wind, icing and turbulence forecasts are available in 3000 ft. increments from the surface up to FL180, and in 6000 ft. increments from FL180 to FL480. Turbulence forecasts are also broken into LO (below 18,000 MSL) and HI (FL180 and above) graphics. A maximum icing graphic and maximum wind velocity graphic (regardless of altitude) are also available.

Multiple fields of interest are combined in categories that the user is able to select from the top level menu (Observations & Warnings, Thunderstorms, Precipitation, Ceiling/Visibility, Clouds, Ice, Turbulence, and Winds). Data are time synchronized and available hourly from -6 hours to +15 hours. The data for each category is determined by the time period: observations (current time and the prior six hours) and forecasts (valid up to 15 hours in the future). Details of each category are in the following table:

Weather Category	Observations (-6 hours to current time)	Forecasts (Up to +15 hours)
Observations & Warnings	Satellite; Radar; METARs; PIREPs; SIGMETs; NWS Warnings impacting aviation	SIGMETs; NWS Warnings impacting aviation; TAFs
Thunderstorms	Satellite; Radar; Convective, Tropical Cyclone (TC) and International Thunderstorm(TS) SIGMETs; Severe Thunderstorm and Tornado NWS Warnings	Convective, Tropical Cyclone (TC), and International Thunderstorm (TS) SIGMETs; NDFD Thunderstorm coverage categories; Severe Thunderstorm and Tornado NWS Warnings
Clouds	Volcanic Ash, Blowing Dust/Sand, and Convective, TC, and TS SIGMETs; RAP model cloud fraction and cloud layer/top heights (dialog text box)	Volcanic Ash, Blowing Dust/Sand, and Convective, TC, and TS SIGMETs; RAP model cloud fraction and cloud layer/top heights (dialog text box)
Flight Category (Ceiling & Visibility)	Volcanic Ash, blowing dust/sand, and convective, TC and TS SIGMETs; G-AIRMET Sierra (IFR); METAR flight category (no VFR); and the LAMP model ceiling and visibility (displayed by flight category).	Volcanic Ash, blowing dust/sand, and convective, TC and TS SIGMETs; G-AIRMET Sierra (IFR); TAF flight category (no VFR); and the LAMP model ceiling and visibility (displayed by flight category).

<p>Precipitation</p>	<p>Satellite; Radar; Convective, TC, and TS SIGMETs; METARs (weather symbol only, full METAR available in dialog text box)</p>	<p>Convective, TC, and TS SIGMETs; TAFs (weather symbol only, full METAR available in text); NDFD Weather</p>
<p>Icing</p>	<p>Radar; G-AIRMET Zulu; freezing level; Icing SIGMETs; Convective, TC and TS SIGMETs; Icing PIREPs; METARs (weather symbol only); CIP/FIP severity.</p> <p>Note: when SFC or MAX level is selected, displayed data is the maximum value for ALL levels. Otherwise, the data is valid for the level selected. PIREPs displayed are +/- 3000 ft. of the selected altitude. METARs and surface freezing level are available when SFC is selected.</p>	<p>G-AIRMET Zulu; freezing level; Icing SIGMETs; Convective, TC and TS SIGMETs; TAFs (weather symbol and cloud cover only); FIP severity.</p> <p>Note: when SFC or MAX level is selected, displayed data is the maximum value for ALL levels. Otherwise, the data is valid for the level selected. Freezing level is only available when selected.</p>
<p>Turbulence</p>	<p>G-AIRMET Tango (turbulence only, no surface winds or low level wind shear); Turbulence SIGMETs; Convective, TC and TS SIGMETs; Turbulence PIREPs; Graphical Turbulence Guidance (GTG)</p> <p>Note: when LO or HI level is selected, displayed data is the maximum value for below FL180 or at/above FL180, respectively. Otherwise, the data is valid for the level selected. PIREPs displayed are +/- 3000 ft. of the selected altitude.</p>	<p>G-AIRMET Tango (turbulence only, no surface winds or low level wind shear); Turbulence SIGMETs; Convective, TC and TS SIGMETs; Graphical Turbulence Guidance (GTG)</p> <p>Note: when LO or HI level is selected, displayed data is the maximum value for below FL180 or at/above FL180, respectively. Otherwise, the data is valid for the level selected.</p>
<p>Winds</p>	<p>G-AIRMET Tango (no turbulence, low level wind shear & strong SFC Winds only); METAR wind barbs; NDFD Wind Speed; NWS wind warnings; RAP model wind speed and direction.</p> <p>Note: When MAX is selected, the maximum wind speed and associated wind barb, regardless of flight level, will be displayed.</p>	<p>G-AIRMET Tango (no turbulence, low level wind shear & strong SFC winds only); TAF wind barbs; NDFD Wind Speed; NWS wind warnings; RAP model wind speed and direction.</p> <p>Note: When MAX is selected, the maximum wind speed and associated wind barb, regardless of flight level, will be displayed.</p>

Additional information is available in text format when mouse-clicking on the map or using the hover function. The “Settings” menu enables the user to customize the satellite and radar display, in addition to choosing parameters for the observations and aviation advisories displayed. The “Configure” menu allows the user to choose map overlays, views, and basemaps.

Imagery, observations, and forecast graphics are overlaid on high-resolution basemaps from ESRI, including colored relief, satellite and street views. Overlays include highways, counties, roads, top jet routes, Air Route Traffic Control Center (ARTCC) boundaries, navigational aids, airports, and heliports for the entire United States. More detail is revealed as you zoom in and individual layers can be turned on or off independently.

2. Purpose/Intended Use: In May 2015 the National Weather Service received a formal request from the Federal Aviation Administration (FAA) to cease production of textual Area Forecasts (FAs), contingent upon the provision of equivalent meteorological information in-support of aviation. The intent of the FAA in retiring the FA and transitioning to more-modern digital and graphical forecasts allows the Aviation Weather Center (AWC) to focus the efforts of forecasters on maximizing operational benefit to aviation end users, resulting in improved weather information to decision-makers.

The majority of the weather elements contained in the FA are already available through existing NWS products. To maintain continuity of service, the Graphical Forecasts for Aviation will ensure the availability of equivalent information in addition to adding graphical displays of the predominant weather, sky cover, and wind speed and direction. The AWC’s Graphical Forecasts for Aviation are intended to replace the textual FA for the CONUS.

The FAA, pursuant to Title 49 United States Code Section 44720, established requirements for this weather information and service which is necessary for the safe and efficient conduct of operations in the National Airspace System (NAS).

3. Audience/Users: Commercial and General Aviation pilots, operators, briefers and dispatchers.

4. Presentation Format: The Graphical Forecasts for Aviation are multiple displays of weather phenomena combined in a single interactive online domain. Weather parameters are displayed on high resolution ERSI basemaps. Overlays include navigational aids, airports and heliports throughout the CONUS.

5. Feedback Method/Period: The public comment period will begin January 11, 2016 and run through June 11, 2016.

Part 2 – Technical Description

1. Format and Science Basis: The Graphical Forecasts for Aviation combine Open Layers displays of multiple weather parameters on a single website. The display itself is not a weather product; it is a repository that aggregates a number of existing weather products into a single, quick-glance, automated display. Underlying products, except cloud and flight category data, have gone through a safety risk management process. These various graphics are overlaid on

high-resolution GIS basemaps and can be selected from the top menu. The OpenLayers environment offers more core functionality and support for mobile devices.

2. Availability: The Graphical Forecasts for Aviation will be continuously updated and available online: <http://new.aviationweather.gov/areafcst>

3. Additional Information: N/A