

New weather data coming soon to FIS-B

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Pilots will soon have access to new weather data in their cockpits over the 978 megahertz (MHz) Universal Access Transceiver link.

In June, the FAA will begin broadcasting six new weather products: Lightning strikes, turbulence, icing forecasts, cloud tops, graphical Airmen's Meteorological Information (AIRMET) and Center Weather Advisories.

The new weather information will complement the original 13 "baseline" weather products — including Next Generation Weather Radar (NEXRAD) mosaics, winds aloft and terminal forecasts — in the Flight Information Services-Broadcast (FIS-B) feed.

"There were discussions in the past about lightning, turbulence, icing and cloud tops, and how those would be valuable to general aviation pilots," said Bob Pomrink, a senior systems engineer supporting the FAA on the program.

The FAA added Center Weather Advisories to address a recommendation by the NTSB to send pilots more timely information on areas of convective weather.

Graphical AIRMETs, showing regions of potentially hazardous weather, were added to help pilots more easily visualize the threats.

According to FAA officials, the general aviation community will benefit from the new FAA products, which should boost safety and weather situational awareness.

"We have been advocating for these new weather products because of the in-flight safety benefits they provide," said Rune Duke, senior director of government affairs for the Aircraft Owners and Pilots Association (AOPA).

Deciding what data can be uplinked and at what rate is like putting together a puzzle, as available bandwidth is limited on the 978 MHz link, according to FAA officials.

The FAA considered uplinking turbulence forecasts every 60 seconds — the refresh rate of the model-based graphical turbulence guidance from the Aviation Weather Center — but based on available bandwidth decided on 15-minute updates, officials noted.

To satisfy a request from pilots for more granular cloud top information at lower altitudes while remaining within the bandwidth budget, the FAA is provid-

ing data in 1,500' intervals from 1,500' MSL to 15,000', and in 3,000' intervals to 24,000'.

Pomrink noted radar data is broken down into "bins" measuring one-by-one-and-a-half nautical miles.

"In each bin we'll tell you if there is a presence of clouds at that altitude," he said.

The locations of lightning strikes, which are captured by Vaisala's U.S. National Lightning Detection Network, are updated every five minutes and transmitted every five minutes. The relatively high update rate for air-to-ground strikes — an indicator of thunderstorm activity — may be a valuable addition to NEXRAD mosaics of convective weather, which the FAA warns can be 15 to 20 minutes older than the most recent uplink.

Icing data includes real-time probability for areas where atmospheric conditions may be conducive to icing and super-cooled large droplets (SLD), and a forecast for potentially affected areas over the next 12 hours. The information is updated hourly and transmitted every 15 minutes.

While pilots have had access to current, forecast and SLD icing data in graphical format on the ground, Eldridge Fra-

zier, lead engineer for the FAA's Weather Technology in the Cockpit program, said research is underway for how to best use the information in the air, work that will lead to technical standards.

"Time is more critical when using the current, forecast and SLD icing products in the cockpit compared to when a pilot is doing a pre-flight on the ground," said Frazier. "For that reason, we're doing a rigorous study."

The work, which includes flight-simulator sessions with volunteer pilots flying specific weather scenarios using FIS-B icing products on their displays, will culminate later this year in recommendations for companies that will incorporate new FIS-B data into their weather applications.

The new FIS-B data will be active in June 2018, and pilots will only get access to the new information when their individual applications are updated.

AOPA's Duke says the benefits will be worth the wait, but he reminds pilots to do their homework.

"Pilots should review the FAA's guidance on the new products to get the full benefits of FIS-B and to understand the limitations," he said.