

Enhanced Flight Hazards Forecasts



Increase safety and reduce costs with proven accuracy

One of the major challenges that your organization faces is turbulence. This serious, common aviation weather phenomenon can threaten crew and passenger safety, as well as damage your aircraft. It can also result in any number of financial losses, including medical expenses, worker compensation claims, lost time, unscheduled inspection and repair costs, added fuel bills, and canceled or delayed flights.

Each year, on average, the direct cost of turbulence to airlines is \$500 million¹ and personnel injuries, 80% of which are received by cabin crews,¹ contribute to that amount. However, connected aircraft and in-flight weather updates can help reduce risks and deliver an estimated \$1.3 billion² in annual fuel, maintenance, and depreciation cost savings.

Limited knowledge of the location and severity of turbulence often means airlines plan unnecessarily longer flights and use more contingency fuel than required to avoid risks. This can cause delays and place undue costs on operators and the traveling public. Traditional turbulence observations have proven to be inadequate to support such decisions. Thus, airline and aircraft operators need better, more timely, and more reliable information to make critical turbulence-related decisions.

The DTN difference

Our top scientists in the aviation weather community provide Enhanced Flight Hazards Forecasts that easily integrate into flight planning solutions to optimize flight planning and tracking efforts.

Our fully-patented, high-resolution forecasts help support flight planning and safety by enhancing weather awareness with capabilities like:

- A global forecast that offers one-hour forecast periods up to 36 hours out
- An hourly-updated U.S. forecast up to 18 hours out
- ICAO-standard Eddy Dissipation Rate (EDR) scale for turbulence forecasts
- NASA-based, aircraft-specific icing

¹ <https://edition.cnn.com/travel/article/clear-air-turbulence-climate-change/index.html> and

² <https://www.lse.ac.uk/business/consulting/assets/documents/sky-high-economics-chapter-two-evaluating-the-economic-benefits.pdf>

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To help our airline customers reduce their turbulence risks, we offer independently proven, most accurate turbulence forecasts. We effectively predict the time and location of these dangerous events with the granularity needed to avoid potential safety and financial implications.

Turbulence forecasts

Our Enhanced Flight Hazards Forecast model includes full, state-of-the-art EDR turbulence forecasts. It provides an integrated view of the three types of turbulence: boundary layer, mountain wave, and clear air. Specific EDR values are also included and can be applied to any aircraft's airframe-specific thresholds. They are also specific to 29 flight levels, from FL010 to FL530.

Icing forecasts

Today, icing forecasts are typically one-size-fits-all. This can create a lot of ambiguity around when a particular aircraft might be more vulnerable to icing than the forecasts indicate.

Our Enhanced Flight Hazards Forecasts include aircraft-specific icing and HIWC forecasts at 20 levels using a universal, objective quantitative metric to calculate aircraft performance loss, which can be applied to ice accumulation for specific airfoils. Categories include helicopter,

plus small, medium, and large fixed-wing aircraft — allowing you to better see icing conditions for your aircraft. We also give guidance to help classify specific aircraft in those four categories.

Thunderstorm forecasts

We also deliver valuable insights for thunderstorm events. Thunderstorms can create intense turbulence and icing. Avoidance is the best strategy, and accurate forecasts can help.

Our Enhanced Flight Hazards Forecasts include thunderstorm forecasts for a very precise area and time period. As with our turbulence and icing forecasts, we offer multiple forecast periods to support enhanced flight planning and following — before and after departure. We also supply maximum top values that indicate the top-most altitude forecast for that area of thunderstorms, plus insight into the intensity of the storms measured in meters-per-second of vertical velocity. Convective turbulence and icing are best correlated to storm updraft speeds or vertical velocity: the higher the updraft velocity, the higher the accompanying turbulence and icing.

4D Flight Route Alerting

As an additional service, we offer Flight Route Alerting directly and through partners to help you quickly and easily determine if the weather will impact one of your flights. It supports safer operations with better planning and in-flight alerts — allowing your pilots to make changes en route. We monitor your flight routes and up to 25 locations for you and make safe, cost-effective recommendations based on your preset thresholds and assets.