



Enhanced Flight Hazards



Why Enhanced Flight Hazards is Essential to Your Planning

Turbulence is dangerous — and expensive. In fact, it directly costs airlines [an average of \\$500 million each year](#) in related medical care, compensation claims, repairs, delays, and cancellations. More important is the human risk you can't put a price on — the safety of passengers and crews.

Due to global warming, experts expect occurrences of this common aviation phenomenon will increase, and by 2030, the projected costs of airframe inspections in North America alone [will reach \\$145 million](#). While turbulence management is vital, because events occur so frequently, being overly cautious can also have negative impacts. Airlines and aircraft operators who don't have the right insights may use unnecessarily large blocks of

airspace to avoid more mild turbulence, leading to longer flights, added fuel costs, potential delays, and added emissions.

The problem is that traditional turbulence forecasts do not provide the detail and granularity required to support targeted decisions. However, extensive research with leading scientists and aviation weather experts allows DTN to deliver its world-class Enhanced Flight Hazards solution — including eddy dissipation rate (EDR) turbulence forecasting — bringing actionable insights to pilots, flight operations managers, and flight dispatchers. Here are three areas where the solution supports accurate and more timely decisions.



Turbulence

Our patented, aircraft type-specific EDR turbulence forecasting is the centerpiece of Enhanced Flight Hazards, providing accurate and detailed information on areas of turbulence for better flight planning — whether minimizing the impacts on passengers and crews or avoiding rough air altogether.

Added lead time can also support better in-flight operations, such as when food and beverage services should occur, for a smoother and more enjoyable experience while also reducing risks for cabin crews, who account for more than [80% of personal injuries each year](#).

Factoring in the type of aircraft is essential to forecast accuracy since turbulence affects planes differently based on size; the same amount of turbulence can be more severe for lighter aircraft than their larger, heavier counterparts.

Enhanced Flight Hazards is also unique because it delivers a new level of forecast detail with data for 29 distinct flight levels. Where you could only previously access data for cruising altitudes, you can now get turbulence forecasts for climbing and descending, too. The data sets are also high resolution — 13km x 13km, allowing it to forecast even the smallest pockets of turbulence.

In short, Enhanced Flight Hazards can mean the difference between holding patterns or diversions, saving valuable time, fuel, and emissions. More importantly, by accurately forecasting turbulence in greater detail, it helps you better protect passengers and crews, which is the most significant benefit of all.



Thunderstorms

As a leading cause of intense turbulence for aircraft of all sizes, thunderstorms are a significant safety concern. If you know about the potential in advance, you can plan routes around them, ensuring planes avoid trouble.

Enhanced Flight Hazards includes our global thunderstorm forecast, which analyzes weather prediction data to help pinpoint the “ingredients” of a thunderstorm. These include:

- Unstable environments
- Sufficient heat and moisture
- A process to lift the parcel

The solution then calculates the thunderstorm’s position, intensity, vertical velocity, and potential top heights to support routing decisions that protect passengers, crews, and aircraft.

Icing

The formation of ice crystals is another potential concern for flights, and Enhanced Flight Hazards offers two types of ice forecasts:

- Normal
- High Ice Water Content (HIWC)

As with the turbulence forecasts, Enhanced Flight Hazards’ icing forecasts are aircraft specific. This is especially important with HIWC as it can lead to ice accumulation inside the engine core, causing potential engine blade damage or temporary power loss.

Radar alone is not enough to help aircraft avoid ice crystal encounters due to the poor reflectivity characteristics. However, Enhanced Flight Hazards offers the unique ability to forecast both liquid and ice water content in convective storms, which is important since dangerous HIWC occurs near a storm’s core.

Using the data

Knowing the kinds of data Enhanced Flight Hazards delivers, how would you use it?

Here are three separate use cases:

1. **Flight planning** – allows dispatchers to avoid specific weather when planning routes.
2. **Flight tracking** – helps pilots and crews avoid developing weather risks en route.
3. **Electronic Flight Bag (EFB)** – supports the delivery of up-to-the-minute weather data in flight.

Whichever way you use Enhanced Flight Hazards, you can be sure the best possible weather data is at your fingertips.

See it for yourself

[Request a consultation](#)

The DTN logo is displayed in a large, stylized font. The letters 'DTN' are in a bold, black, sans-serif font. A small blue circle with a white dot inside is positioned above the letter 'n'. A thick blue line curves from the top right of the page, passing behind the logo, and then curves down to the bottom right. A thick green line curves from the bottom left of the page, passing behind the logo, and then curves up to the bottom right. The background of the page is a photograph of an airport tarmac with a yellow truck and a worker in a yellow safety vest on a lift bucket. The truck has 'FLUGHAFEN GRAZ' and 'FLUGZEUGENTEISUNG AIRCRAFT DE-ANTHICING' written on its side. The worker is positioned on a yellow lift bucket that is extended over the tarmac. The sky is overcast and the ground is wet and reflective.