

IATA Turbulence Aware

Objective Turbulence Data
Enhancing Safety and Efficiency



Vision

**Working together to shape the future
growth of a safe, secure and
sustainable air transport industry that
connects and enriches our world.**





Sustainability is made up of three pillars

Economy



Environment



Society

Turbulence:

Causing
aircraft
damage

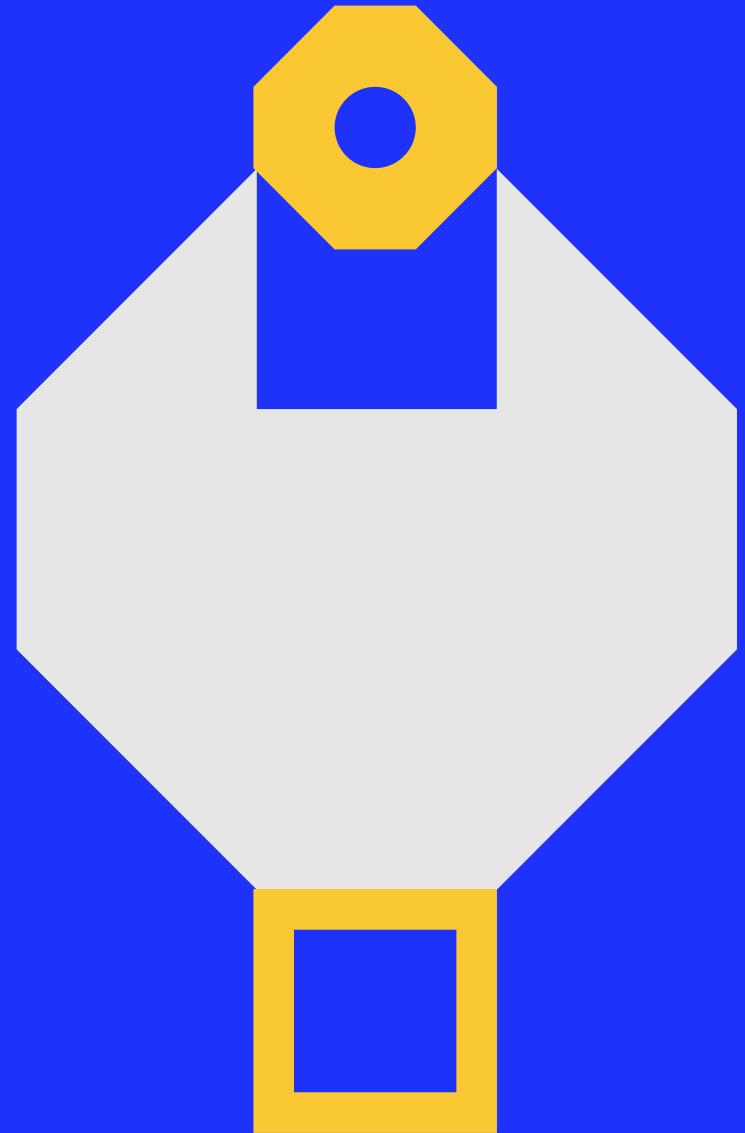
Injuries to cabin crew
and passengers.
Contributing to the
fear of flying.

Increasing fuel
consumption

Economy

Society

Environment



Existing tools for managing
turbulence have limitations



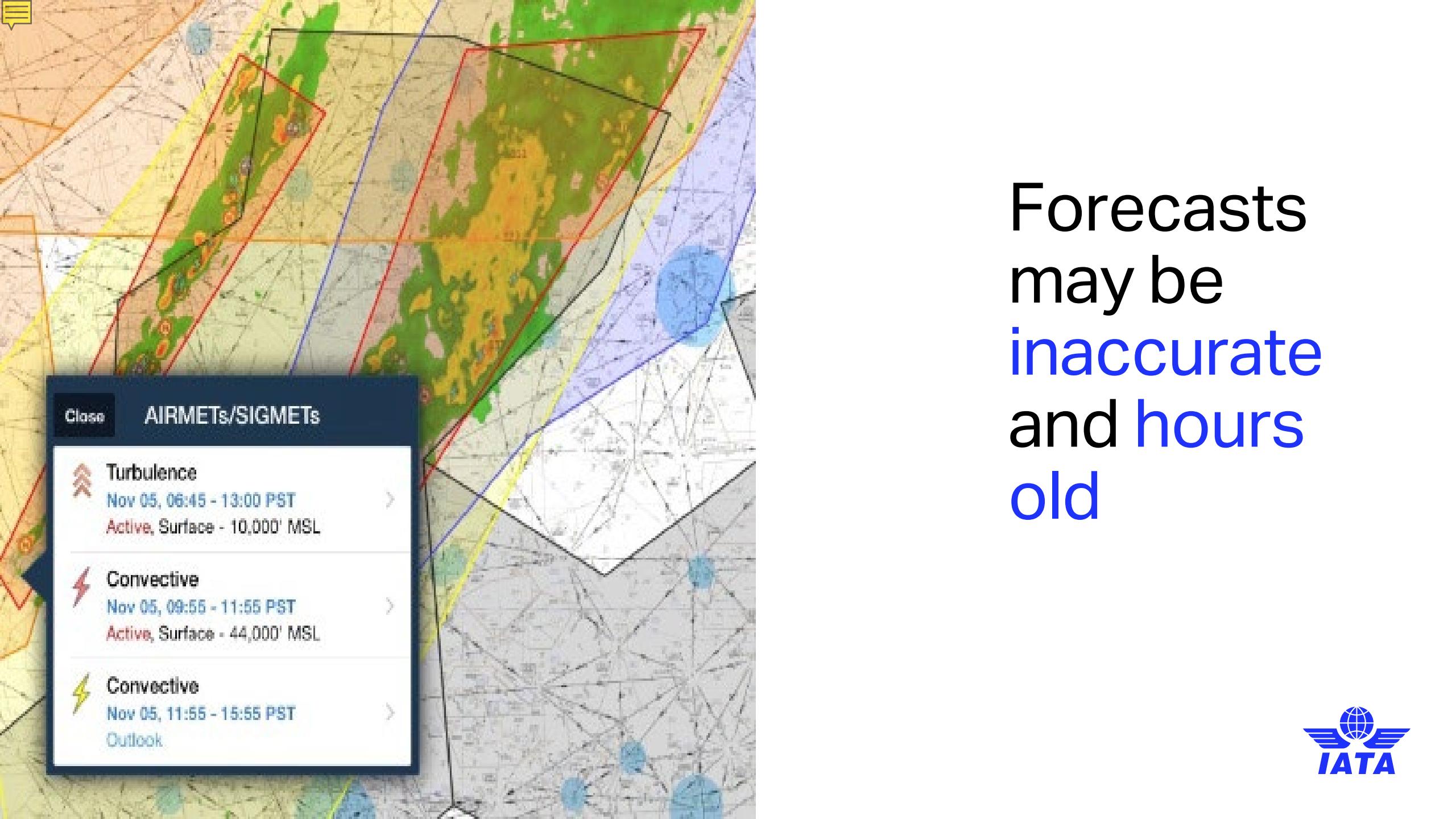
**KCMH UA /OV APE 230010/TM 1516/FL085/TP BE20/SK
BKN065/WX FV03SM HZ FU/TA 20/TB LGT**

- KCMH - Closest weather reporting airport (Columbus Ohio)
- UA - Routine PIREP
- /OV APE 230010 - location one zero miles southwest of Appleton VOR
- /TM 1516 - time 1516 UTC
- /FL085 - altitude eight thousand five hundred
- /TP BE20 - aircraft type Beech 200 Super King Air
- /SK BKN065 - base of the broken cloud layer is six thousand five hundred
- /WX FV03SM HZ FU - flight visibility 3 miles with haze and smoke
- /TA 20 - air temperature 20 degrees Celsius
- /TB LGT - **light turbulence**

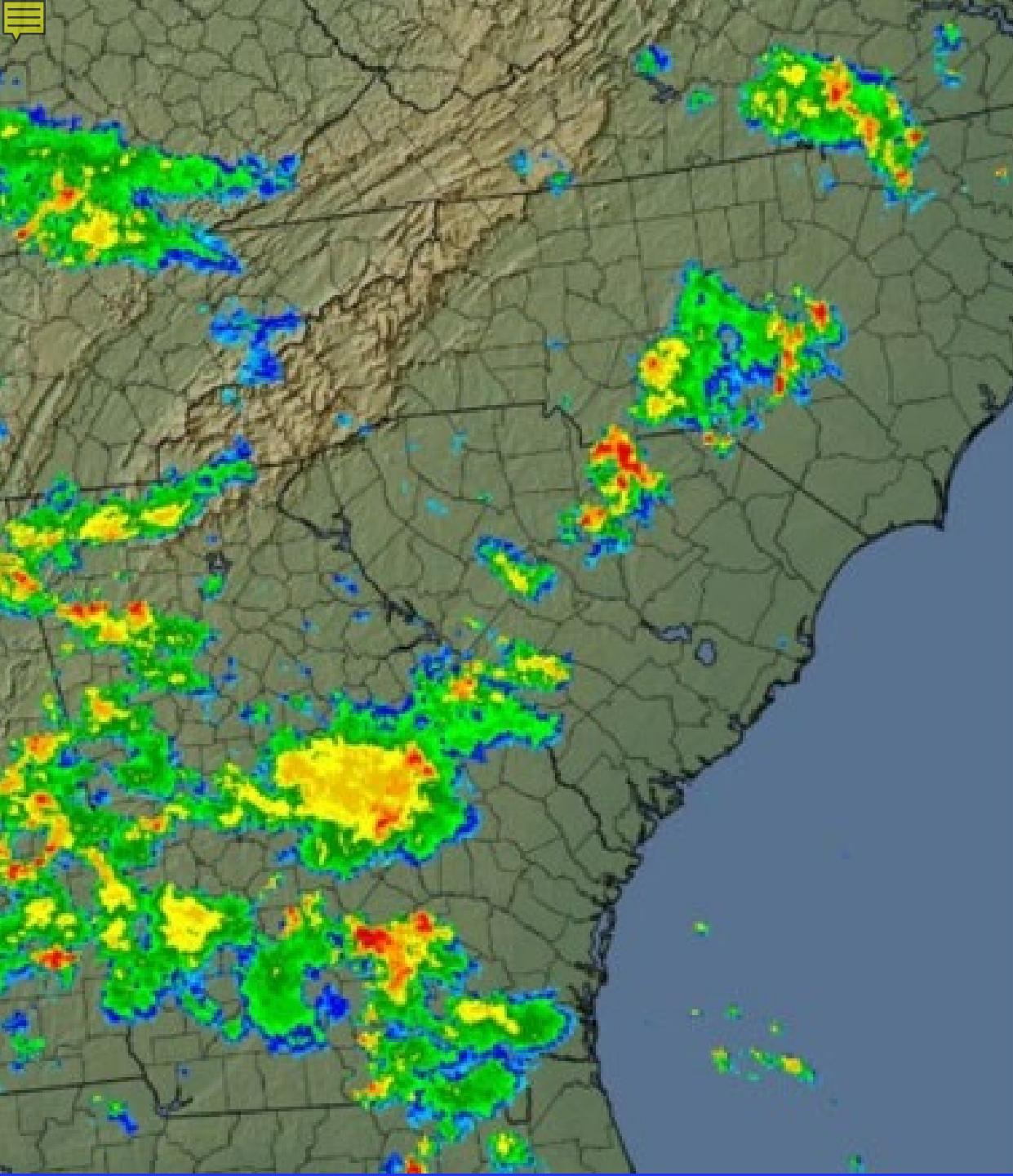
Pilot Reports are Subjective

Light turbulence in a King Air is likely little to no turbulence to an A320





Forecasts
may be
inaccurate
and **hours**
old



Weather radar **cannot**
detect clear air
turbulence

Industry shift to data-driven turbulence management

Recent technical advancements now enable
aircraft to accurately calculate the turbulence
state of the atmosphere in flight



Airlines requested IATA to be a global turbulence data consolidator

Existing turbulence data is often not shared

Fragmented data pools limit benefits

Airlines need to see beyond their own data to mitigate turbulence

Importance of global data coverage

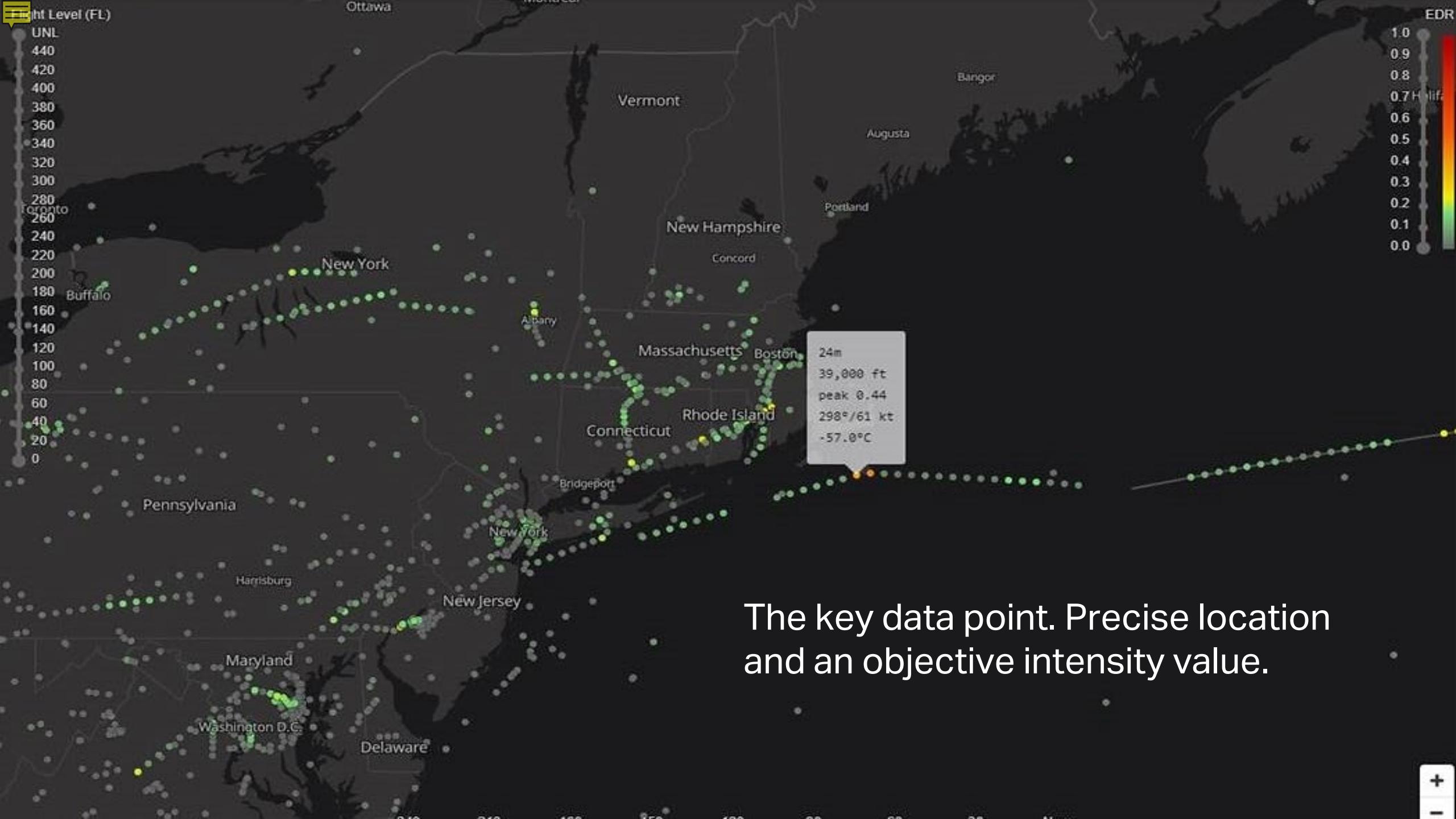


What is real-time turbulence data?

Eddy Dissipation Rate (EDR)

- Turbulence intensity metric measuring the **state of the atmosphere** around an aircraft in flight
- An **aircraft independent** absolute value
- Simple **software installation** based on NCAR v2 open source algorithm
- **No hardware** required to calculate EDR





The key data point. Precise location and an objective intensity value.

IATA Turbulence Aware

A global platform for
sharing automated
EDR turbulence
reports in real time

Real-time turbulence data is **collected** from
airlines, business aviation or third party
ground servers

Data is **consolidated**, quality controlled and
de-identified

Data is currently **processed** through the
platform within **1 second**

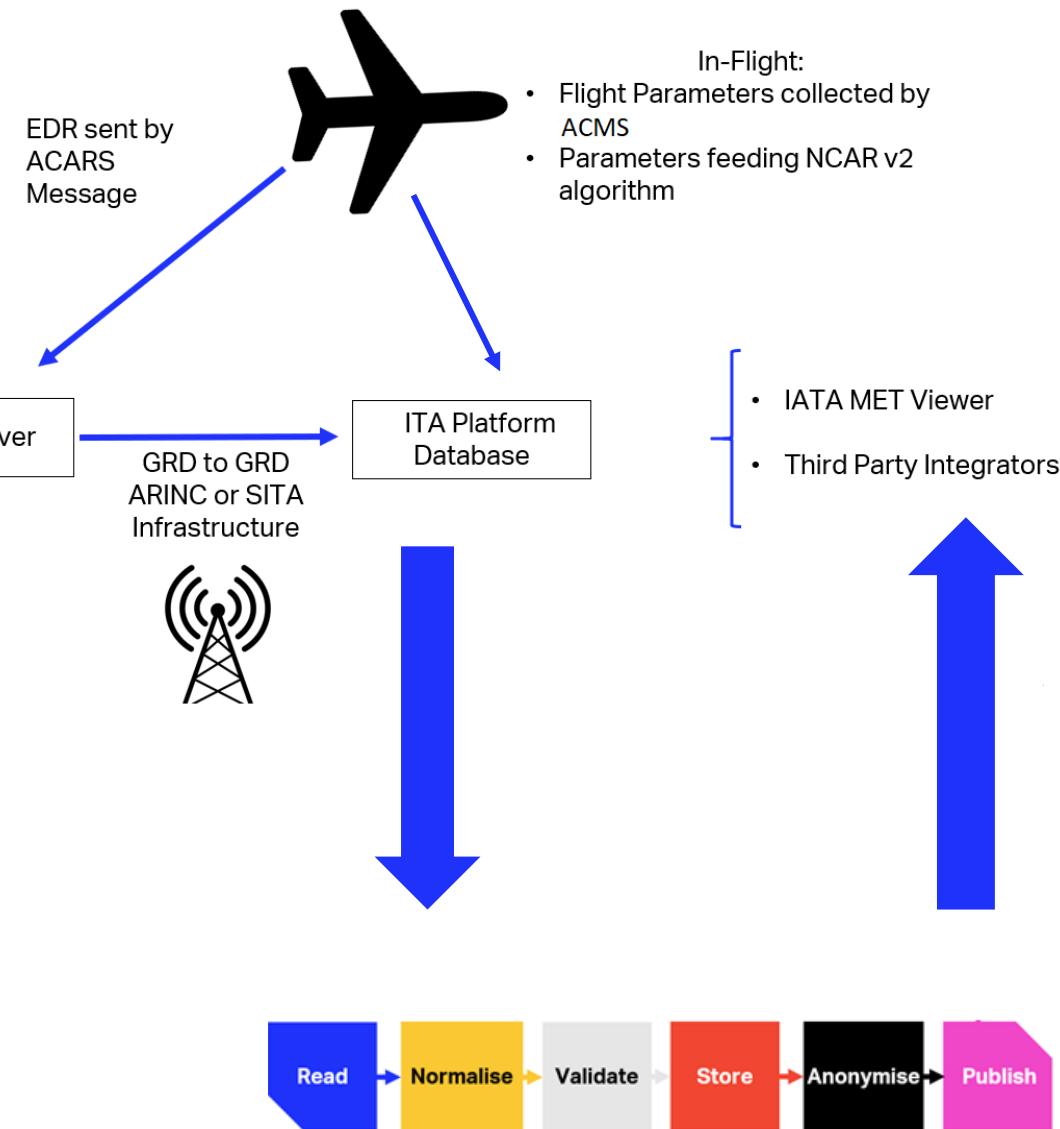
Turbulence data points are **made available**
for immediate operational use via a range of
airline/vendor applications and/or ITA
Viewer





Turbulence Aware

A global platform for sharing automated EDR* turbulence reports in real time



* Eddy Dissipation Rate

Time UTC
2020-01-31T17:48:47Z

Observation Time
2020-01-31T17:47:00Z

Report Age
2m

Altitude
37,004 ft

Coordinates
56.081N 45.339W

Peak / Mean EDR
0.31 / 0.106

Wind
240° / 19 kt

Static Air Temperature
-41.0°C

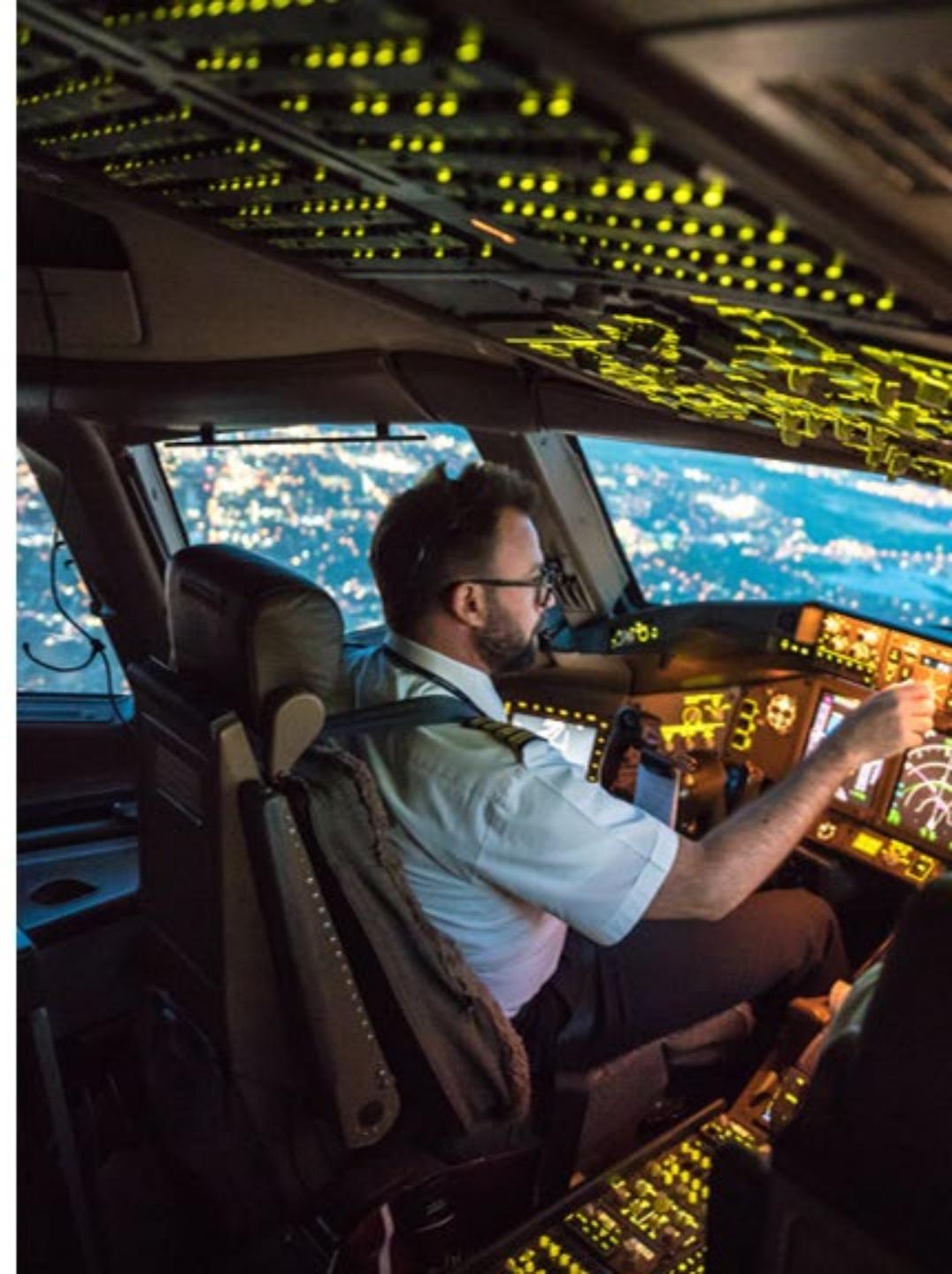


Practical Use of EDR Data

Secure the cabin and coordinate service

Change altitude to avoid turbulence for a better ride based on:

- Real-time, precise information about the location, altitude and intensity of turbulence
- Heartbeat reports identifying areas of smooth air



Comparing the Accuracy of Forecasts

Forecast products or **validation** of forecast vs actual

Significant interest of research and forecast entities in EDR values

"During the last year we had some high EDR reports on our fleet, so we contacted several weather providers for more information. By providing time, position and the EDR value the three entities provided us with an extensive explanation about the occurrence including an insight into their weather models."



Benefits of IATA's Turbulence Aware

Improved **safety** outcomes

Enhanced **customer experience** and
brand image

Efficient **fuel** planning and optimum
burn in-flight

Fewer **engineering** inspections

Lower **insurance** premiums



Thank you
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