The FAA’s *In Situ* Turbulence Reporting System

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**In Situ Turbulence Reporting System**

**Driver:**
Augment/replace subjective PIREPs with objective state-of-the-atmosphere turbulence measurements.

**Features:**

- Atmospheric turbulence metric: eddy dissipation rate (EDR).
- Position accuracy within 10 km vs average 50 km pireps.
- 44,000 *in situ* reports per day (UAL) vs. 300-500 pireps/day (above FL200).
- Adopted as ICAO Standard.
New Activities

- Delta Airlines has implemented EDR reporting!
- New aspects:
  - Event-based reporting.
    - Routine reporting every 15 minutes w/ MDCRS.
    - Event triggers.
  - “Fill-in” between null MDCRS EDR reports
  - New, winds-based algorithm.
  - Improved on-board QC.
EDR Reporting from Delta!

EDR reports over a 24 hour period
“Fill-in” Reports

Same 24 hr period as above
UAL EDR Reports

EDR reports over the same 24 hr period
Combined DAL and UAL EDR Reports

EDR reports over same 24 hr period
Turbulence Nowcasting/Forecasting System

Merges all current turbulence observations with forecast grids.

4D data cube updated every ~15 min

- In situ EDR reports, PIREPs,
- Convective turbulence diagnostic (EDR)
- Wx satellite data
- Radar (NTDA) turbulence grids (EDR)
- GTG forecast grids (EDR)

Cockpit display or alert (EDR or RMS-g)

Dispatch, ATC, etc.