The FAA's *In Situ* Turbulence Reporting System

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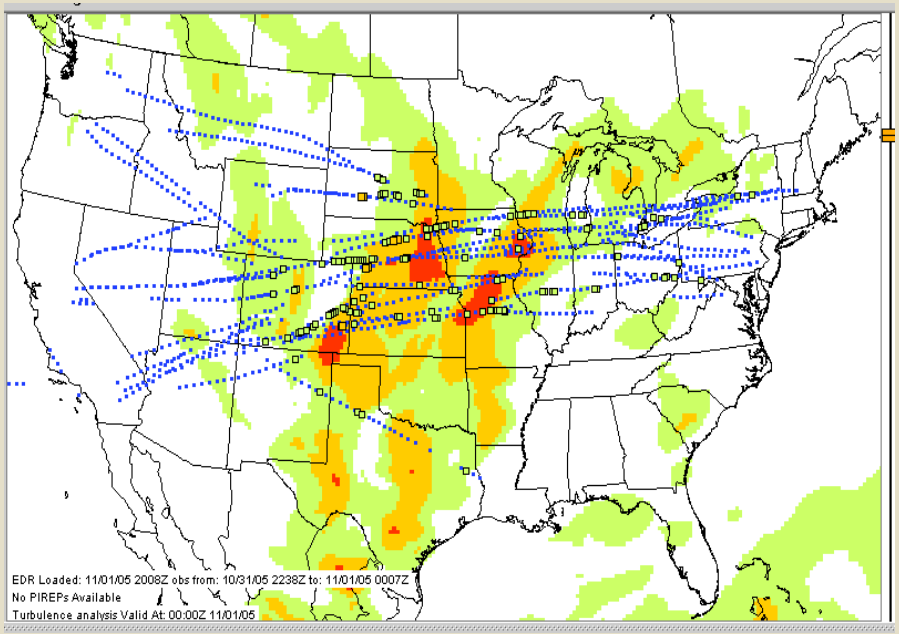
In Situ Turbulence Reporting System

- **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.



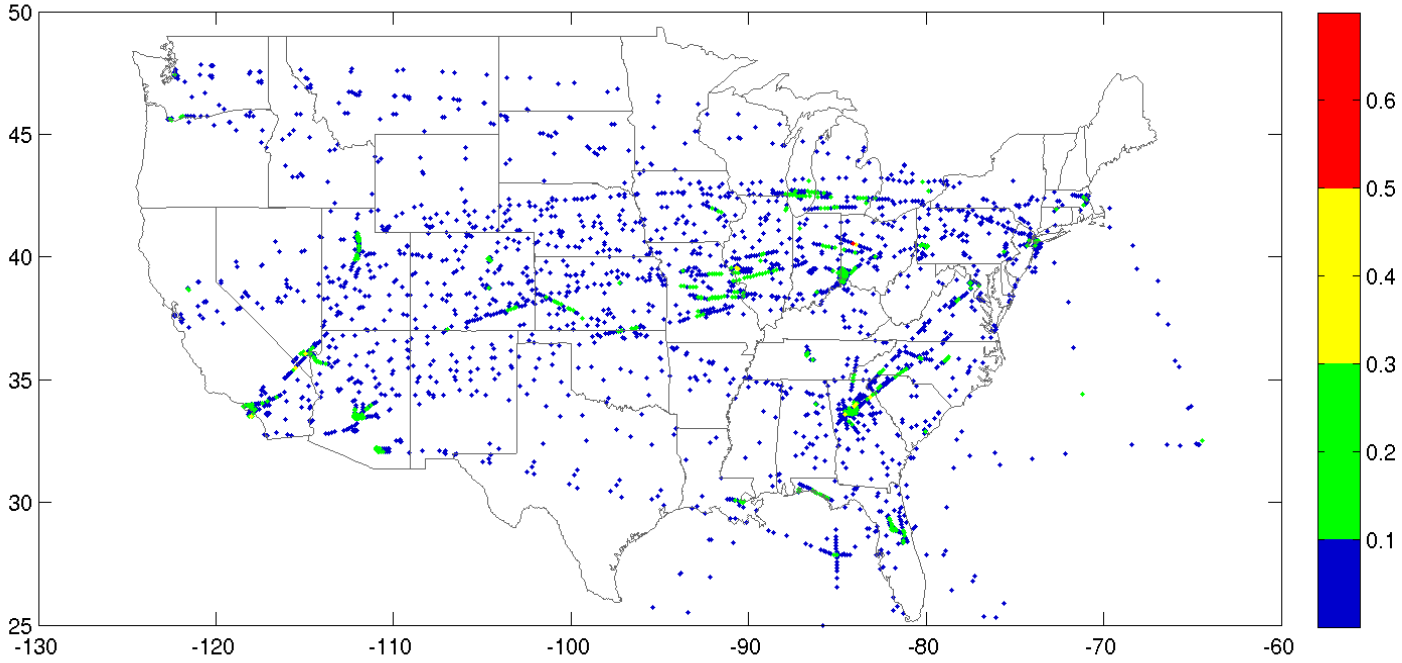
Experimental ADDS website

NCAR

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.

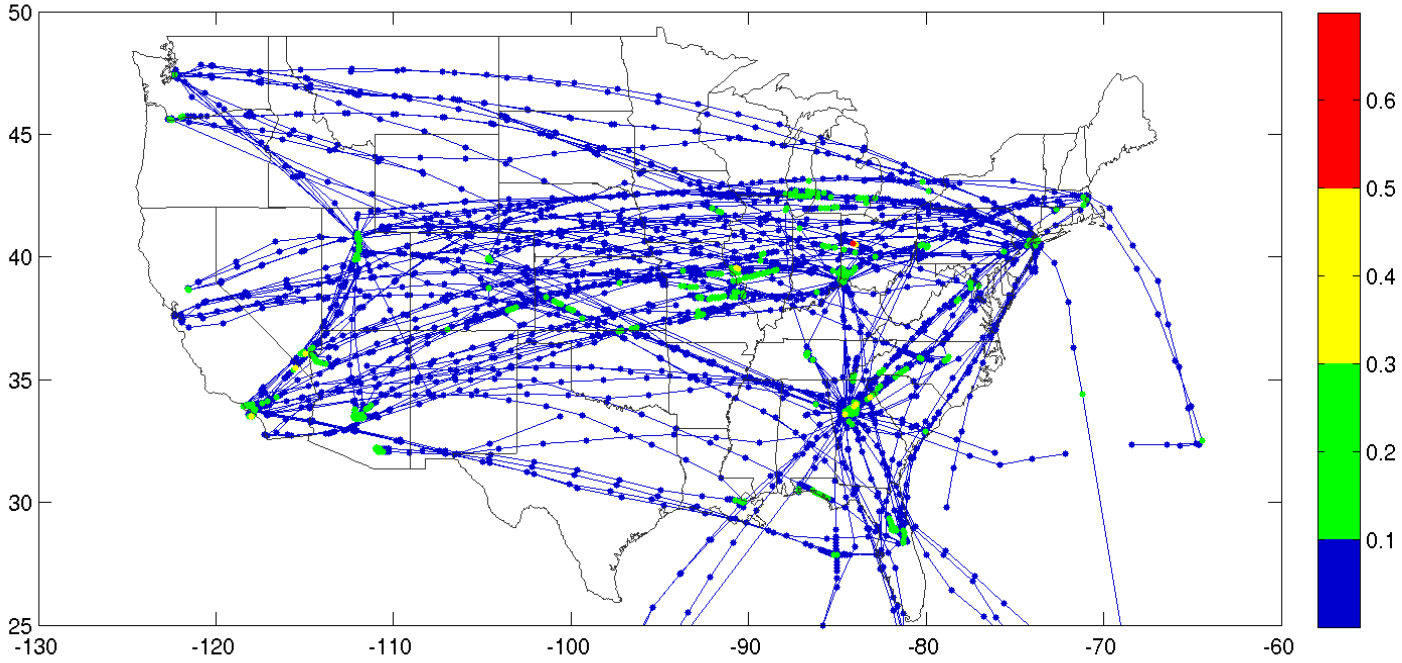
EDR Reporting from Delta!



EDR reports over a 24 hour period

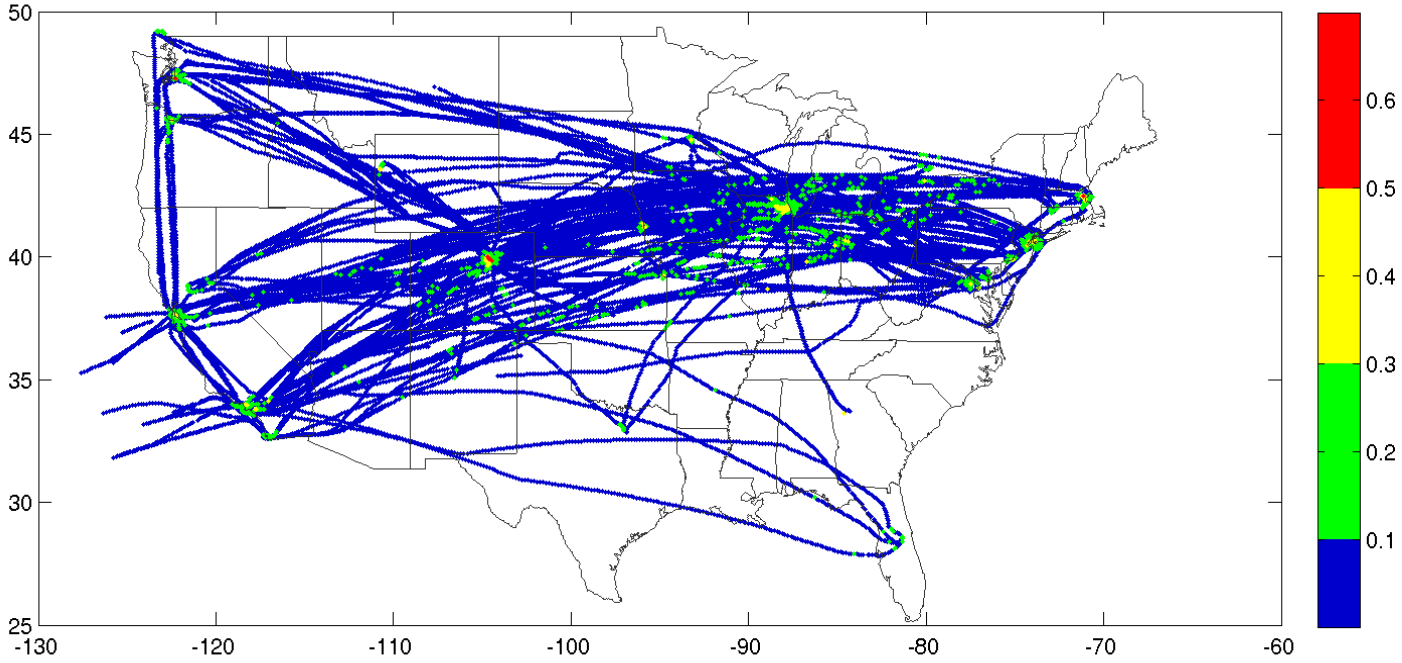
NCAR

“Fill-in” Reports



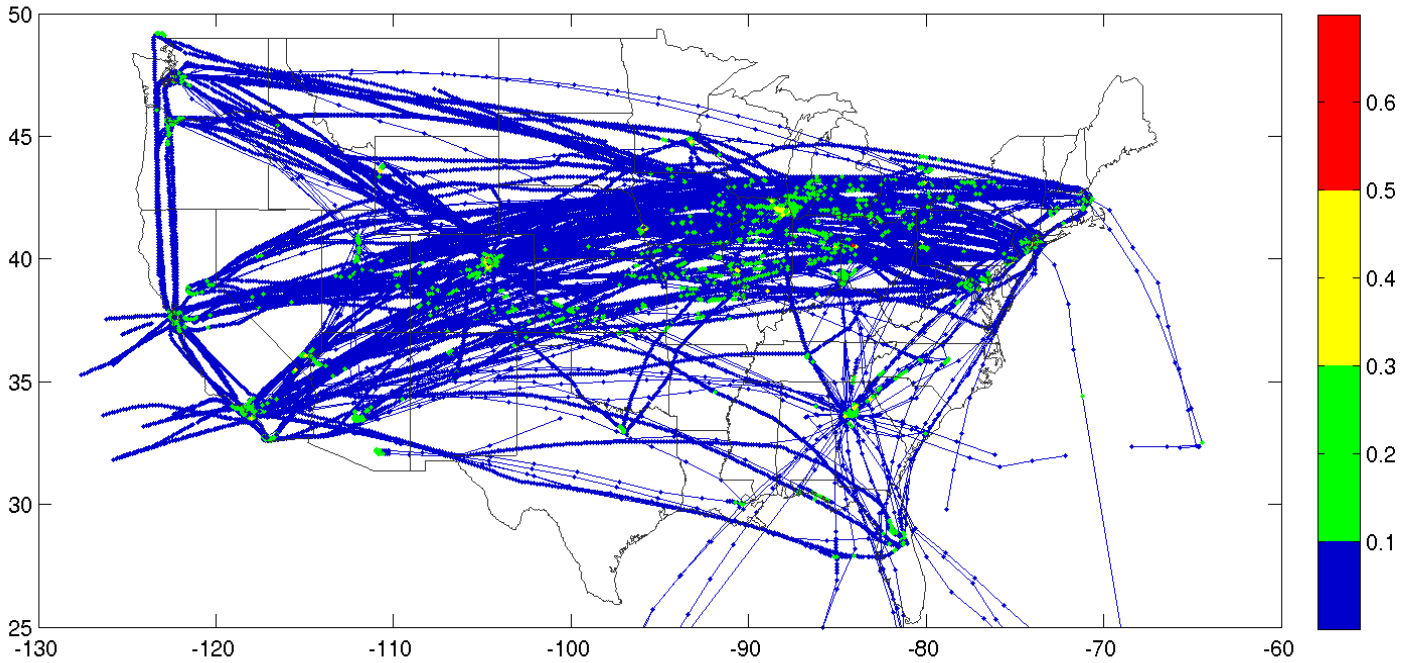
Same 24 hr period as above

UAL EDR Reports



EDR reports over the same 24 hr period

Combined DAL and UAL EDR Reports



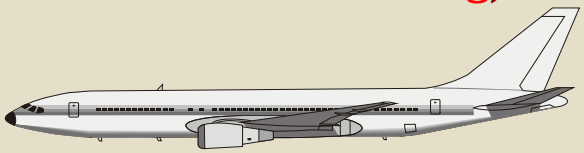
EDR reports over same 24 hr period

Turbulence Nowcasting/Forecasting System

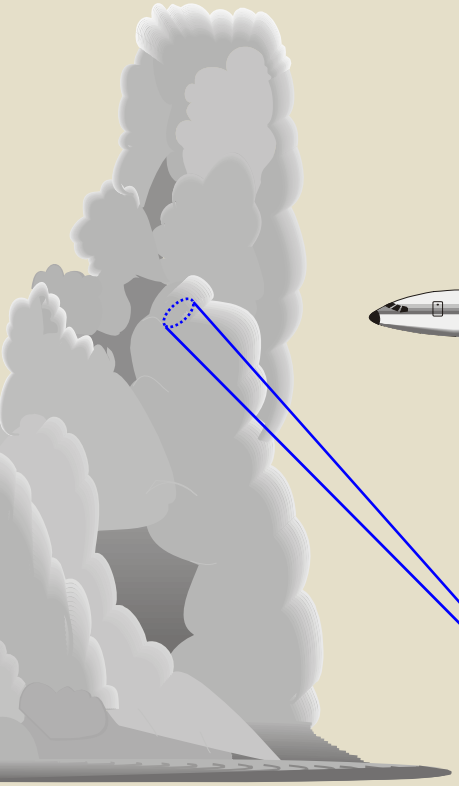
Merges all current turbulence observations with forecast grids.

Cockpit display or alert (EDR or RMS-g)

Dispatch, ATC, etc.



In situ EDR reports, *PIREPs*,

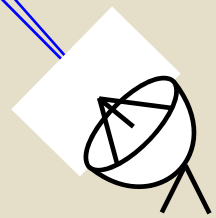


4D data cube updated every ~15 min

GTG forecast grids (EDR)

Convective turbulence diagnostic (EDR)

Wx satellite data



Radar (NTDA) turbulence grids (EDR)