

Weather Information for Pilots

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Weather User Panel – Needs and Shortfalls

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Agenda

- Surface Observations
 - When Do Pilots Use Them?
 - What Do Pilots Do with Them?
 - Accuracy and Validity of the Data
 - What Happens if They Are Missing?
- PIREPs
- Turbulence Information



When Do Pilots Use Surface Observation?

- Takeoff and Landing Phase; Weather Packet must include
 - Departure Observations
 - Destination Observations
 - Destination TAF
 - Alternate Airport(s) Observations (if required)
 - Alternate Airport(s) TAF(s) (if required)
 - Any hazard to flight identified by the Dispatcher as relevant to the safe operation of the flight. (Volcanic eruption, Mountain waves, etc)



What do Pilots do with Surface Observations?

- Compute aircraft performance, often known as Takeoff and Landing Data (TOLD)
- Determine which runway is in use, if Control Tower closed
- Determine if airport is equipped for the operation due to weather (Category II or III Approach)



Accurate and Valid Surface Observations

- Pilots need to trust surface data for the purpose of computing aircraft performance
 - It's critical for pilots when receiving surface information that the data is accurate
 - A safe takeoff or landing depend on accurate data
- Pilots Consider the Source of the Data
 - Tower, ATIS, Weather Observer, ASOS



Reports

- Whether VMC or IMC, Pilots will not takeoff or conduct approaches to any airport without a valid report of airport weather conditions.
- Dispatch IS allowed without a report IF a valid weather report can be obtained prior to commencing the approach.



Validity

- Reports obtained from ATIS, AWOS/ASOS, FSS, VOLMET, the Dispatcher or any Air Traffic Controller are considered valid.
- Report must contain the following:
 - Time of the observation
 - Wind direction/Speed
 - Visibility
 - Ceiling
 - Temperature/ Dew point
 - Altimeter setting



Validity-Missing Items

- Dew point can be missing if it is not needed for MEL/Performance requirements.
- The NWS Real-Time Mesoscale Analysis (RTMA) product may be used for missing temperature and if previously approved by the FAA, used for other missing variables.



Validity-Approved Source

- US National Weather Service
- Company Meteorology Department
- A weather facility approved by the NWS/FAA
- Any other nation's weather service



PIREP Information

- When are PIREPs Needed:
 - During Takeoff and Climb Phase:
 - Windshear, Turbulence, Icing, Wildlife
 - During Enroute Phase:
 - Turbulence, Precipitation
 - During Approach and Landing Phase:
 - Windshear, Turbulence, Icing, Precipitation, Braking Action Reports, and Wildlife



PIREP Information

- PIREPs need to be precise and accurate
- Pilots need to be able to trust PIREP data, so it's critical for pilots when giving and receiving PIREP information that the data is accurate.
- For Example: Braking Action Reports
 - Different airplanes yield different braking abilities
 - ATC should transmit ALL braking actions less than good, if the runway has not been tended to by the airport
 - Airports should monitor all PIREPS

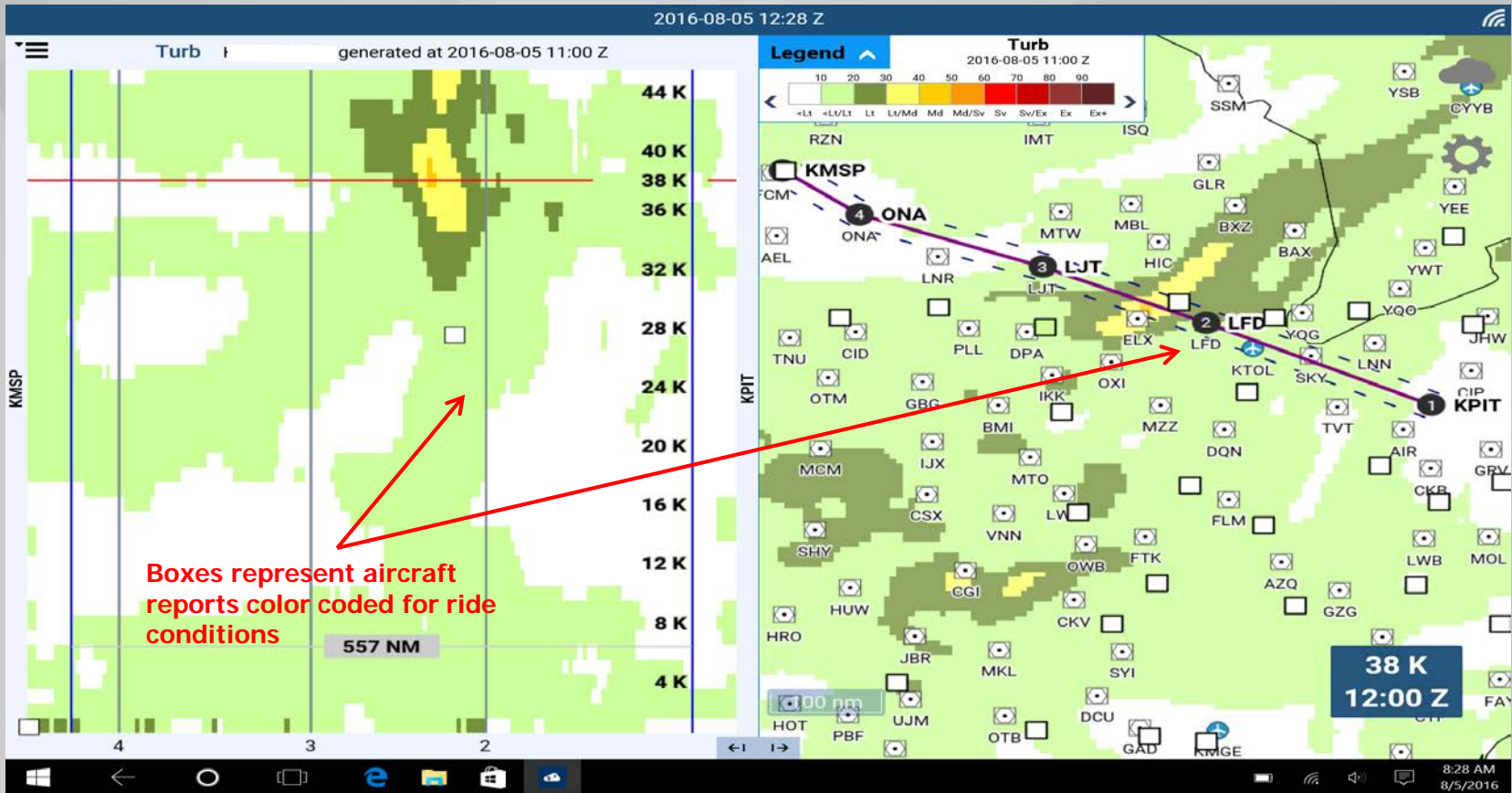


Turbulence Information

- Predicting the where, when and intensity of turbulence is notoriously difficult to do. But Delta has developed a new, industry-leading app that's helping pilots better spot and avoid it.
- Delta's Flight Weather Viewer app provides pilots with real-time graphics of turbulence observations and forecasts on the flight deck.



Tool in the Cockpit for Operational Decisions



Reports Validate Forecast and Facilitate Operational Decisions

The screenshot displays a flight data interface. On the left, a table lists turbulence reports for an aircraft on August 5, 2016. The table has columns for Time, Date, Lat / Long, Alt. Ft., Winds Kts, Temp °C, and Peak / Avg. A red arrow points from the text 'This is the actual turbulence level' to the 'Winds Kts' column of the last row. Another red arrow points from the text 'Touching "View Report" when a report box is opened displays the Turbulence Report history of the aircraft.' to the 'View Report' button in a popup window on the right. The popup window shows details for a report at 11:55Z on 08/05, including location (41.982, -87.997), altitude (3,000 ft), temperature (19°C), wind (278° / 24 kt), and EDR (Peak: 16, Avg: 10). The background is a map of the central US with a legend for turbulence levels (4L to 9E) and various airport codes. A '38 K 12:00 Z' indicator is visible in the bottom right of the map area.

| Time, Date | Lat / Long | Alt. Ft. | Winds Kts | Temp °C | Peak / Avg |
|---------------|------------------|----------|-----------|---------|------------|
| 11:55Z, 08/05 | 41.982 / -87.997 | 3,000 | 278° / 24 | 19°C | 16 / 10 |
| 12:09Z, 08/05 | 42.13 / -89.92 | 31,900 | 281° / 48 | -35°C | 2 / 0 |
| 12:24Z, 08/05 | 42.17 / -92.1 | 32,000 | 277° / 54 | -33°C | 2 / 0 |
| 12:39Z, 08/05 | 43.44 / -93.25 | 26,300 | 279° / 58 | -22°C | 4 / 2 |
| 12:54Z, 08/05 | 44.67 / -93.19 | 4,700 | 319° / 22 | 12°C | 0 / 0 |
| 12:59Z, 08/05 | 44.852 / -93.233 | 1,100 | 326° / 14 | 18°C | 16 / 12 |

This is the actual turbulence level

Touching "View Report" when a report box is opened displays the Turbulence Report history of the aircraft.



Summary

- Surface Observations are critical to pilots with specific meteorological information to help compute aircraft performance for takeoff and landing
- Surface data needs to be precise, accurate and current from a reliable approved source
- PIREP data helps pilots with detailed information for each phase of flight
- Turbulence information helps find smooth air and reduce passenger/FA injuries.



Together we are making a difference

THANK YOU



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