CFI Bootcamp

Flight Instructor Training

Weather and ForeFlight

Decoding Turbulence

FAA Definitions and ForeFlight Layers

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Flight Instructor Training

Today's Bootcamp+ Network Programming



What's on for Today's Show?

Live Show – 1st Hour

Open Mic – 2nd Hour onward

Monitor the Chat - Links/Info

Wings Credit for This Presentation

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Today's Bootcamp+ Network Programming

What's on for Today's Show?

PH Rebroadcast – Weds 8 pm ET

Power Hour Podcasts – Full Shows

Using AI as a Teacher & Learner Class

Step-by-Step Workshop –
Nov 19th (8-10 pm Eastern Time)

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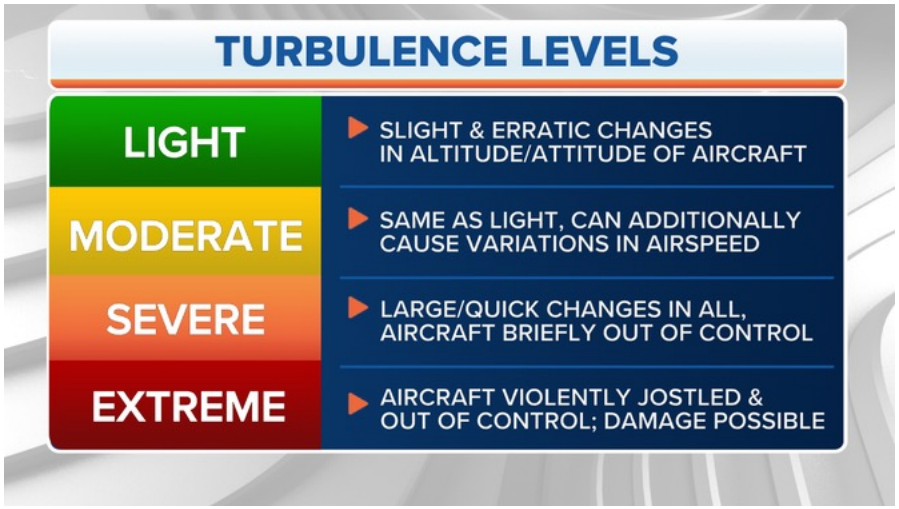
Turbulence Classifications

- Light
- Moderate
- Severe
- Extreme



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Light



Slight changes in airspeed attitude or altitude - Easily controlled



Mild bumpiness or Rhythmic (Chop)



Slight strain into the seatbelt



Service can continue

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Moderate

- Changes in airspeed attitude or altitude - Positive AC Control
- Feel strained into the seatbelts
- Walking becomes difficult
- Loose objects may be dislodged

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Severe

- Large Changes in airspeed attitude or altitude
- Forced violently into the seatbelts
- Temporary loss of control
- Loose objects are tossed around



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Extreme

- Airplane is violently tossed around
- Airplane is impossible to control
- Structural damage may occur

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Duration



Occasional - <1/3 of the time



Intermittent – 1/3 – 2/3 of the time



Continuous - >2/3 of the time

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Summary

Intensity	Symbol	Aircraft Reaction	Reaction Inside Aircraft
Light		Momentarily causes slight, erratic changes in altitude and/or attitude (pitch, roll, yaw).	Occupants may feel a slight strain against seat belts or shoulder straps. Unsecured objects may be displaced slightly. Food service may be conducted and little or no difficulty is encountered in walking.
Moderate		Changes in altitude and/or attitude occur but the aircraft remains in positive control at all times. It usually causes variations in indicated airspeed.	Occupants feel definite strains against seat belts or shoulder straps. Unsecured objects are dislodged. Food service and walking are difficult.
Severe		Causes large, abrupt changes in altitude and/or attitude. It usually causes large variations in indicated airspeed. Aircraft may be momentarily out of control.	Occupants are forced violently against seat belts or shoulder straps. Unsecured objects are tossed about. Food Service and walking are impossible.
Extreme		Aircraft is violently tossed about and is practically impossible to control. It may cause structural damage.	
Chop is a category of turbulence which causes rapid and somewhat rhythmic bumpiness without appreciable changes in altitude or attitude. May be reported as light chop or moderate chop.			

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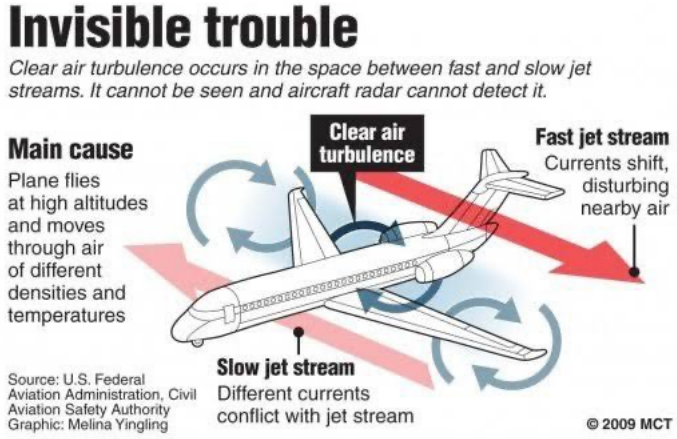
Classification by Type

- Mechanical – Air encountering objects – Mountain Waves/Rotors
- Thermal – Uneven heating of the earth – Rising and falling air currents
- Clear air turbulence (CAT) – Air free of clouds – Near Jetstream and sharp temperature gradients



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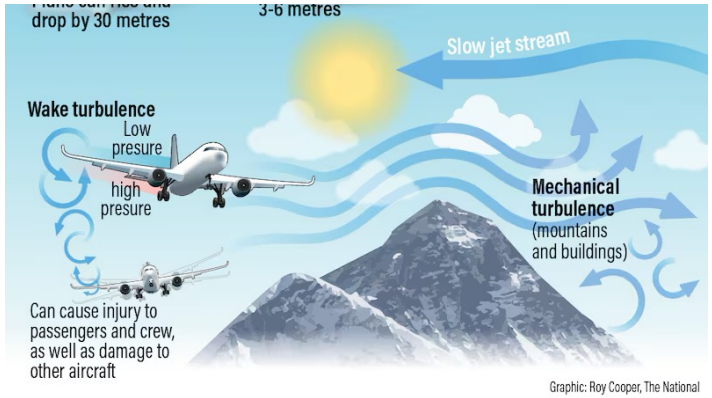
Classification by Type

- Frontal – In proximity to a frontal zone – Fast moving cold fronts and rising air from warm air displaced by cold air
- Wake turbulence – Wingtip vortices – Cruise – Above preferred. If below at least 1000 ft. 500 ft min/3 min dissipation. Following stay above land after. Takeoff, rotate before outclimb or turn.
- Windshear – Change of windspeed/direction – Loss or gain of airspeed. Pitch up or down moment – Dangerous near the ground



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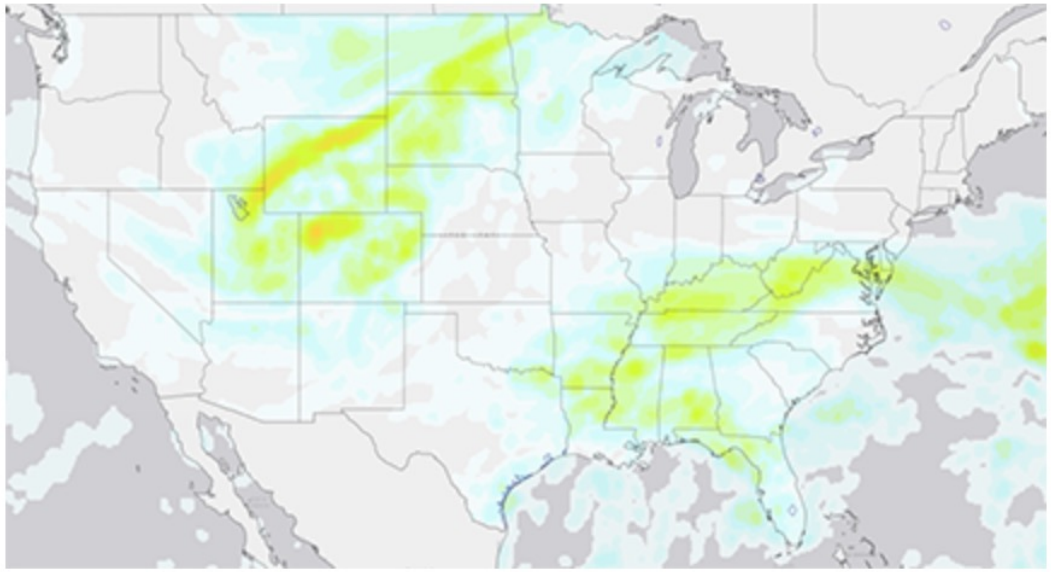
Turbulence Forecasts

- Graphical Turbulence Guidance (GTG-3) Model – US only
- Forecast period is 18 hours
- Issued hourly



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Turbulence Forecasts

- Global Forecast System - Worldwide
- Forecast period is 24 hours
- Issued every 6 hours – Doesn’t forecast Mountain Wave

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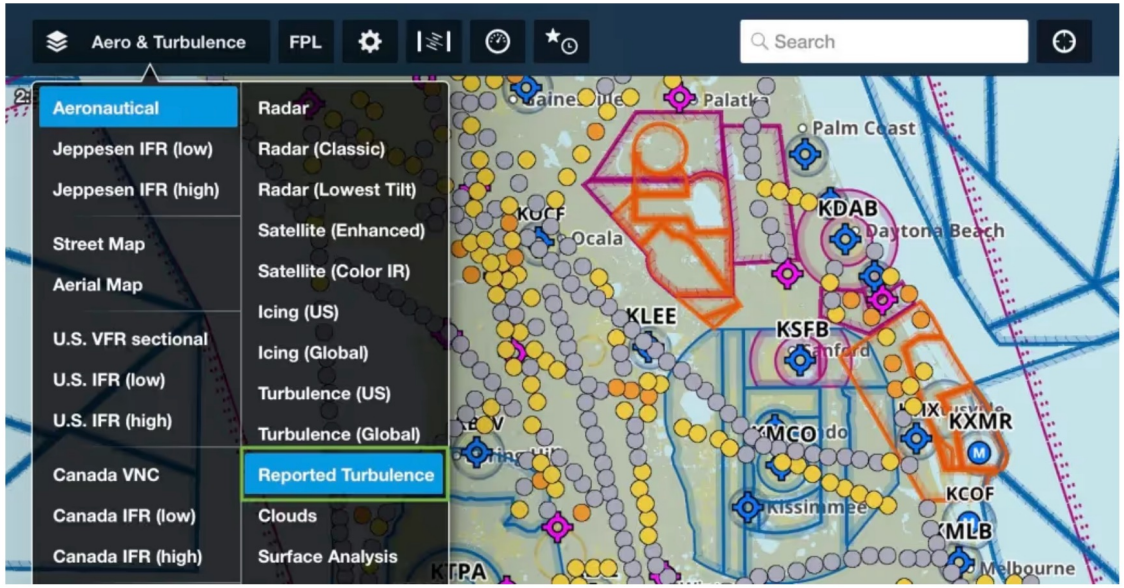
Reported Turbulence

- Crowdsourced – Uses Sentry Sensors – ForeFlight – Video Link
- Updates as airplanes get access to WIFI for uploads
- Below 14,000 and All altitudes subscriptions available



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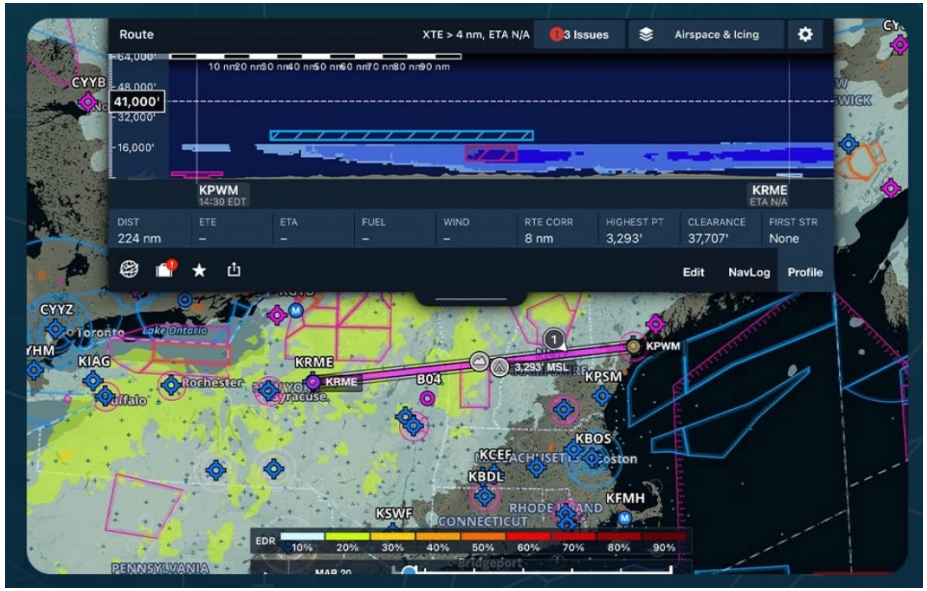
How ForeFlight Displays Turbulence

- US Turbulence – Uses the GTG-3 Model Data
- Displays Eddy Dissipation Rate – EDR – Color coded



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EDR – Eddy Dissipation Rate

- EDR measures the **rate at which turbulent kinetic energy dissipates** in the atmosphere. Mechanically, as swirling air currents (eddies) break down into smaller units, energy is released.
- Airplane Independent

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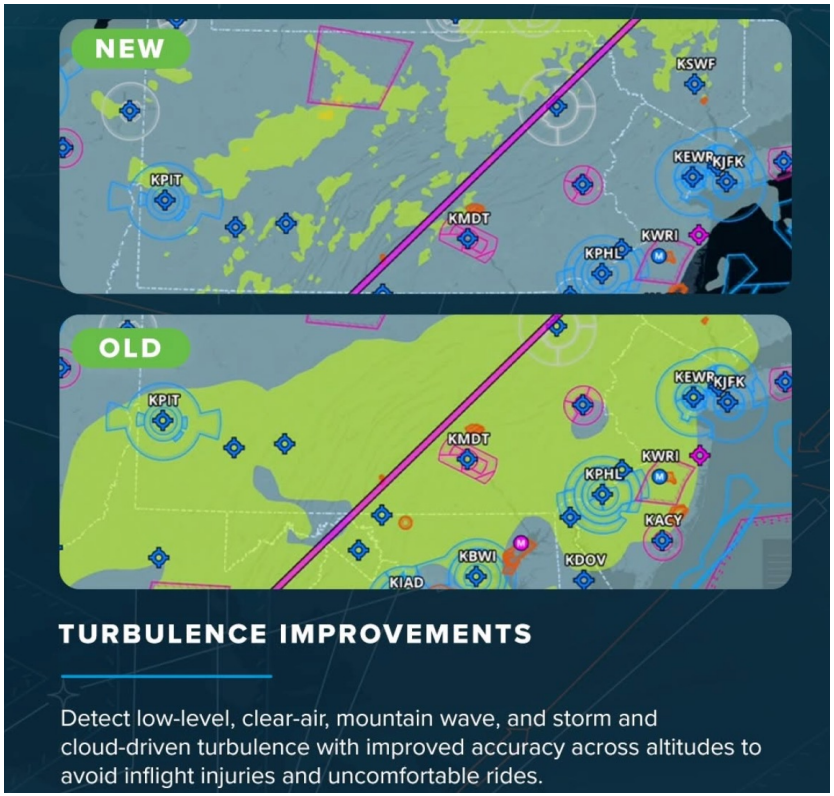
ForeFlight Turbulence Layers

- US and Global layers

[Video Link]



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EDR – Eddy Dissipation Rate

EDR Value (0-100 Scale)	Light Aircraft (≤15,500 lbs)	Medium Aircraft (15,501–299,999 lbs)	Heavy Aircraft (≥300,000 lbs)
10 – 20	Light Turbulence	Smooth to Trace	Smooth
20 – 30	Moderate Turbulence	Light Turbulence	Smooth to Trace
30 – 45	Severe Turbulence	Moderate Turbulence	Light Turbulence
45 – 70	Extreme Turbulence	Severe Turbulence	Moderate Turbulence

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Special Announcement

Initial CFI Airplane 7-Day Courses

- Nov 9 – 15 (11am – 6pm EDT – Remote Via Zoom – PAO Classroom Open)
- AI Class – Nov 9 and Dec 7 – 11am to 5pm EDT – 11am to 5pm
- Dec 7 – 13 (11am – 6pm EST – In person in Opa-Locka, FL or Zoom)
- **Register Here**
- Sample - Course Syllabus – Hour by Hour Here



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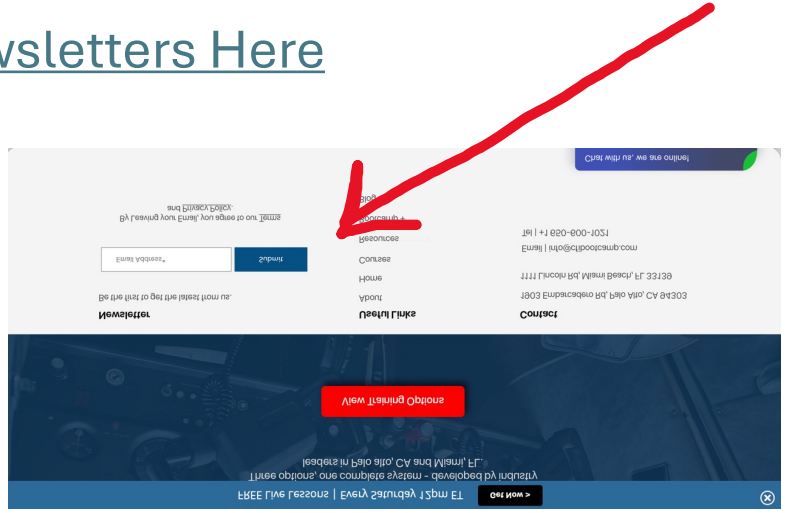
- Delivered Once a Month to your Inbox
- Timely information about what's going on
- ProTips section
- Sign up here – ***Go to the bottom of the page***
- Previous Newsletters Here



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Special Announcement

- CFII Instrument Instructor and Accelerated 3-Day Course – Pop Up class added Dec 15-17, 11am – 6pm
- **Register Here**
- Sample - Course Syllabus – Hour by Hour Here
- Two People will Win our Online CFI Course and 7-day class. Winner announced Jan 4, 2027 – Register to Win via the link in the chat



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Special Announcement!

Reminders!



CFI Study Group
on Facebook

Society of Aviation and
Flight Educators

National Association of
Flight Instructors

Join SAFE, NAFI and the CFI Study Group by Clicking on the Images Above

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