Aviation Weather Guide
TURBULENCE

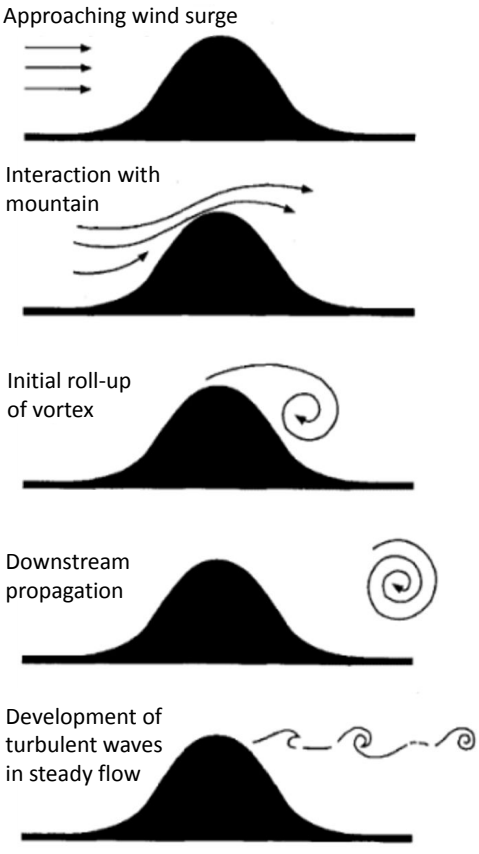
Aircraft turbulence occurs when air motion is irregular because of a rapid change in speed and/or direction.

TURBULENCE INTENSITY CLASSIFICATION

- **LIGHT** - Minor changes in altitude/attitude
- **LIGHT-MODERATE**
- **MODERATE** - More intense rapid bumps and changes in altitude/attitude; positive aircraft control is maintained
- **MODERATE-SEVERE**
- **SEVERE** - Intense and abrupt changes in altitude/attitude and variations in airspeed; temporary loss of aircraft control
- **EXTREME** - Aircraft is violently displaced and is impossible to control; may cause structural damage

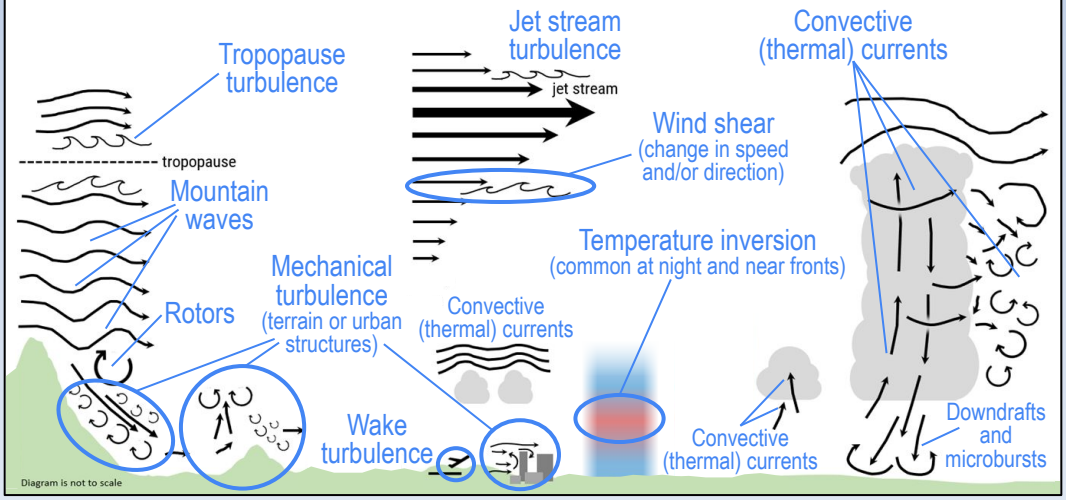
Clouds associated with mountain wave turbulence. Note the evenly spaced "stripes" of clouds and clear air located downstream of the mountain. This cloud pattern reveals locations of upward (cloud) and downward (clear air) motions.

EVOLUTION OF MOUNTAIN WAVE TURBULENCE

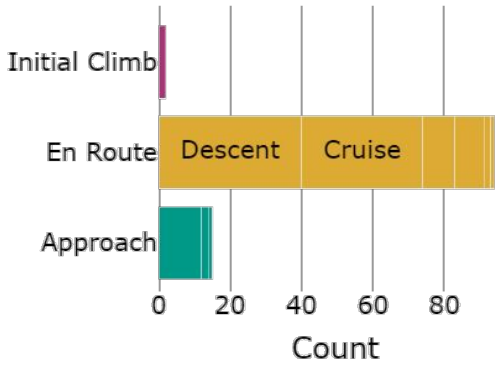


Modified from Bedard, 1993

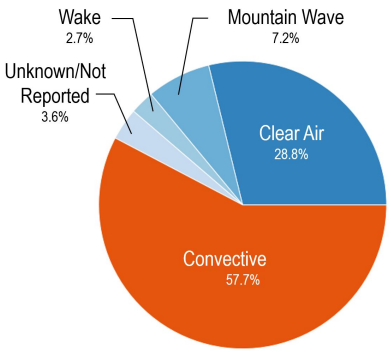
SOURCES OF TURBULENCE



TURBULENCE ACCIDENTS BY PHASE OF FLIGHT



TURBULENCE ACCIDENTS BY TYPE OF TURBULENCE



Adapted from NTSB

PRE-FLIGHT (MISSION PLANNING)

- **Check the latest pilot reports** along your route
- **Check turbulence forecasts** along your route and for the hours leading up to your planned departure.
- **Check for AIRMETs & SIGMETs** along your route. AIRMETs show areas where moderate turbulence is likely. SIGMETs show areas where severe turbulence is likely.
- **Consider adjusting departure/arrival times**. Low-level turbulence can be more frequent in the afternoon, especially in the summer.

IN-FLIGHT (SITUATIONAL AWARENESS)

- **Stay away from thunderstorms!** Turbulence may occur thousands of feet above a storm and tens of miles away from a storm.
- **Stay alert! Clear Air Turbulence (CAT)** may occur ***without warning***
- **Be aware of wind shear,** especially near thunderstorms, fronts, and during overnight/early morning hours.
- **Be cautious near mountains!** Strong wind perpendicular to the ridgetop may cause mountain waves (see diagram on other side).

WE WANT YOUR PIREPS

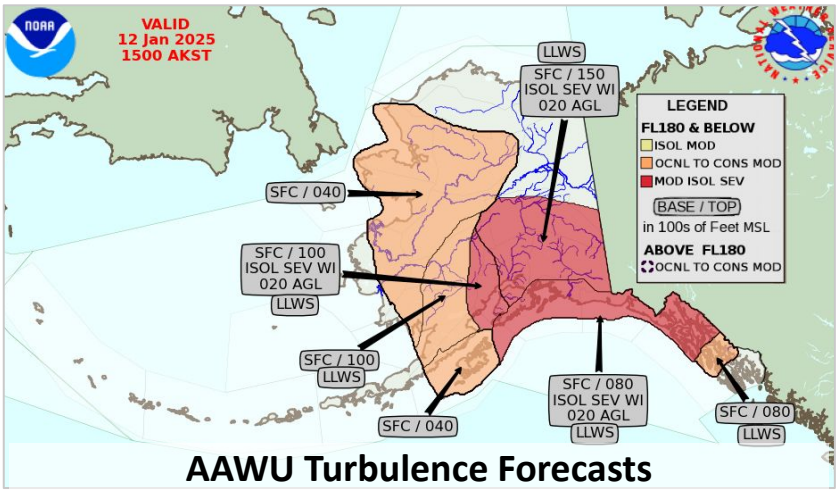
Help meteorologists make better, more accurate forecasts and assist other pilots in the airspace.

Submit PIREPS to Alaska Flight Service or the AWC webpage.
(account and airman certificate # required for AWC webpage)

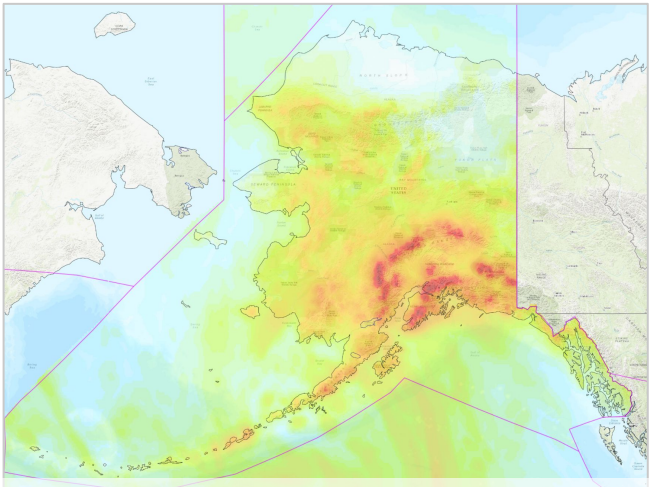
Alaska Turbulence Forecast Products

SIGMETs, AIRMETs, Low-Level Forecast Product (Includes mod or greater turbulence forecasts at 12 & 24 hrs from issuance)

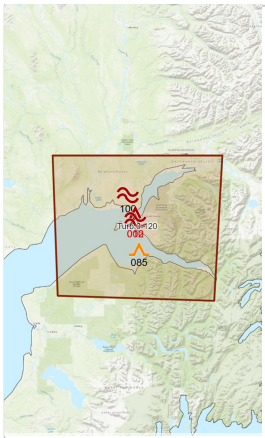
- High-Level Turbulence > FL180
- Low-Level Turbulence < FL180
- Low-Level Wind Shear
- Sustained Surface Winds > 30 knots



AAWU Turbulence Forecasts



Graphical Turbulence Guidance



SIGMET: Turbulence
FIR Name: PAZA ANCHORAGE
Hazard: TURB - OCNL
Begins: 2025-01-12T09:35:00Z
Ends: 2025-01-12T13:35:00Z
Top: 12,000
Base: 0
Movement: stationary
Change: INTSF

WSAK03 PAWU 120936
SIGAK3
ANCK WS 120935
PAZA SIGMET KILO 1 VALID 120935/121335 PANC-
PAZA ANCHORAGE FIR OCNL SEV TURB FCST AREA WI 30 NM E BGQ - 40 NM SE ANC
- 10 NM NE ENA - 30 NM W BGQ - 30 NM E BGQ SFC/FL120 MOV STNR INTSF=
LL TURB AND LLWS.

Turbulence SIGMET

Turbulence forecast resources available at:

weather.gov/aawu and AviationWeather.gov