



## Today's discussion is from the Aviation Category.

### Mountain Flying

This outline is not all inclusive, nor is it directive in nature. Many of the subjects discussed in this outline can be found in non-mountainous areas or at low altitudes. For example, density altitudes over 8500' MSL can be found regularly on the eastern plains of Colorado in the summer. Also, dangerous mechanical and or mountain wave turbulence can be found in areas that aren't usually considered mountainous. Places like the Rocky Mountains / Sierra Front are where all of these concepts can be experienced. In addition, keep in mind that fires in any geographic area can and do produce their own localized weather and the hazards described in this outline can occur in these situations as well.

#### ● Pilot Ability

- Carefully consider your experience and background before beginning a fire mission into mountainous terrain. Mountain flying in many areas will stretch your abilities to fly the airplane proficiently, navigate, and deal with weather. Consider your ability to react to strong winds and the up and down drafts they may cause. The aircraft gross weight and its affect on performance should be carefully considered.

#### ● Visibility

- Many experienced mountain pilots recommend having at least 15 miles of visibility before attempting mountain flights. In the fire environment, make sure you have enough visibility to safely maneuver the aircraft to avoid any obstacles. Remember, turn radius is greater due to increased TAS, engine response time is increased and thrust is reduced due to higher density altitudes....give yourself a margin.

#### ● Winds

- Strong winds can cause some of the most dangerous conditions you'll have to contend with in the mountains. Mountain top winds in excess of 25 knots are indicative of moderate to severe turbulence at ridge top levels as well as the likelihood of very strong up and down drafts. Plan your approach / drop and leave an "out" in case you have to go through dry or encounter unexpected turbulence / down drafts. When encountering a downdraft, maintain sufficient airspeed. Jettison part / all of the load if necessary. Guard against stalling the aircraft and fly out of the downdraft immediately with full power. Proceed to an area of updraft or smoother air. Pay close attention to the forecasts at and above the mountain ridges. In the west, that usually means the 9000' and 12,000' wind forecasts. In the east, you'll look at lower wind level forecasts. Winds above 25 knots at these levels should be a warning sign regarding turbulence and updraft / downdraft potential.

#### ● Mountain Wave

- When the wind speed is above about 25 knots and flowing perpendicular to the ridge lines, the air flow can form waves, much like water flowing over rocks in a stream bed. The waves form downwind from the ridge line and will be composed of very strong up and down drafts, with the probability of dangerous rotor action under the crests of the waves. If enough moisture is present, (standing) lenticular clouds can form to give a visual indication of the wave action. Standing lenticular clouds are also an indication of moderate to severe turbulence.

#### ● Winds Through Passes

- Winds flowing through the narrow restriction of a mountain pass tend to increase in velocity. When the winds are forecast above 20 knots, be aware that this phenomenon may cause turbulence and drafts.

● Remove or secure loose articles when working around an operating helicopter.

● Be aware of the dust abatement conditions of the landing area, as blowing dust, sand, or rocks caused by the helicopter's rotor wash can be hazardous.

● Remove or secure loose articles when working around an operating helicopter.

#### References:

[FAA-P-8740-60 / AFS-803 \(1999\), "Tips on Mountain Flying."](#)  
[Air Traffic Manager, Denver Air Route Traffic Control Center, "Mountain Flying, Techniques and Tips"](#)  
[Department of Transportation Book AC91-15, "Terrain Flying."](#)

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