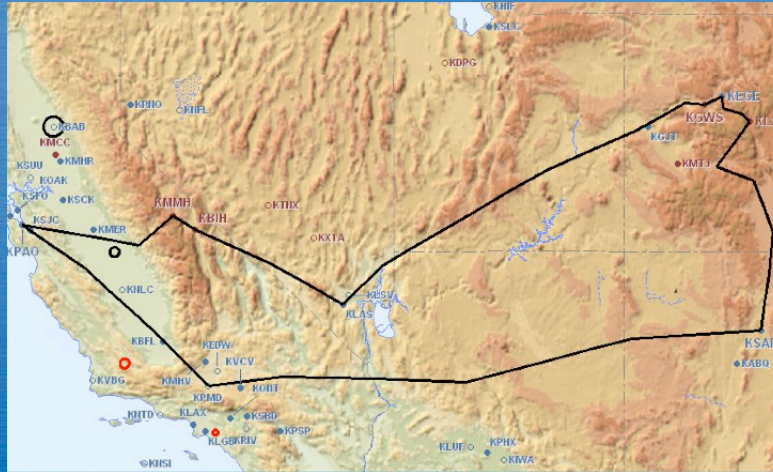


Colorado June 2010 Trip

- Approximate plan
 - 2000 NM round-trip
 - Overnight
 - Santa Fe, NM (KSAF)
 - Glenwood Springs, CO (KGWS)
 - Las Vegas, NV (KLAS)
 - Stops
 - Lake County, CO (KLXV)
 - Eagle County, CO (KEGE)
 - Moab, UT (KCNV)
 - Bryce Canyon, UT (KBCE)

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Colorado June 2010 Trip



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Colorado June 2010 Trip

- High-altitude airports
 - KSAF, KLXV, KEGE, KGWS
 - But no unimproved mountain airports
- Mountain passes
 - Cumbres, La Manga, Independence, Hagerman, Monarch
- Mountain weather
 - Wind, clouds, thunderstorms, turbulence

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4



Overview

- Topics
 - Physiology
 - Survival
 - Performance
 - Operations
 - Weather
 - But...
 - we don't have time to cover all possible topics in depth

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Before You Fly

- Planning
 - Route
 - Performance
 - Weather
 - Flight plan
- Supplies
 - Physiological
 - Survival

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Physiology




The image shows a topographic map of the Colorado Rockies. A black line traces a flight path starting from the west coast, crossing the mountains, and ending in the east. An inset map shows a high-altitude area with peaks like Mount Massive (14,421 ft) and Independence Peak (12,777 ft). A blue line in the inset indicates a specific flight path at an altitude of 14,433 ft. The inset also labels Hagerman Pass (11,925 ft), Twinning Peak (13,384 ft), and Independence Pass (12,093 ft). Other labels include 'TAMU's Directory's D/E (sic) of Hrs' and 'INTERPLAYING PAU WILDERNESS'. Airport codes like KMTJ, KLAS, and KMTJ are visible on the main map.

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Physiology

- Hypoxia
- Hydration
- Vision


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Physiology

- Hypoxia
 - Hypoxic hypoxia
 - Operating at or above oxygen altitudes
 - Operating at night at high altitude
 - Operating for prolonged periods at altitude
 - §91.211 Supplemental oxygen
 - > 12500 MSL Required crew beyond 30 minutes
 - > 14000 MSL Required crew at all times
 - > 15000 MSL Available (but not required) to passengers
 - Non-regulatory, but recommended
 - > 5000 MSL Prolonged night operation

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Physiology

- Oxygen systems
 - Built-in
 - Typically provided only in turbocharged airplanes
 - “Hook-up” (connector, hose, regulator) required
 - No standard for connectors (unfortunately)
 - Pilot outlet may be color-coded for extra flow
 - Portable systems
 - Oxygen cylinder
 - Various capacities
 - Number of simultaneous users (2-place, 4-place)
 - Duration of use
 - Weight
 - Don't forget O₂ system in weight and balance
 - Security
 - Oxygen cylinder secured in cabin against turbulence

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Physiology

- Oxygen systems
 - Familiarity
 - Continuous flow system operation and limitations
 - Masks and cannulas
 - Donning and securing
 - Pre-flight
 - Oxygen cylinder charged (1800–2200 psi)
 - Flow check from oxygen cylinder
 - Flow check at each passenger station
 - Ascending to and cruising at oxygen altitudes
 - Set flowmeter for cruise altitude
 - Regular checking of flowmeter
 - Assist and monitor passengers
- Pulse oximeter
 - Closed feedback loop
 - *Know* that you are getting enough O₂; don't depend on flowmeter

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Physiology

- Hypoxia
 - Hypemic hypoxia
 - Cold at high altitude
 - Use of cabin heat
 - Carbon monoxide from cabin heat
 - Avoidance/remedies
 - Carbon monoxide detector
 - Breath supplemental oxygen
 - Vent cabin
 - Precautionary landing

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Physiology

- Hydration
 - Prolonged flight at high altitudes
 - Air is relatively dry
 - Breathing of oxygen
 - Hot weather
 - Hot cabin
 - Avoid dehydration
 - Carry and consume water in flight

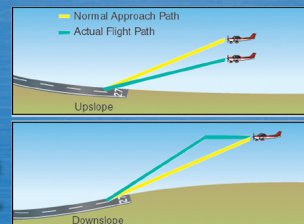
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Physiology

- Vision
 - Illusions
 - Runway slope
 - Mountain airports often sloped, sometimes extremely so (> 5%)
 - Upslope: airplane appears high, is flown low
 - Downslope: airplane appears low, is flown high
 - Obscurations
 - Rain, fog, haze: airplane appears high, is flown low
 - Groundspeed
 - True airspeed higher at high elevation airports
 - Ground rush: airplane appears low, is flared high



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Physiology

- Vision
 - Horizon
 - Irregular terrain (distant ridgeline)
 - Sloping cloud deck
 - Horizon is the base of the mountains 6–8 miles away
 - Crosscheck instruments
 - Night
 - Oxygen use
 - Sparse ground lighting
 - Sloping ground lighting

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Physiology

- Survival tip: don't try to push C-182 uphill at 10000 MSL



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Survival

The image shows a map of the United States with a black line representing a flight path. An inset map in the upper right shows a detailed view of the crash site, with a blue circle and a blue arrow pointing to the location. The inset map is labeled '72' and '8500 MSL'. The main map shows various airports and flight paths across the country.

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Survival

- Clothing
- Supplies
- After the crash
- Rescue

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Survival

- General considerations
 - Don't be fooled by departing from sea level on a summer day
 - In the mountains you may find yourself in high-altitude winter conditions
 - Many have survived a crash only to succumb to the environment

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Survival

- Clothing
 - Warm or winter jacket
 - Sturdy or hiking shoes
 - Gloves
 - Waterproofing

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Survival

- Survival kit contents
 - Canadian Aviation Regulations 602.61
 - State of Alaska Statute 02.35.110
 - <http://www.aopa.org/members/files/pilot/1996/survive9604.html>
 - <http://touchngo.com/iglcnr/akstats/Statutes/Title02/Chapter35/Section110.htm>
 - http://www.tc.gc.ca/CivilAviation/Regserv/Affairs/cars/PART6/602.htm#602_61

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Survival

- Sample survival kit contents (non-statutory)
 - Water
 - Food (high-energy)
 - Warmth
 - Sleeping bag
 - Blanket
 - Matches
 - Signaling
 - Mirror
 - Pyrotechnic
 - Radio and cellular phone
 - Whistle
 - Medical
 - First-aid kit
 - Compresses
 - Bandages
 - Tools
 - Knife
 - Multitool
 - Fishing kit
 - Flashlight

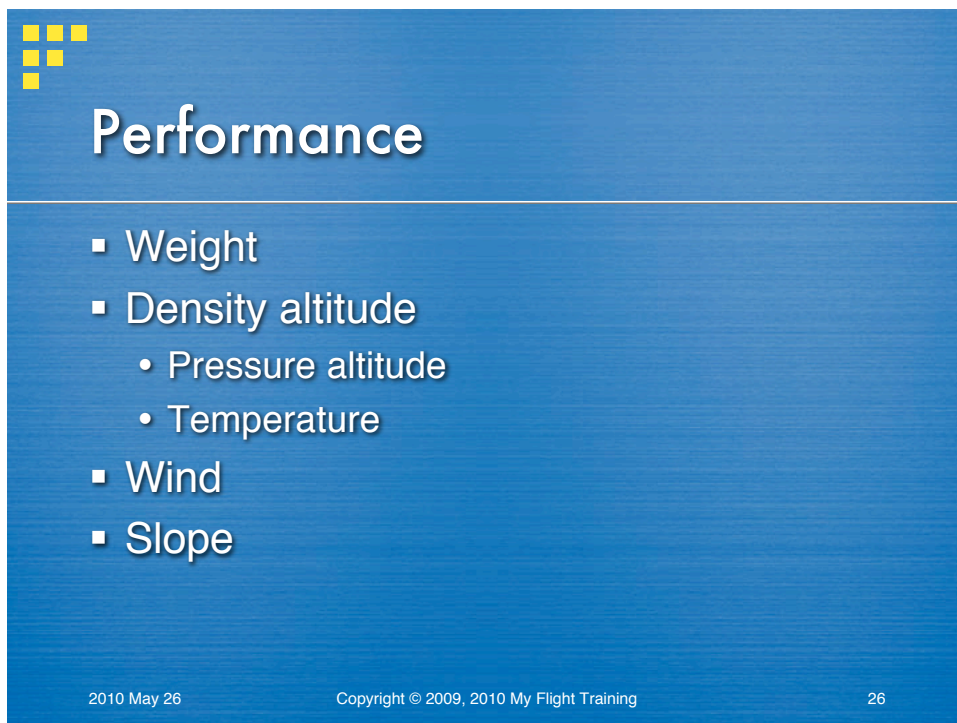
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Performance

- Landing Lake County, CO (KLXV)
 - Elevation 9928 MSL

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Performance

- Weight
- Density altitude
 - Pressure altitude
 - Temperature
- Wind
- Slope

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Performance

- Airspeed definitions
 - Indicated airspeed (IAS)
 - Calibrated airspeed with installation errors
 - Calibrated airspeed (CAS)
 - Most important airspeed related to performance
 - True airspeed (TAS)
 - Aircraft's actual linear progress through air
 - Groundspeed (GS)
 - True airspeed adjusted for effects of wind

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Performance

- Airspeeds
 - TAS and GS are flight planning quantities
 - They relate to progress over ground and ETE and fuel burn
 - CAS is the most important airspeed for measuring aircraft performance
 - Relates the behavior of aerodynamic surfaces to the relative wind
 - CAS appears directly in formulas for lift
 - CAS responds to changes in air density (σ)
 - CAS adjusts automatically for flight at different altitudes
 - IAS approximates CAS at cruise airspeeds

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Performance

- Ceiling definitions
 - Service ceiling
 - Altitude at which aircraft is capable of maximum 100 fpm climb (all engine(s) operating)
 - Absolute ceiling
 - Altitude at which aircraft can sustain 0 fpm climb at V_Y
 - Flying any airspeed other than V_Y at absolute ceiling results in a descent

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Performance

- Airspeeds
 - AFM/POH operating airspeeds (IAS) remain the same at all density altitudes
 - V_S Stall speed
 - V_{REF} Approach speed
 - V_A Maneuvering speed
 - True airspeed (TAS) for a fixed IAS increases with altitude
 - But IAS is the performance speed you fly

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Performance

- True airspeed (TAS)
 - Increases approximately 2% per 1000 ft of altitude for fixed IAS
 - Causes groundspeed to increase
 - Can cause landing visual illusions due to faster apparent motion over runway
 - Solution: Deliberately fly indicated airspeed

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Performance

- Performance airspeeds (IAS)
 - V_Y (best rate of climb)
 - Decreases with altitude
 - V_X (best angle of climb)
 - Increases with altitude
 - $V_Y = V_X$ at aircraft's absolute ceiling
- Guidance:
 - Consult AFM/POH for airspeed adjustment
 - Many manufacturers publish SL and 10000 MSL values
 - Fly appropriate climb speed for altitude

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Performance

- Weight adjustment of airspeed
 - Stall speed (angle of attack) depends on weight
 - Performance airspeeds are related to stall speed
 - Approach speeds (V_{REF})
 - Maneuvering speed (V_A)
 - Manufacturers publish weight adjustment for maneuvering speed
 - Maximum gross weight
 - Intervals down to minimum typical operating weight
 - With or without AFM/POH guidance, you can compute appropriate airspeeds adjusted for weight

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Performance

- Weight adjustment of airspeed
 - Stall speed decreases as square root of weight decrease
 - Other airspeeds decrease proportionally to stall speed
- Example
 - At maximum gross weight
 - $W_{MTOW} = 3000$ lbs
 - $V_{S1} = 60$ KCAS
 - $V_{S0} = 50$ KCAS
 - $V_A = 117$ KCAS
 - $V_{REF} = 65$ KCAS
 - What are appropriate airspeeds for operation at 2500 lbs?

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Performance

- Example
 - Appropriate airspeeds for operation at 2500 lbs?
 - $W = 2500 \text{ lbs}$
 - $W/W_{MTOW} = 2500/3000 = 0.83$
 - $\sqrt{W/W_{MTOW}} = \sqrt{0.83} = 0.91$
 - Airspeeds at 2500 lbs (KCAS)
 - $V_{S1} = 55 \text{ KCAS} (0.91 \times 60 \text{ KCAS})$
 - $V_{S0} = 46 \text{ KCAS} (0.91 \times 50 \text{ KCAS})$
 - $V_A = 107 \text{ KCAS} (0.91 \times 117 \text{ KCAS})$
 - $V_{REF} = 59 \text{ KCAS} (0.91 \times 65 \text{ KCAS})$
 - Then convert each KCAS speed to KIAS (AFH/POH)!
 - Position error results in significant KCAS/KIAS divergence at low airspeeds!

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Performance

- Load factor
 - $LF = G's = \text{aerodynamic load} / \text{weight}$
 - Load factor increases with bank angle
- Limit load factor
 - Normal category: -1.52 G, +3.80 G
 - Utility category: -1.76 G, +4.40 G
 - Acrobatic category: -3.00 G, +6.00 G (typically)
 - Flaps deployed substantially penalizes limit load factor
 - Typically: -0.00 G, +2.00 G
- Ultimate load factor
 - Limit load factor + 50% ($\times 1.5$)

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Performance

- Radius of turn
 - Decreases with increased bank angle
 - Load factor increases
 - Stall speed increases
 - Decreases with increased rate of turn
 - Increases with increased airspeed
 - Doubling airspeed quadruples turn radius
 - Tight turn
 - Slow down
 - Bank as steeply as load factor and stall speed allow

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Performance

- Effects of higher weight
 - Higher takeoff speed
 - Longer takeoff run
 - Lower angle of climb
 - Poorer rate of climb
 - Decreased cruise speed
 - Increased stall speed
 - Higher landing groundspeed
 - Longer landing roll

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Performance

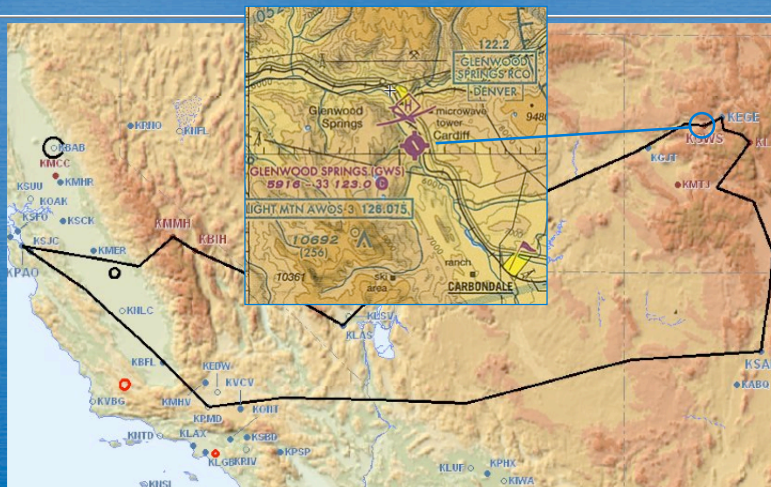
- Effects of higher density altitude
 - Longer takeoff run
 - Longer landing roll
 - Poorer rate of climb
 - Higher landing groundspeed
- Note,
 - *higher density altitude is*
 - *lower density air*

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Operations



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Operations

- Pre-flight
- Takeoff
- Climb
- Cruise
- Descent
- Landing
- Securing




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Operations

- Pre-flight
 - Weight and balance
 - Performance calculations
 - Fuel
 - Rigging
 - Frost
 - Engine pre-heat
 - Run-up


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Operations

- Pre-flight
 - Run-up
 - Normally-aspirated (non-turbocharged) engines
 - Full-rich mixture *not* used for high-altitude takeoff
 - Leaning for maximum power
 - Fuel flow
 - EGT
 - Maximum smooth RPM
 - Full-power run-up if any uncertainty about mixture setting
 - Choose debris-free, prop-blast-safe location


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Operations

- Takeoff
 - Most critical phase of flight
 - You can land at places you cannot takeoff from
 - Considerations
 - Temperature
 - Proxy for density altitude
 - Runway
 - 1-way in/out, slope, surface, obstructions
 - Weight
 - Ground effect


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Operations

- Takeoff
 - Runway considerations
 - One-way in, one-way out airports
 - Close-in obstructions
 - May need to takeoff with tailwind
 - Runway slope
 - Slope factor rarely appears in small aircraft takeoff performance chart
 - Combinations of
 - Headwind/tailwind
 - Upslope/downslope

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Operations

- Takeoff
 - Technique
 - 70% rule: 70% of takeoff speed at 50% runway distance
 - Short-field takeoff
 - Prescribed flap setting
 - Airspeed milestones
 - These are *always* weight adjusted!
 - Flap retraction schedule
 - Soft-field takeoff
 - Unpaved runway (sod, gravel, dirt) factors in takeoff performance chart
 - Remember to accelerate before climbing out of ground effect

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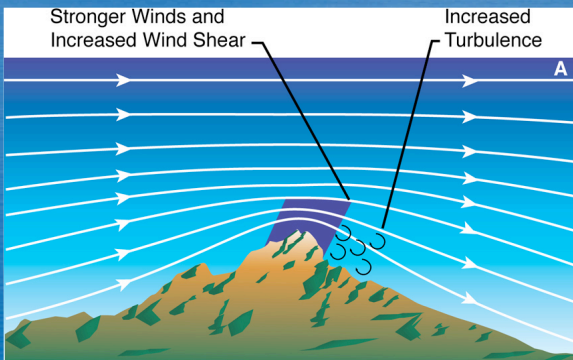
Operations

- Climb
 - Pitch attitude at V_Y/V_X will be lower than sea level
 - V_X to clear obstacles
 - Monitor engine temperature
 - Limit duration
 - V_Y otherwise
 - Shuttle climb for obstacle clearance
 - Circle over airport
 - Climb in ridge lift (downwind side of valley)

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Operations

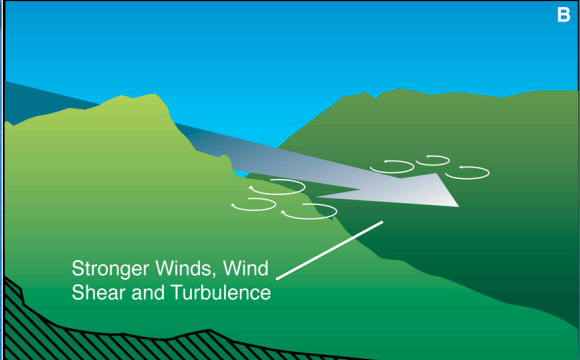
- Visualizing turbulence
 - Vertical venturi effect



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Operations

- Visualizing turbulence
 - Horizontal venturi effect



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Operations

- Canyon flight
 - Safety
 - Principles
 - Aircraft climb gradient rarely exceeds 5%
 - Terrain slope of as little as 10% appears shallow
 - Aircraft cannot out climb even *shallow* terrain slope!
 - Avoid flight up canyon toward higher terrain
 - Enter canyon from high terrain end
 - Maintain airspeed above V_Y to permit instant climb
 - Imeson rule: Altitude and terrain spacing such that gliding descent always allows clearance or turn away!

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Operations

- Canyon flight
 - Visualize wind flow
 - Avoid middle of canyon
 - Even though it offers terrain separation
 - More turbulence
 - Opposite direction traffic
 - Turnaround radius
 - Fly outer third of canyon width
 - Choose updraft (downwind) side
 - Choose sunlit side
 - Ridge lift
 - Only available within 300–1000 feet of canyon wall

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Operations

- Canyon flight
 - Canyon turn
 - Principles
 - Minimize airspeed to minimize radius of turn
 - Power
 - Trade airspeed for altitude
 - Steep turn without (accelerated) stall
 - Load factor increases with bank angle
 - Stall speed increases with bank angle
 - Unloading wing (descent) relieves load factor

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Operations

- Canyon turn

The diagram illustrates a canyon turn maneuver in four stages:

- 0° bank, leveling:** The aircraft is in a level flight path.
- 45° bank, pitching up:** The aircraft banks to the right and pitches up.
- 60° bank, back pressure released:** The aircraft reaches a 60-degree bank and releases back pressure.
- 45° bank, climbing:** The aircraft banks back to 45 degrees and enters a climbing phase with power.

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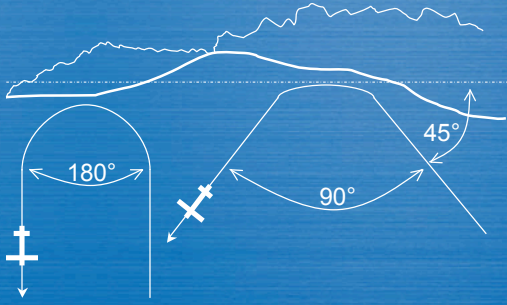
Operations

- Cross ridgelines
 - With altitude to spare
 - 2000 feet for the novice
 - 1/2 again of AGL summit elevation
 - With awareness of approaching from upwind or downwind side
 - Expect downdraft from lee side and add altitude
 - At 45° angle to reduce the time to turn away in case of downdraft

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Operations

- Cross ridgelines
 - 45° approach
 - at 1/2 mile
 - Reduces angle of turn in case need to turn away for downdraft



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Operations

- Updrafts and downdrafts
 - Best angle of climb to clear obstacles
 - V_x decreases in an updraft
 - V_x increases in a downdraft
 - Downdraft rule:
 - Fight instinct to pitch for V_y
 - Accelerate to escape more quickly
 - Pitch down

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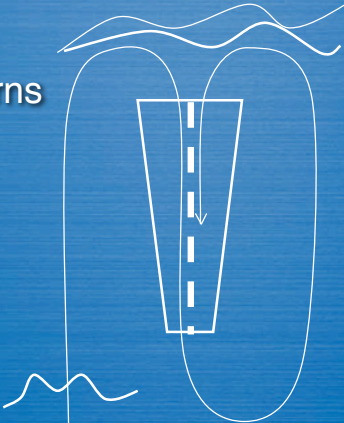
Operations

- Descent
 - Danger in descent is increase in airspeed
 - Exceeding weight-adjusted V_A
 - Expect turbulence when descending below ridge level
 - Flaps not a help since they reduce limit load
 - Adding drag while avoiding idle engine
 - Idle engine results in shock-cooling, counterweight detuning
 - Speed brakes
 - Landing gear (watch V_{LOE})
 - Propeller to high rpm (but MP in green)
 - Forward slip


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Operations

- Landing
 - Non-standard traffic patterns
 - Over fly (drag) field
 - Surface hazards
 - Obstacles
 - Wildlife




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Operations

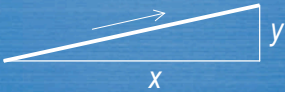
- Landing
 - Stabilized approach
 - Absence of visual glide path aid:
 - 3° glide path: VS (fpm) = 5 × groundspeed (knots)
 - 4° glide path: VS (fpm) = 7 × groundspeed (knots)
 - Weight-adjusted V_{REF}
 - “Spot” method
 - Aim point stationary in windshield
 - “Back side of drag curve” operation
 - Pitch controls airspeed
 - Power controls descent angle
 - Pitch change requires matching power change

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Operations

- Runway slope and wind
 - Gradient = y/x
 - Expressed as % in A/FD
 - Or take runway end elevations/length
 - Landing
 - Adjust ground roll -10% per 1% uphill slope
 - Adjust ground roll +10% per 1% downhill slope




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Operations

- Soft-field landing
 - Approach at minimum airspeed ($1.3 V_{S0}$)
 - Add power immediately before touchdown
 - Nose high attitude at touchdown
 - Maintain back stick
 - Power as needed for surface conditions after touchdown
 - Avoid brakes
 - Maintain forward motion on ground

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Operations

- Short-field landing
 - Obstacle or no-obstacle
 - Approach speed $1.3 V_{S0}$ maximum or per AFM/POH recommendation
 - Precise airspeed controlled by pitch
 - 10% excess airspeed increases landing distance by 21%
 - Powered stabilized approach
 - No “chopping” power past obstacle or in flare
 - After touchdown
 - Flaps up, *with safety*
 - Braking as appropriate to surface condition

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Operations

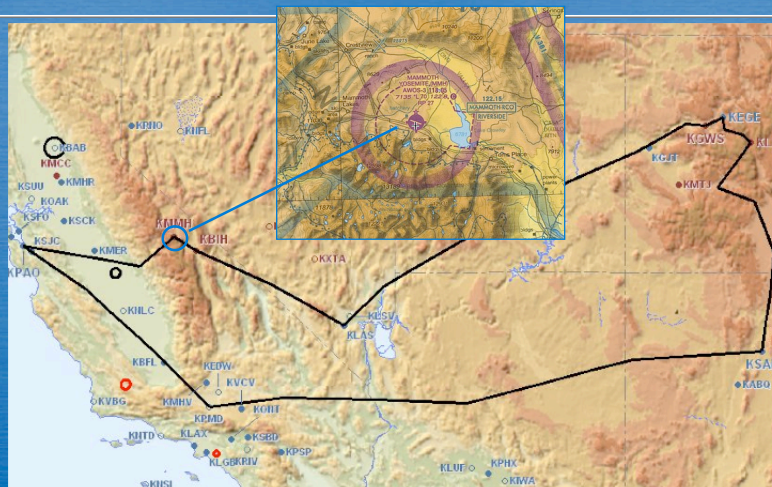
- Securing
 - Park into wind
 - Tie-downs may be deficient or absent
 - Bring securing aids with you
 - Rope
 - Know your knots
 - Screw anchors
 - Chocks

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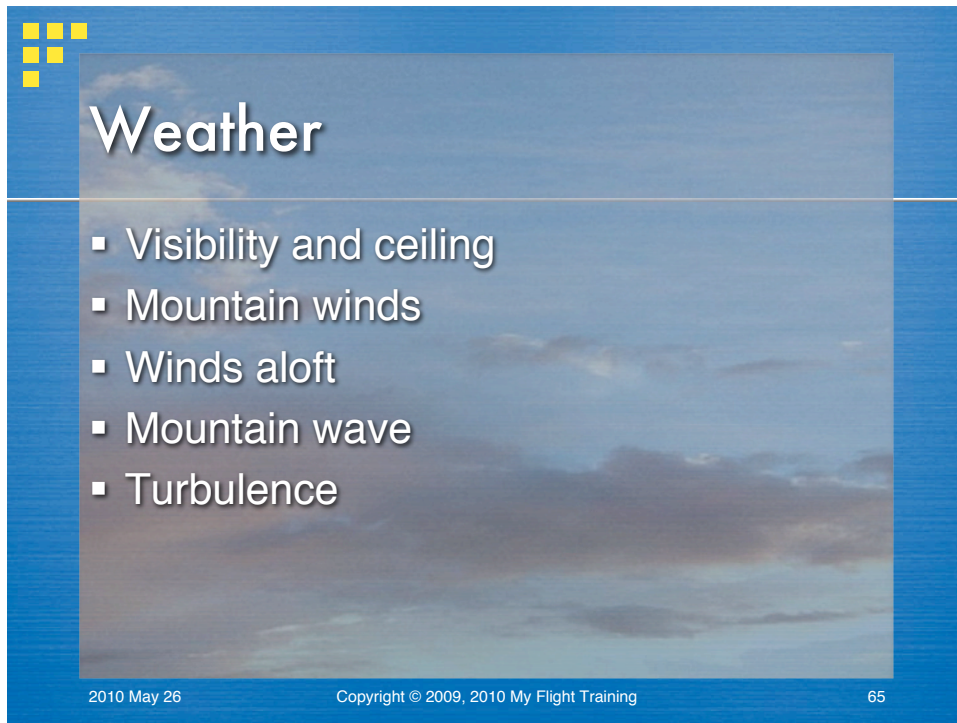
Weather



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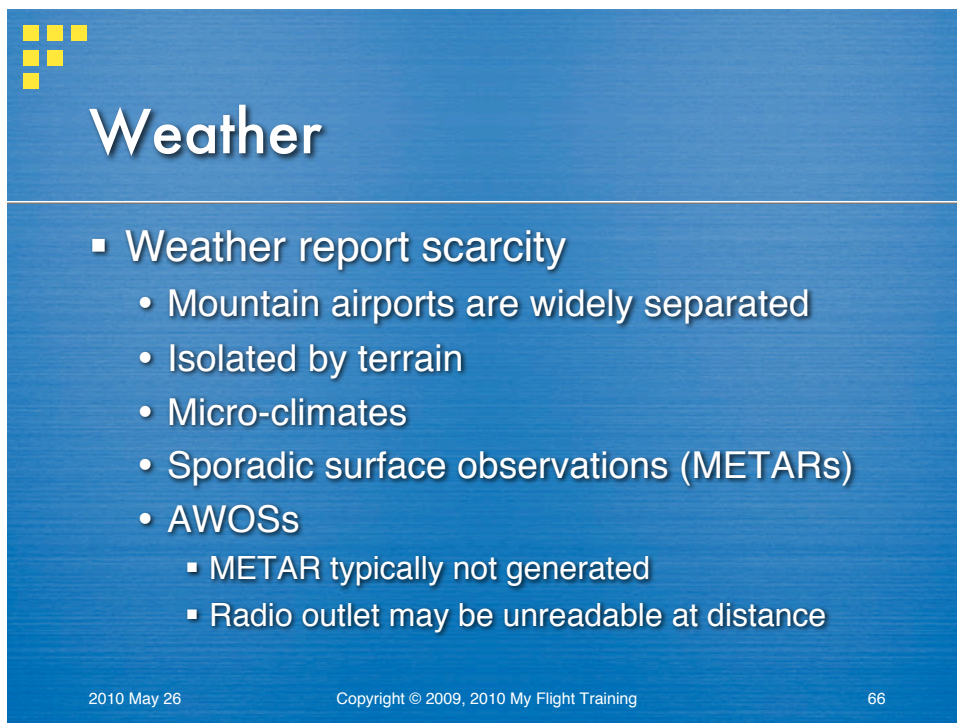
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Weather

- Visibility and ceiling
- Mountain winds
- Winds aloft
- Mountain wave
- Turbulence


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Weather

- Weather report scarcity
 - Mountain airports are widely separated
 - Isolated by terrain
 - Micro-climates
 - Sporadic surface observations (METARs)
 - AWOSS
 - METAR typically not generated
 - Radio outlet may be unreadable at distance


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Weather

- Weather report scarcity
 - Consequences
 - Suspect altimeter settings
 - Suspect visibility and ceiling
 - Unreported local wind conditions
 - Mitigation
 - PIREPs
 - Brief them
 - Give them

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Weather

- Winds aloft
 - At ridgeline level, winds
 - > 20 knots dictate caution, planning, turbulence tolerance
 - > 30 knots are probably no-go for light aircraft
 - In Sierra Nevadas,
 - FD altitudes
 - 9000 MSL
 - 12000 MSL
 - FD locations
 - FAT
 - BIH
 - RNO

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Weather

- VFR ceiling
 - TAF, METAR cloud bases are reported AGL
 - Airport elevation may be thousands MSL
 - Adjust cloud bases to MSL accordingly
 - FA cloud bases are MSL unless otherwise designated
 - Even generous “VFR” ceiling may place cloud bases below the levels of surrounding peaks
 - AIRMET SIERRA for mountain obscuration issued
 - But probably not that helpful for specific valley or airport

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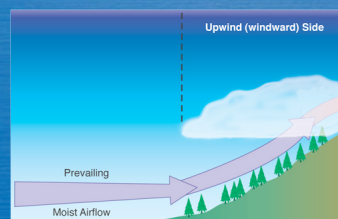
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Weather

- VFR visibility
 - Minimum legal VFR visibility is insufficient in mountains
 - Even 5 SM should be limited to expert knowledge of local terrain
- Fog
 - Valley fog
 - Precipitation
 - Radiation cooling
 - Upslope fog
 - Adiabatic cooling



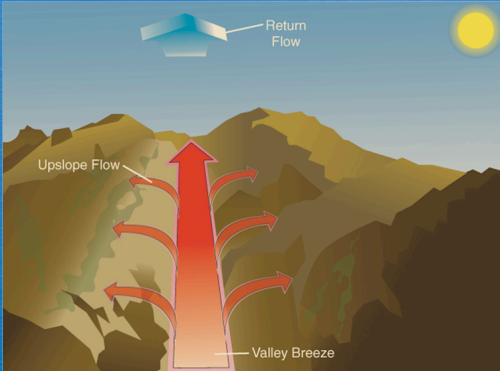
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Weather

- Diurnal wind
 - Valley breeze
 - Daytime
 - Upslope
 - Mountain breeze
 - Nighttime
 - Downslope

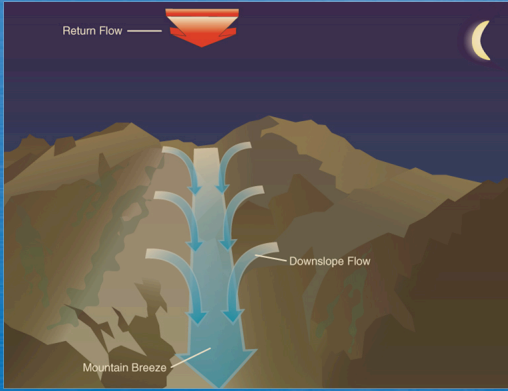


The diagram illustrates daytime diurnal wind patterns. A sun is visible in the upper right corner. Red arrows show air rising up the slopes, labeled 'Upslope Flow'. A large red arrow points upwards from the valley floor, labeled 'Valley Breeze'. At the top of the mountain range, blue arrows point downwards, labeled 'Return Flow'.

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Weather

- Diurnal wind
 - May dictate takeoff/landing runway
 - With temperature may dictate time of day for 1-way airport



The diagram illustrates nighttime diurnal wind patterns. A crescent moon is visible in the upper right corner. Blue arrows show air flowing down the slopes, labeled 'Downslope Flow'. A large blue arrow points downwards from the mountain peaks, labeled 'Mountain Breeze'. At the top of the mountain range, red arrows point downwards, labeled 'Return Flow'.

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Weather

- Mountain wave
 - Standing wave of updraft and downdraft extending downwind from mountain chain
 - Marked by clouds in presence of sufficient moisture
 - May extend from tens to hundreds of miles downwind
 - May extend vertically to tropopause

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Weather

- Mountain wave
 - Preconditions
 - Moderate to strong winds at crest elevation
 - Approximately perpendicular to crest face wind direction
 - Moderately stable air
 - Result
 - Spring-like upward deflection of air at crest followed by overshooting down flow as stable air seeks its natural altitude

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Weather

- Mountain wave
 - Vertical development to tropopause
 - Layered lenticulars

The diagram illustrates the vertical structure of a mountain wave. On the left, a mountain range is shown with wind blowing over it. The wind is deflected upwards on the windward side, creating a wave that propagates downwind. Key features labeled include:

- Downslope Winds:** The wind direction on the lee side of the mountain.
- Lower Turbulent Zone:** A region of turbulence near the surface on the lee side.
- Rotor:** A region of strong, opposing air currents near the surface, often associated with a rotor cloud.
- Lee Wave Region:** The area where the wave propagates downwind, showing alternating layers of clouds (lenticulars) and clear air.
- Tropopause:** The boundary between the troposphere and stratosphere, which is also wavy in this region.

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Weather

- Cap cloud
 - Upslope (updraft) condensation
- Rotor (roll) cloud
 - Stratocumulus fractus

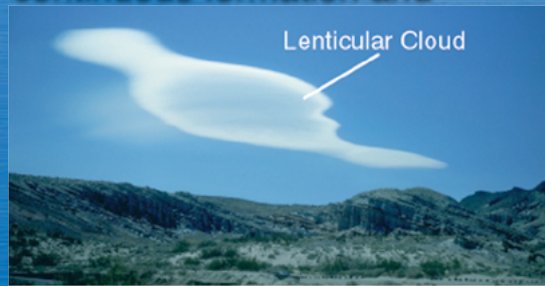
The photograph shows a real-world example of mountain wave clouds. A dark, horizontal, turbulent-looking cloud is labeled as the **Rotor (Roll) Cloud**. Above it, a more distinct, layered cloud is labeled as the **Cap Cloud**. The background shows a range of mountains under a clear sky.

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Weather

- Lenticular cloud
 - Appear to be stationary
 - But actually continuous formation and dissipation
 - May be layered



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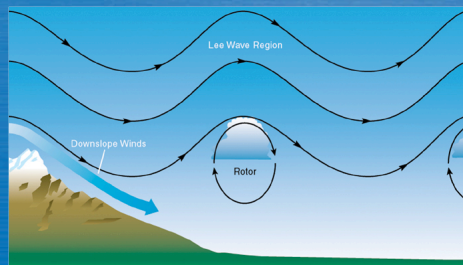
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Weather

- Rotor clouds
 - Rotary motion may be visible as different cloud velocity top and bottom
 - Torn or ragged appearance (fractus)
 - Severe or greater turbulence
- Avoid
 - Detour around
 - Well above
 - Never below



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Weather

- Turbulence
 - PIREP
 - Reporting criteria
 - Intensity
 - Duration
 - Aircraft type

TURBULENCE REPORTING CRITERIA TABLE		
Intensity	Aircraft Reaction	Reaction Inside Aircraft
Light ^	Turbulence that momentarily causes slight, erratic changes in altitude and/or attitude (pitch, roll, yaw). Report as light turbulence or light CAT. or Turbulence that causes slight, rapid and somewhat rhythmic bumpiness without appreciable changes in altitude or attitude. Report as light CHOP.	Occupants may feel a slight strain against 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 ^	Turbulence that causes changes in altitude and/or attitude occurs but the aircraft remains in positive control at all times. It usually causes variations in indicated airspeed. Report as moderate turbulence or moderate CAT. or Turbulence that is similar to light CHOP but of greater intensity. It causes rapid bumps or jolts without appreciable changes in aircraft altitude or attitude. Report as moderate CHOP.	Occupants feel definite strains against seat belts or shoulder straps. Unsecured objects are dislodged. Food service and walking are difficult.
Severe ^	Turbulence that causes large, abrupt changes in altitude and/or attitude. It usually causes large variations in indicated airspeed. Aircraft may be momentarily out of control. Report as severe turbulence or severe CAT.	Occupants are forced violently against seat belts or shoulder straps. Unsecured objects are tossed about. Food service and walking are impossible.
Extreme	Turbulence in which the aircraft is violently tossed about and is practically impossible to control. It may cause structural damage. Report as extreme turbulence or extreme CAT.	

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Summary

- This presentation gave only briefest overview of many topics.
- Some topics were omitted.
- Get a mountain checkout.
- Participate in a multi-day mountain trip.
- It's not all serious...
 - Have fun flying in the mountains!

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Resources

- Web
 - <http://www.aopa.org/members/files/pilot/1996/survive9604.html>
 - <http://touchngo.com/lglcntr/akstats/Statutes/Title02/Chapter35/Section110.htm>
 - http://www.tc.gc.ca/CivilAviation/Regserv/Affairs/cars/PART6/602.htm#602_61
 - http://www.fepco.com/Bush_Flying.html
 - <http://www.dot.state.ak.us/stwdav/akfly.shtml>
- Print
 - Imeson, S. *Mountain Flying*. Airguide Publications, 1987.
 - Imeson, S. *Mountain Flying Bible (Revised)*. Aurora Publications, 2005.
 - Potts, F.E. *Guide to Bush Flying*. ACS Publishing, 1993.
- WVFC
 - Mountain Checkout form
 - Del Vecchio, P. *Mountain Flying Checkout*.
- Acknowledgment
 - Photographs from June 2008 WVFC Colorado Trip by Christine Kelly

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