

# Weather for GA Pilots

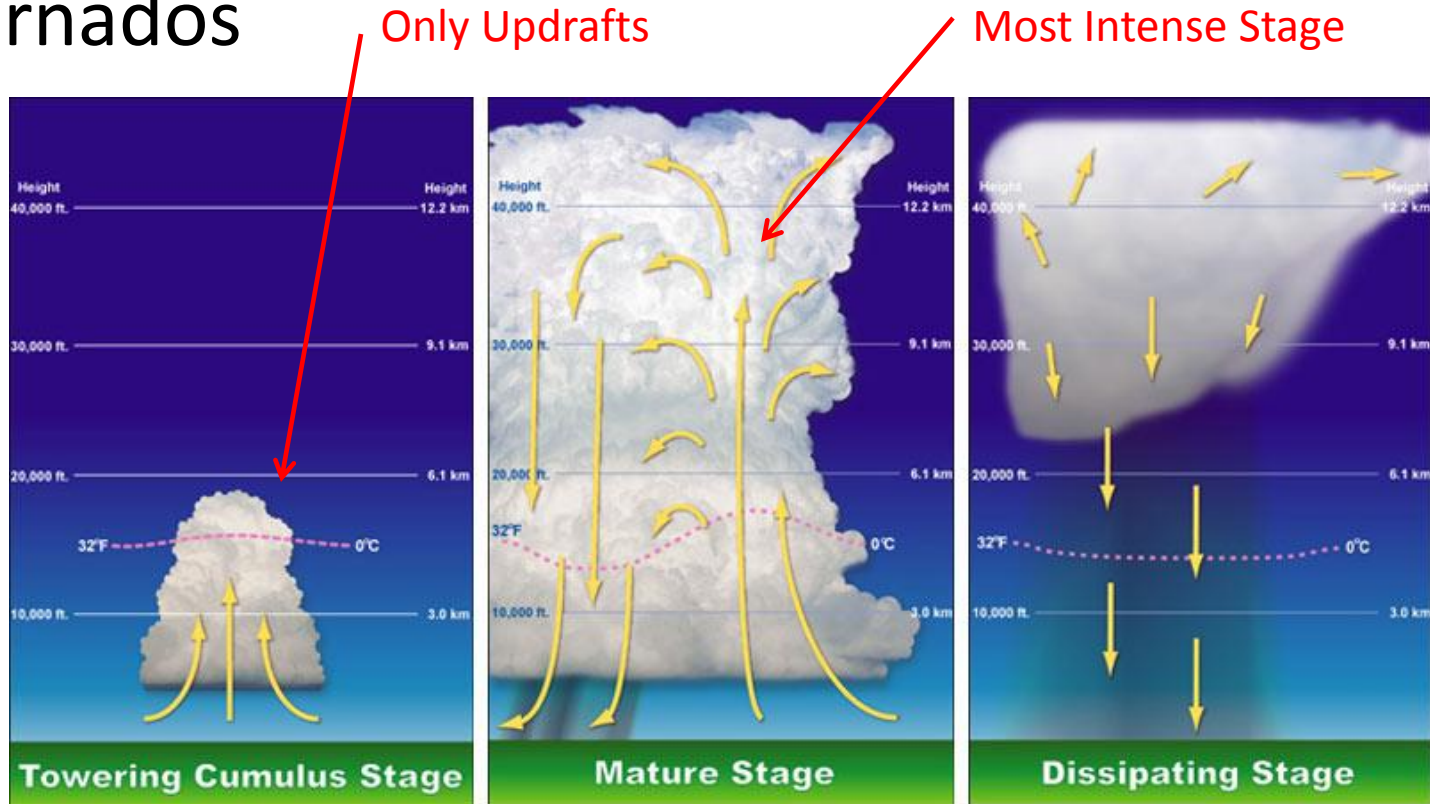
Weather Hazards

Gary White

25 Sep 2012

# Thunderstorms

- Thunderstorms – Moisture, Lifting, Unstable Air
- Most Severe – Turbulence, > 50 Knt, Hail, Tornadoes

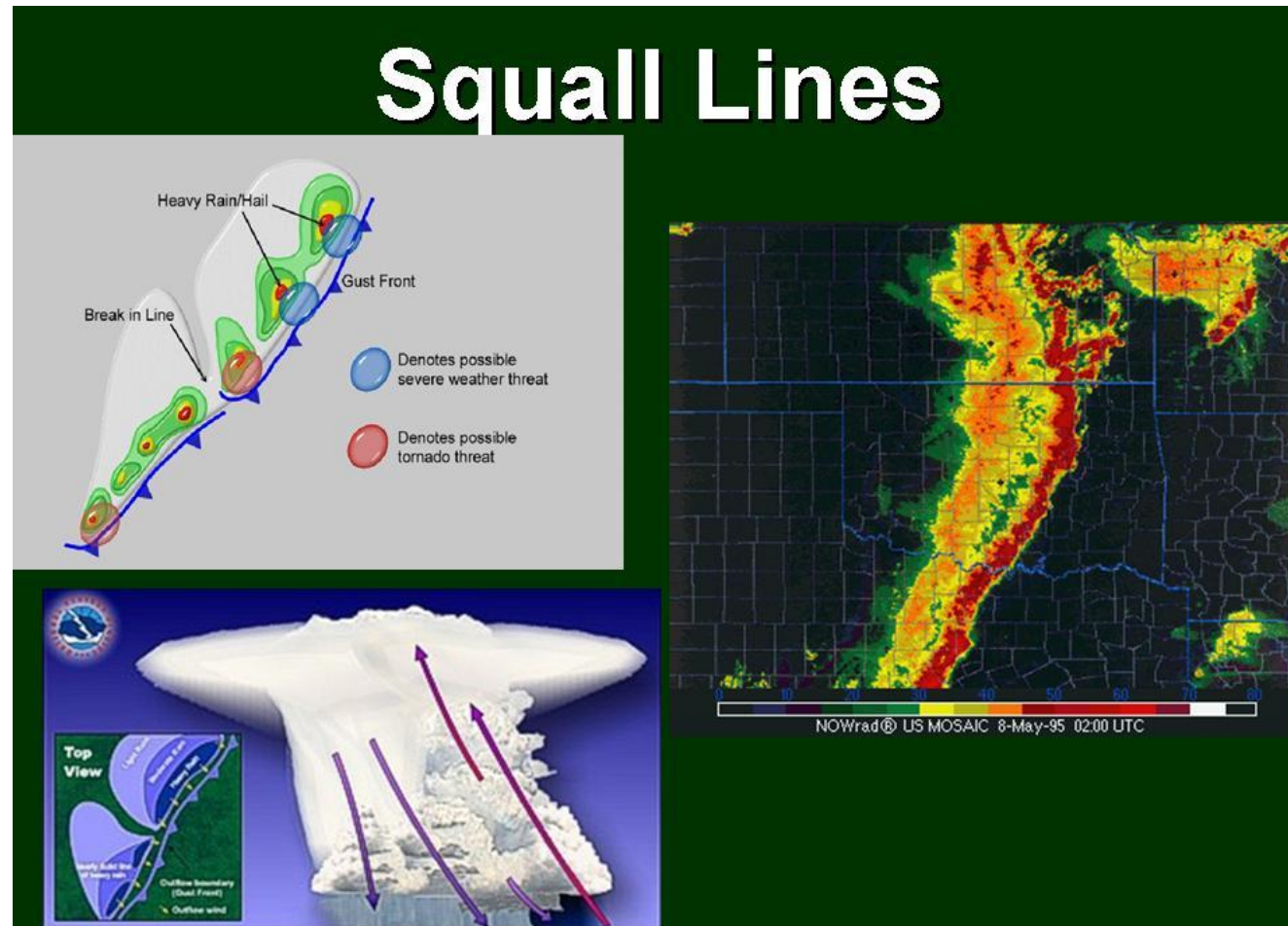


# Thunderstorms (cont.)

- Key Words to Listen for from the Briefer:
  - **Super Cells** – Long Lasting > 2 Hours
  - **Multi Cell** – A Grouping of Thunderstorms
  - **Squall Line** – Multi Cells in a Line – Rapidly Moving
    - May Develop Very Fast – Most Dangerous
  - **Embedded Thunderstorms** – Obscured by Stratiform Clouds – Hard to See

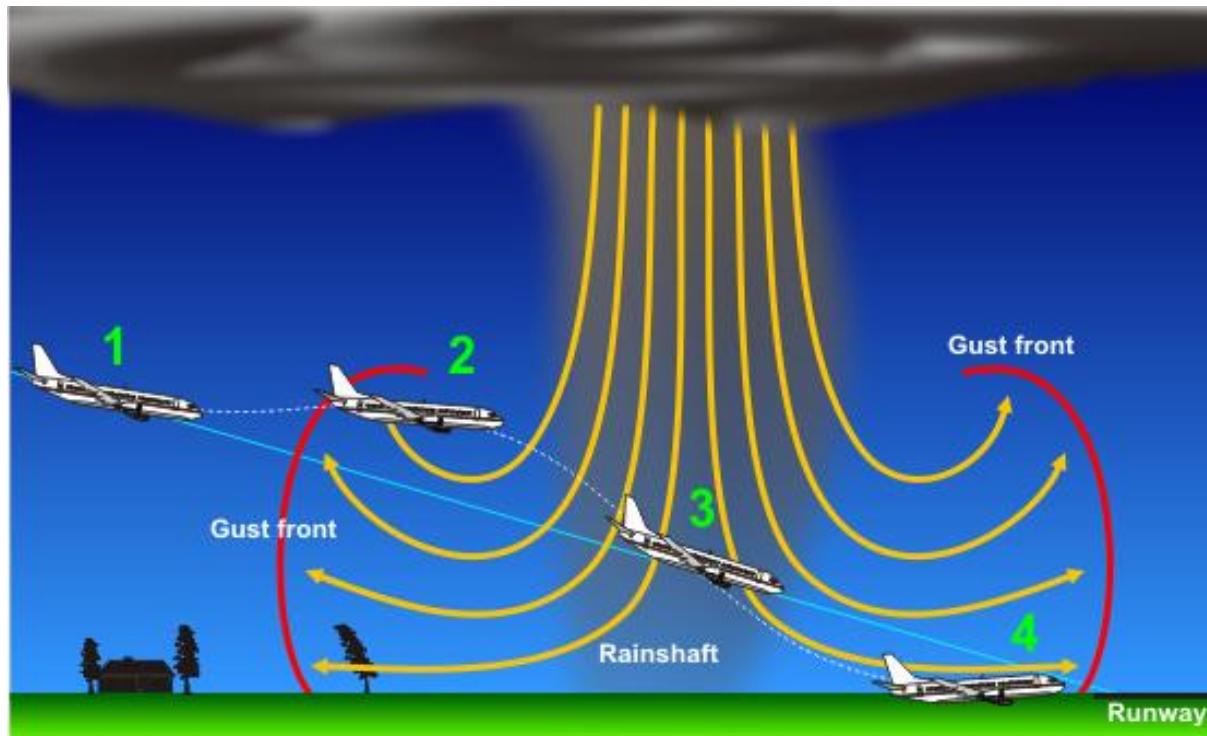
# Squall Lines

- FAA Says these are Non-Frontal – Yet a Front Sometimes Acts as Trigger
- Typically Seen In Advance (75-500 Miles or More) of a Fast Moving Cold Front
- Thunderstorms Associated With a Squall Line are the Most Intense WX a Pilot Can Encounter



# Microburst and Gust Fronts

- Downdraft and Updraft of Cold Air That Can Extend Several Miles
- Can Radically Impact Aircraft Performance



# Turbulence

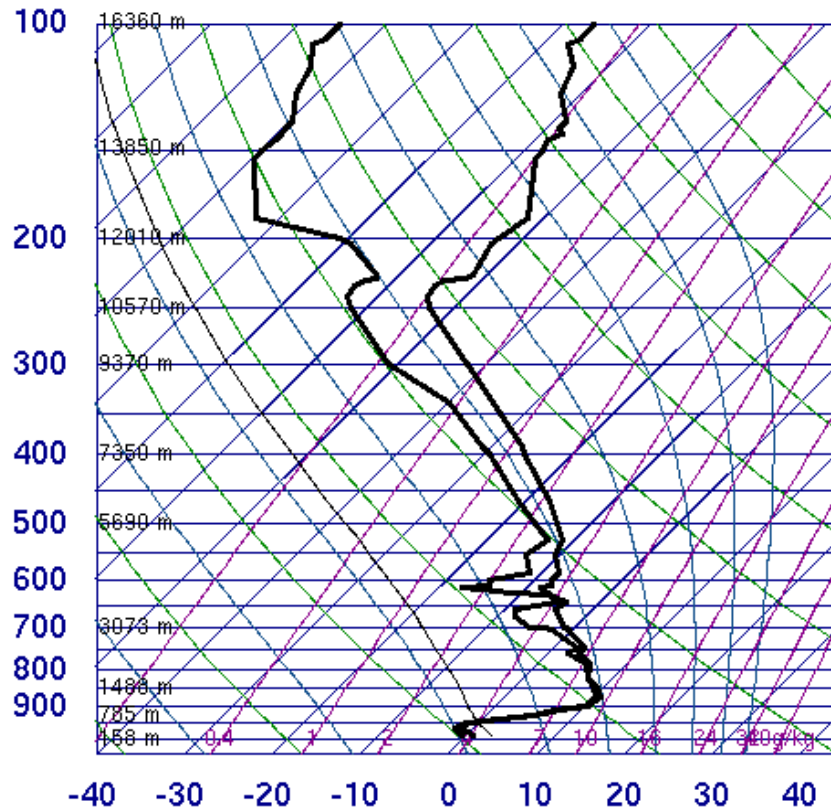
- CAT – Clear Air Turbulence - > 15,000 Feet
  - Standing Lenticular
  - Near Jet Stream or Perpendicular to Mountain Ridge (Mountain Wave)



# Wind Shear

- When Warmer Air (Inversion) Caps Colder Surface Air – Warm Air of 25-30 Knots 2,000 to 4000'

72317 GSO Greensboro



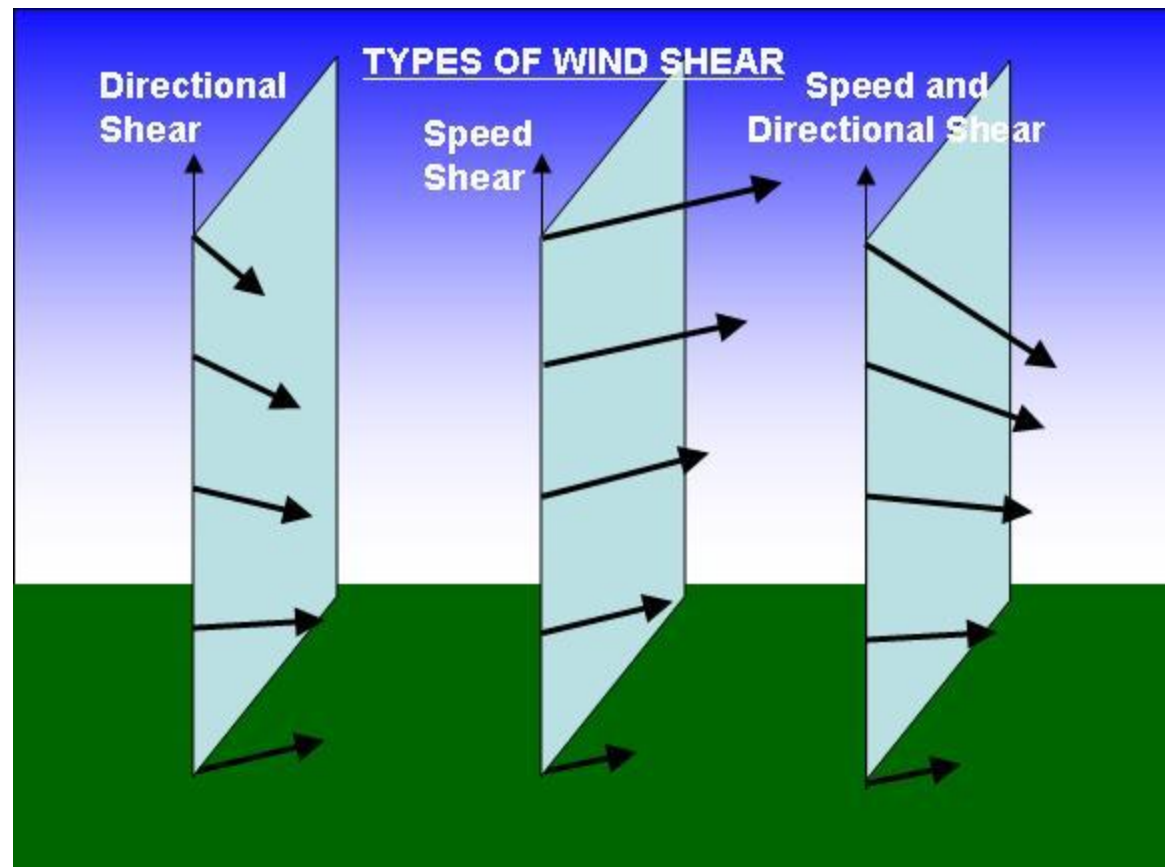
SLAT	36.08
SLON	-79.95
SELV	277.0
SHOW	2.05
LIFT	23.90
LFTV	24.19
SWET	368.6
KINX	29.90
CTOT	22.90
VTOT	23.30
TOTL	46.20
CAPE	0.00
CAPV	0.00
CINS	0.00
CINV	0.00
EQLV	-9999
EQTV	-9999
LFCT	-9999
LFCV	-9999
BRCH	0.00
BRCV	0.00
LCLT	272.6
LCLP	946.4
MLTH	277.0
MLMR	3.98
THCK	5532.
PWAT	26.69

12Z 01 Feb 2008

University of Wyoming

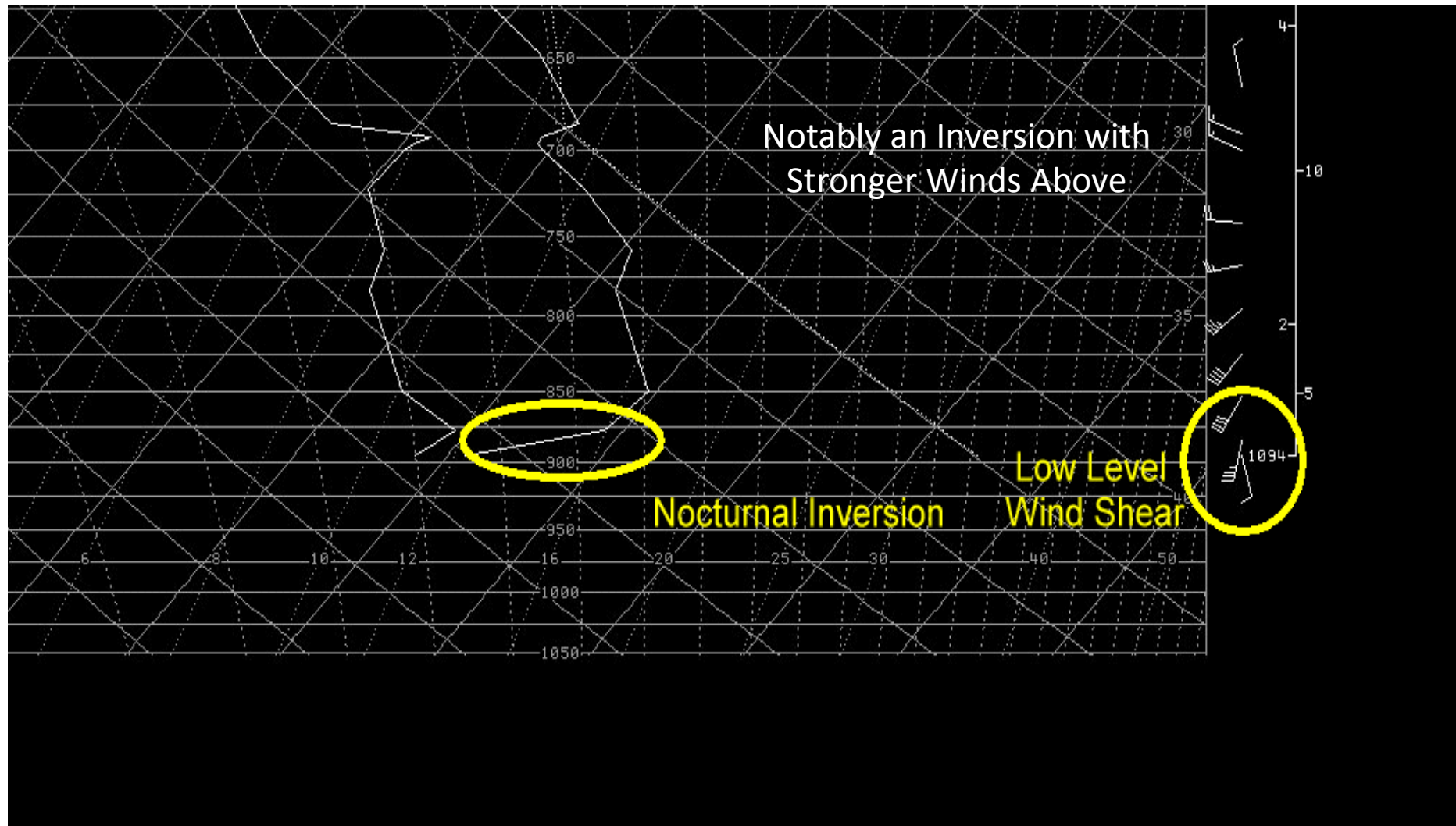
# Wind Shear (cont.)

- Any Altitude – Speed, Direction, or Both





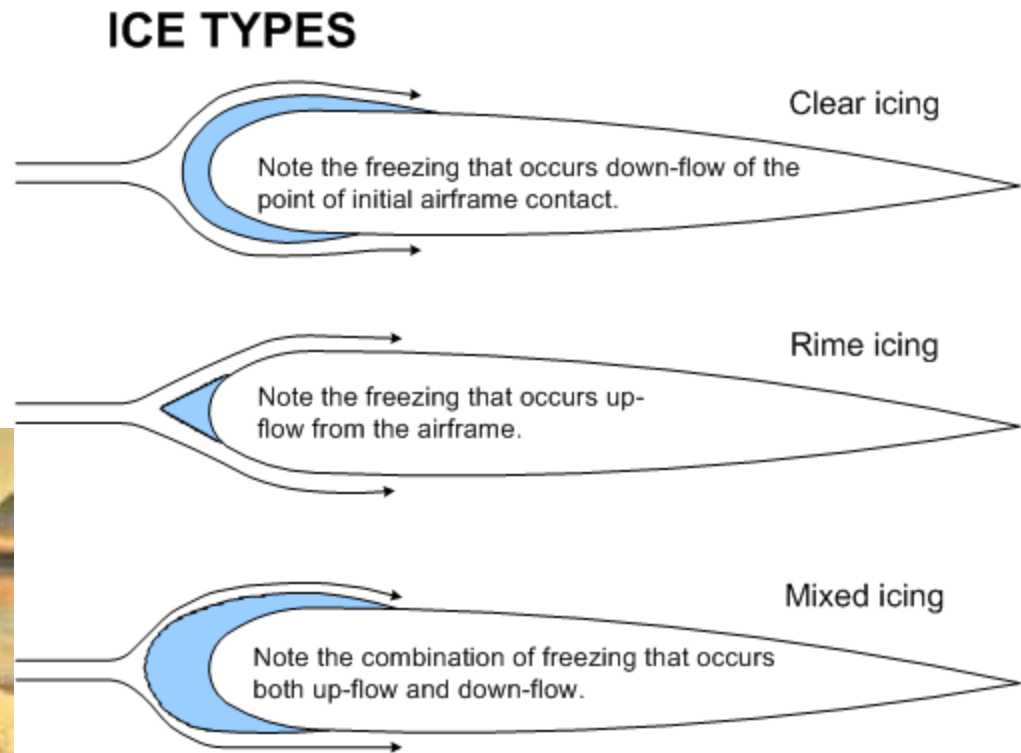
# Low Level Wind Shear



# Icing

- Three or Four Types – Some Categorize Frost As Ice

FAA Says Visible Moisture is Necessary for Structural Icing – Since Frost Is Formed from Deposition of Gaseous to Solid State it Doesn't Meet FAA's Definition



Based on depiction found in Fig. 9-5 of *Air Command Weather Manual*

# Visibility

- Haze, Rain, Smoke, Snow, Smog, Dust

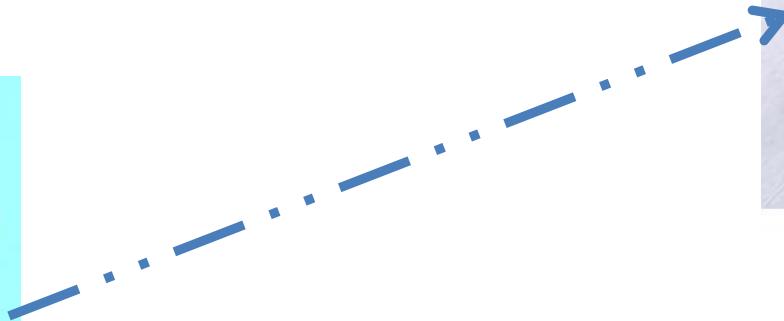
We Can Legally Fly in Visibility as Low as 1 SM – Is This Safe?

Don't Be a Magoo – See and Be Seen

Turning On Landing Lights in Traffic Pattern During Day Helps Other Pilots See You



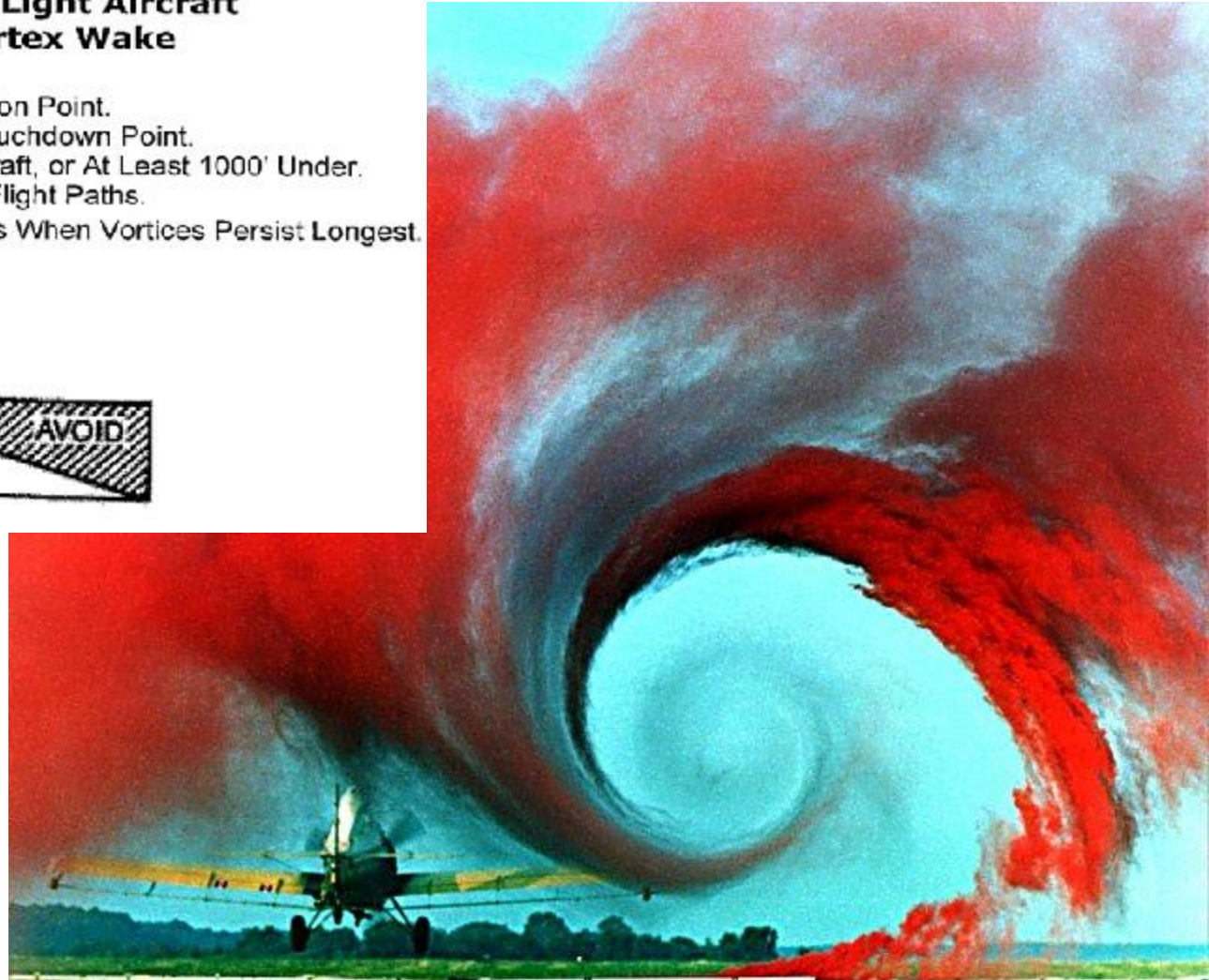
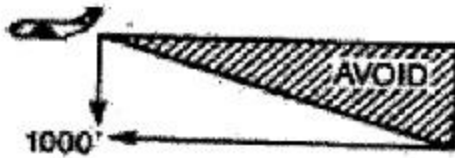
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# Wake Turbulence

## Operational Tips for Light Aircraft How to Avoid Vortex Wake

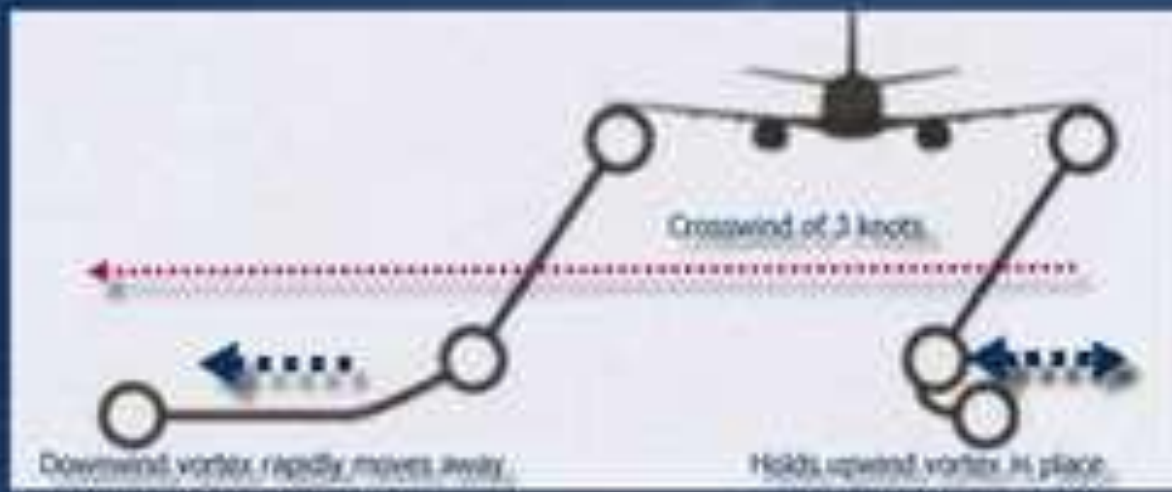
1. Lift Off Short of Large Aircraft Rotation Point.
2. Land Well Beyond Large Aircraft Touchdown Point.
3. Pass Over Flight Path of Large Aircraft, or At Least 1000' Under.
4. Stay to Windward of Large Aircraft Flight Paths.
5. Keep Alert, Especially on Calm Days When Vortices Persist Longest.



# Wake Avoidance (X-Wind)

Wake Turbulence On Takeoff

Effect of crosswind



Light crosswinds (approximately 3 knots)  
require maximum caution!

# Wake Avoidance

Wake Turbulence On Landing

Landing behind a large aircraft



Stay on the upwind side!