MID-ATLANTIC DRONES

Knowledge Elevated

TEMPERATURE

WHAT DOES IT MEAN FOR THE UAV PILOT?
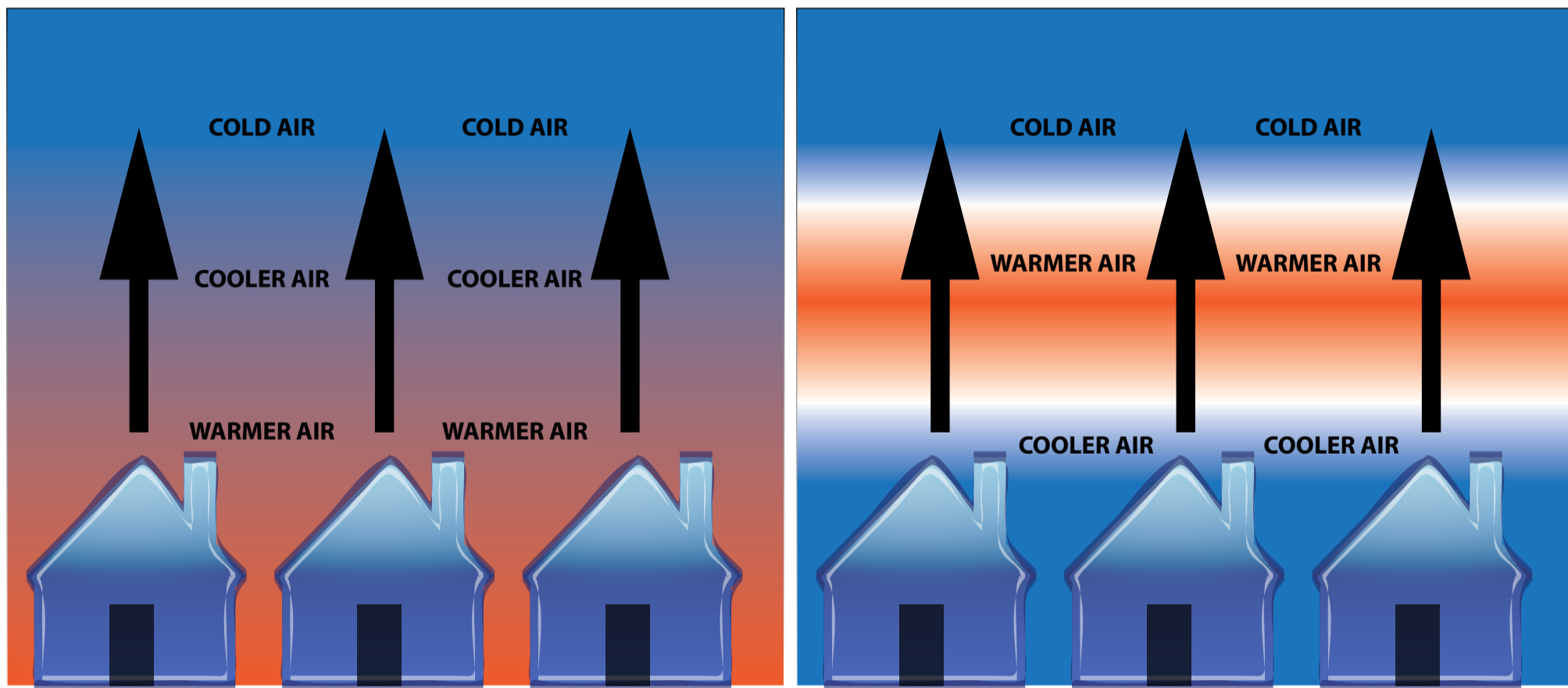**HOW DOES IT AFFECT THE WEATHER?**

INVERSION

**TEMPERATURE INVERSION:
A LAYER OF COOL AIR AT THE SURFACE
IS OVERLAIN BY A LAYER OF WARMER AIR**

NORMAL CONDITIONS

COLD AIR   COLD AIR

COOLER AIR   COOLER AIR

WARMER AIR   WARMER AIR

TEMPERATURE INVERSION

COLD AIR   COLD AIR

WARMER AIR   WARMER AIR

COOLER AIR   COOLER AIR

On the left, arrows show normal conditions: Warm air rises and normal convective patterns persist. During temperature inversion, shown on the right, the warm air acts like a cap, shutting down convection and trapping smog over the city.

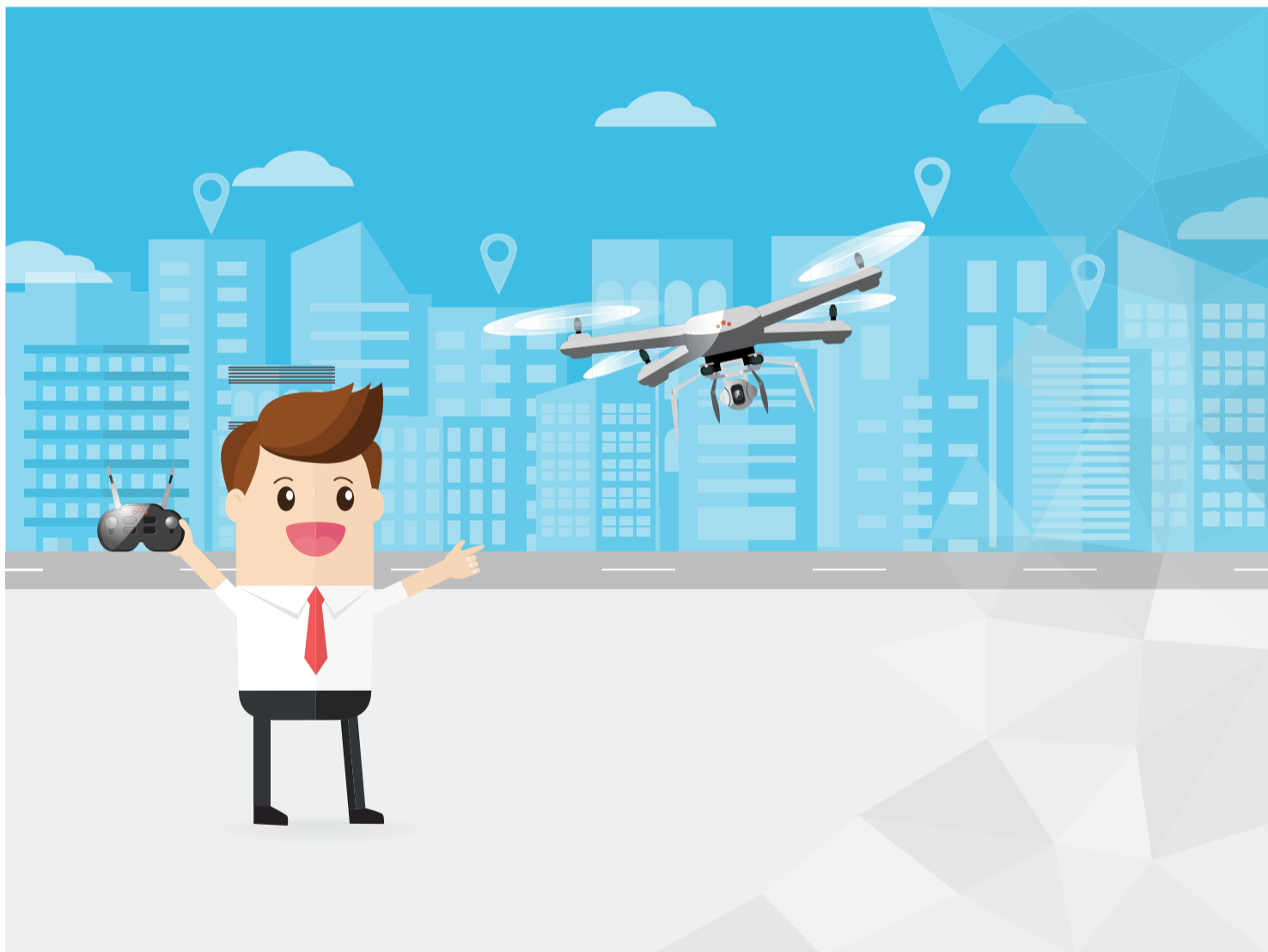# WARM AIR ON TOP OF COLD AIR EXPECT FOG AND HAZE TEMP/DEW POINT SPREAD IS LOW LITTLE CONVECTION

- A temperature inversion means some warm air on top of some cold air.
- The cold air underneath on the ground, along with a high relative humidity, means you are expecting fog in the cooler area.
- If you check the METARS for the airports in the area as you will most likely have a temperature/dewpoint spread that is low.
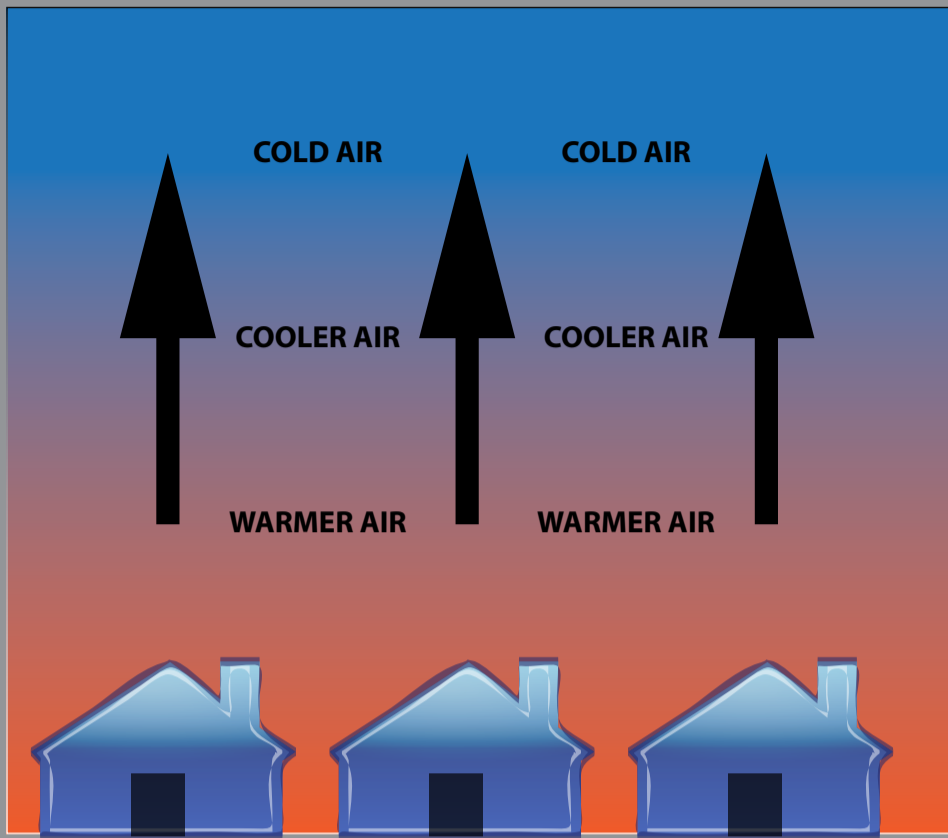- The air will be smooth because there is little convection.

WHAT DOES THIS MEAN FOR YOU, THE DRONE PILOT?

Temperature inversions can represent an important element of air pollution, especially in places that are inhabitted, and in valleys. The warmer air layer acts as a natural lid that keeps pollution and dirt trapped. This trapped layer of dirty air stays in there unable to escape. The main issue for UAVs is visibility.
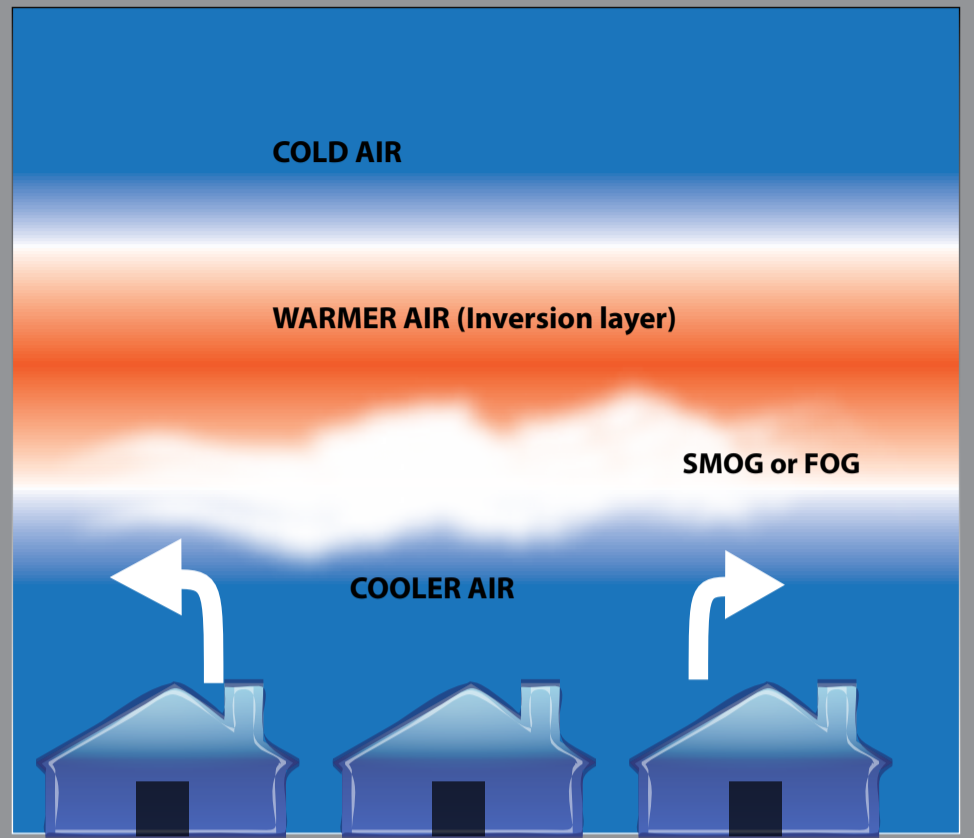
If you are legal to clib above this "lid" layer, you'd see much cleaner air, and therefore much greater visibility.

NORMAL CONDITIONS

TEMPERATURE INVERSION

YOU HAVE RECEIVED AN OUTLOOK BRIEFING. THE BRIEFING INDICATES YOU CAN EXPECT A LOW-LEVEL TEMPERATURE INVERSION WITH HIGH RELATIVE HUMIDITY. WHAT WEATHER CONDITIONS WOULD YOU EXPECT?

- A. Light wind shear, poor visibility, haze, and light rain.
- B. Turbulent air, poor visibility, fog, haze, or low clouds.
- C. Smooth air, poor visibility, fog, low stratus type clouds, and showery precipitation.

SAMPLE QUESTION:

- This is one of the questions you could get in the Part 107 FAA test.
- Study the question and look through the answers
- Which answer do you think is correct?

SMOOTH AIR, POOR VISIBILITY, FOG, HAZE, OR LOW CLOUDS.

A. Light wind shear, poor visibility, haze, and light rain.
Not too much convection so light wind shear is wrong.

B. Turbulent air, poor visibility, fog, low stratus type clouds, and showery precipitation.
Not too much convection so this answer is wrong.

C. Smooth air, poor visibility, fog, haze, or low clouds.
You are expecting fog and haze. The air will be smooth because there is little convection.

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THANK

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WEATHER AND MANY OTHER TOPICS,
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YOU

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