

A photograph of a city skyline with snow-capped mountains in the background, illustrating air pollution. The city buildings are visible in the foreground, and the mountains are in the distance, partially obscured by a hazy atmosphere.

An Introduction to Air Pollution

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What is air?

- Nitrogen - 78.09%
- Oxygen - 20.95%
- Argon – 0.93%
- Carbon dioxide – 0.039%
- Water vapor - ~1%
- Small amounts of other gases
 - Parts per million (ppm)
 - Parts per billion (ppb)

What is air pollution?

- “Stuff” in the air that can harm humans or the environment
- Small amounts of other gases, particles in air
- Air pollution always existed
 - Natural pollution
 - Anthropogenic, or man-made pollution
- Atmosphere changing

Natural air pollution: Fire



Natural air pollution: Dust storms



Sahara Desert (2008)



Phoenix, AZ (2011)



Dust Bowl in Texas (1935)

Natural air pollution: Volcanoes



Mt. St. Helens, WA (1980)



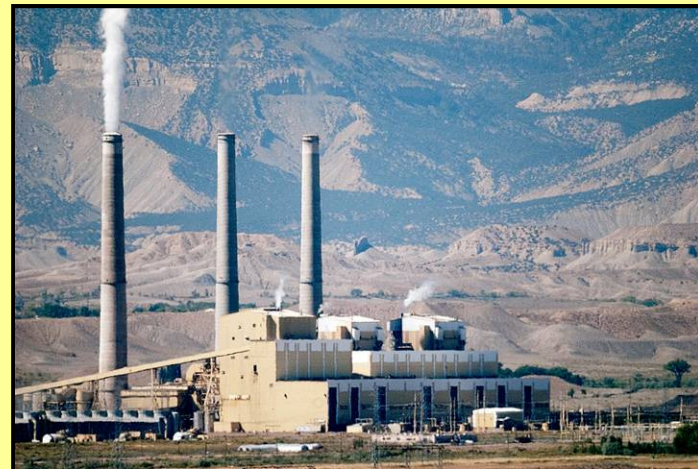
Mt. Pinatubo (1991)



Iceland (2010)

Human-caused air pollution

- Cars
- Home heating
 - Natural gas
 - Wood
 - Cooking
- Industry
 - Electricity
 - Manufacturing



Types of air pollution in Utah



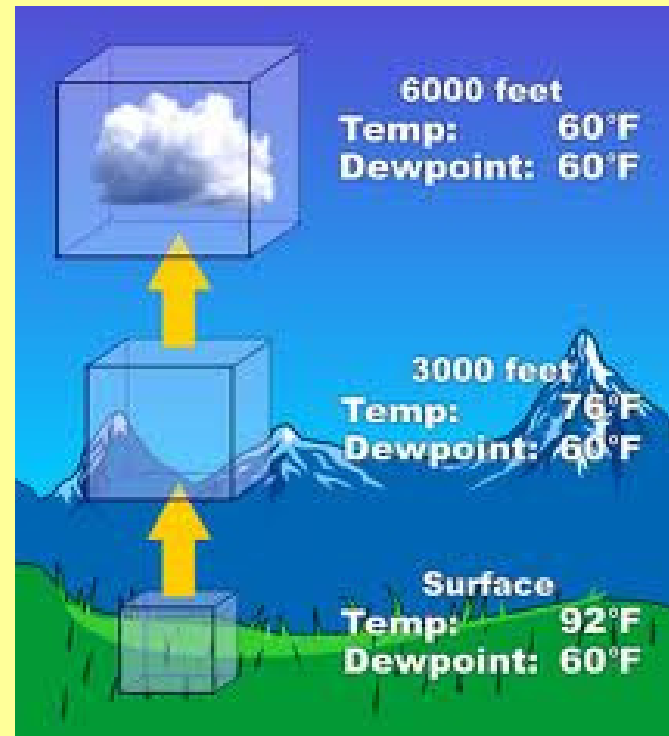
Ozone pollution in Los Angeles



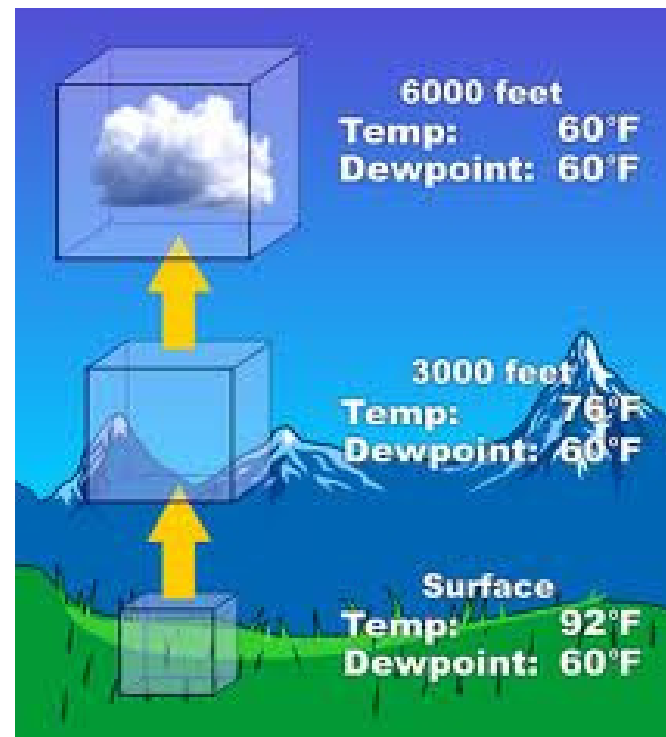
Salt Lake City winter air pollution

- Ozone (O₃)
 - In summer and winter
 - Ozone layer good
 - *Ground-level* ozone harmful
- Particulate matter
 - Small particles in air
 - During winter
- **Temperature Inversions**

Why do we care about air pollution?

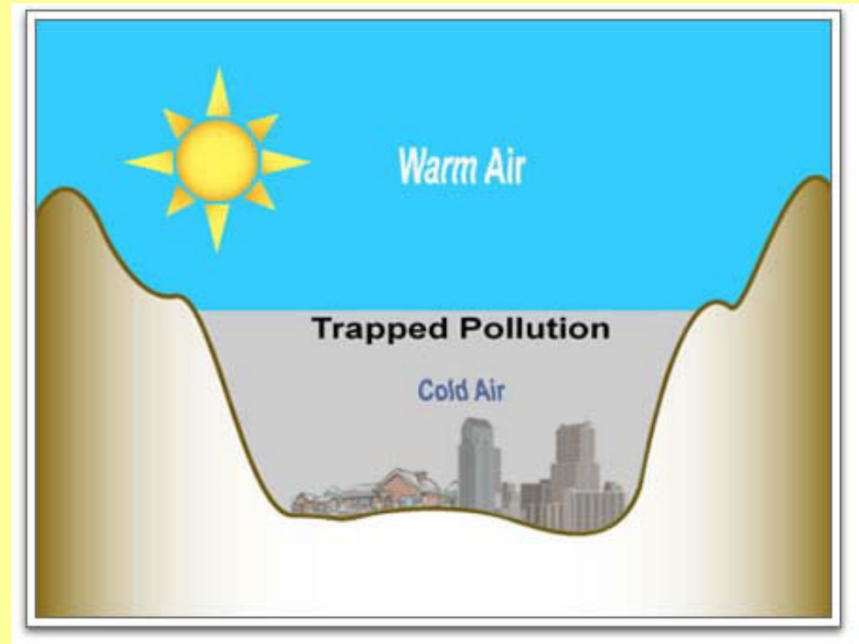


Normal Atmosphere



Air pollution in Vernal and the Uintah Basin

- Temperature normally gets colder with elevation



Temperature inversion