

ATM 209
Cloud Types

Cloud: A visible mass of tiny liquid water droplets (~ 0.02 mm diameter) or tiny ice crystals (variable...0.01 mm to 0.25 mm length) suspended in the atmosphere.

-Often, if liquid, the droplets are “super-cooled”, or subfreezing liquid water.

-Super-cooling can occur if there is no solid “seed nucleus” on which for the water to freeze. This occurs until -40°C / -40°F .

Clouds form as a result of *saturation of the air* ($\text{RH} = 100\%$, or $w=w_s$), either by:

-Cooling the air (lowering w_s)

-Moistening the air (increasing w)

-Lifting the air until saturation (lowering w_s)

Latin prefixes for cloud type:

Upward growth into **heaps**: Cumulo-

Layered sheets at any altitude: Strato-

High wisps (**curls**) of (most often) ice crystals: Cirro-

Cloud with deep enough vertical extent/velocity to produce **precipitation**: Nimbo-

Clouds shown in class:

High clouds

Cirrus

Cirrostratus (ice layer)

Cirrocumulus (cirrus-level “heap”---super-cooled liquid)

Mid-level clouds

Altostratus (mid-level layer)

Alto cumulus (mid-level “heap”)

Low-level clouds

Stratus (Nimbostratus = rain-producing layer cloud)

Stratocumulus (layer of cumulus)

Cumulus

-Cumulus humilis (flat cumulus...very fair weather, not unstable)

-Cumulus congestus (deep vertical cumulus)

-Cumulonimbus (deep vertical precip-producing cumulus)

Other clouds discussed in class:

Lenticular clouds

Banner clouds

Pileus

Alto cumulus castellanus

Anvil clouds

Mammatus

Shelf clouds

Undular bore clouds

Hole clouds / fallstreaks

Nacreous / Noctilucent clouds