

Cloud Types – An In-depth Look

- History
- Three Basic Cloud Types
- Ten Fundamental Cloud Types
- Rare Clouds



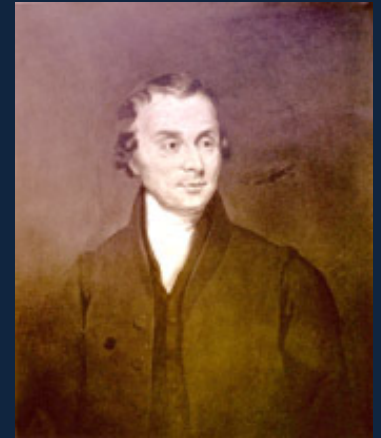
TeachWithFergy

Preview File

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- Some slides appear blank because they have been removed.
- Student versions have portions of the text removed which is given in the teacher version and appear as _____
- Other slides may have on them, this represents writing that has been removed.

Luke Howard



- Amateur meteorologist
 - Worked in pharmaceuticals
- 1802: Came up with cloud names still in use today
- Three general types
 - Cumulus
 - Stratus
 - Cirrus

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Three Basic Cloud Types

- Cumulus – “heap” in Latin
- _____
- Cirrus – “curl of hair” in Latin



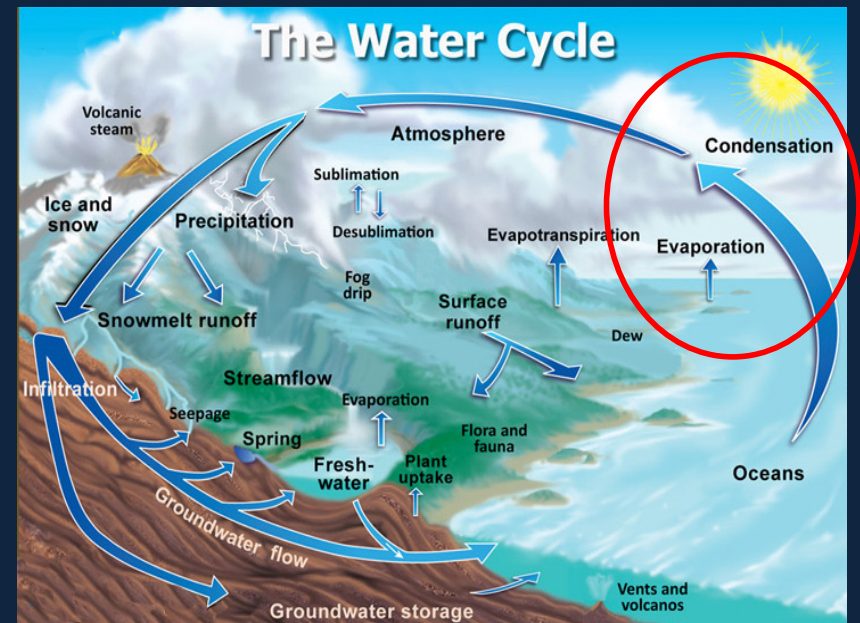
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Cumulus Formation

- Warm air carries water vapor up (evaporation)
- Comes into contact with cooler air
- _____



Stratus



- _____
- Low, dense, blanket of gray
- Fog when very low
- Drizzle or light snow possible
- Altitude: <2000 m (6500 ft)

Stratus Formation

- Warm, wet air flows into an area that has been cold
- Contacts cold ground or cold air
- _____
- Cloud thickness dependent on
 - Water content of air
 - Magnitude of temperature difference between warm and cold air



Cirrus



- ---
- Thin, sometimes silky, wisps of cloud
- Horizontal and vertical fall streaks from snow and ice falling out of clouds and evaporating
- Develop in good weather
- High altitude: >6000 m (20000ft)

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Ten Fundamental Cloud Types

- Stratus
- Cumulus
- Stratocumulus
- Cumulonimbus



Low Atmosphere:
<6,500 ft (2,000 m)

- Nimbostratus
- Altostratus
- Altocumulus



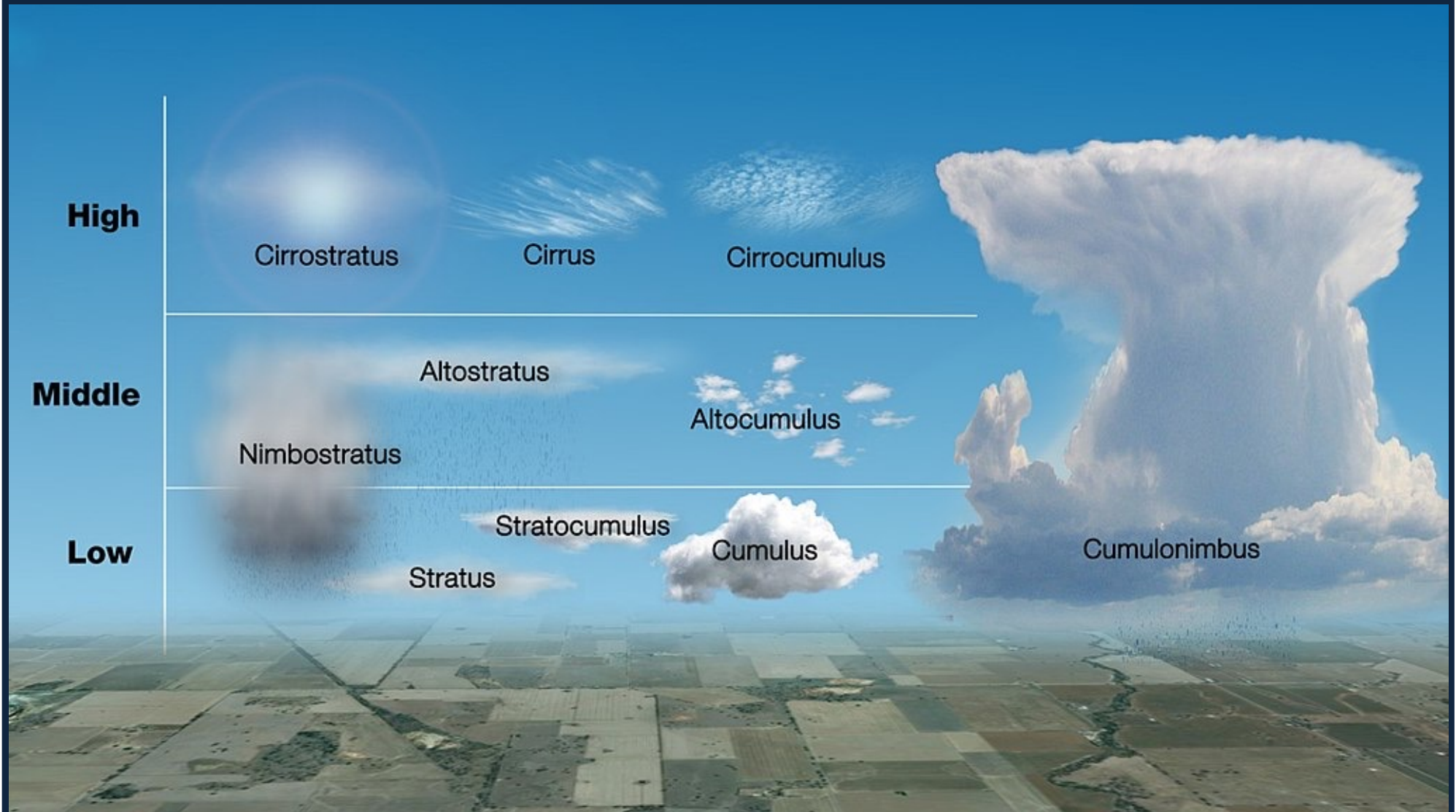
Middle Atmosphere:
6,500 to 23,000 ft (2,000 to 7,000 m)

- Cirrus
- Cirrostratus
- Cirrocumulus



High Atmosphere:
16,500 to 45,000 ft (5,000 to 14,000 m)

Ten Fundamental Cloud Types



Ten Fundamental Cloud Types

- Clouds have similar naming conventions to animals and plants (the Linnean system)
- Genus and species
 - Sometimes a third division called a variety
- _____



Stratus

- Two species
 - *Stratus nebulosus*
 - Uniform, dark layer;
can produce drizzle;
most common
 - *Stratus fractus*
 - _____

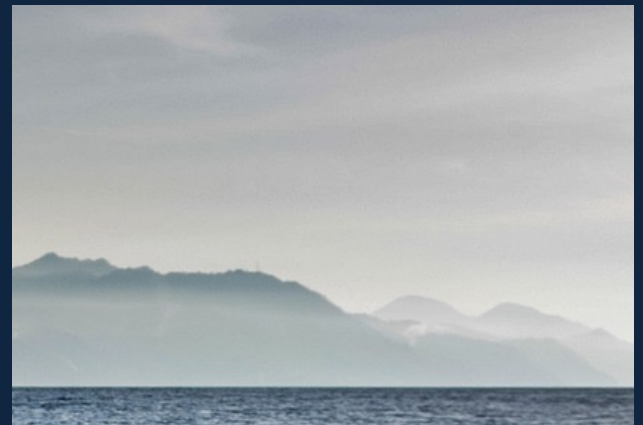


Stratus

- Three varieties

- _____

- *translucidus*: patchy or connected layer; can see outline of sun or moon through it
 - *undulatus*: patchy or connected layer with ripples



Cumulus

- Four species

- *Cumulus humilis*

- Wide, short; look flattened; no precipitation



- *Cumulus mediocris*

- Wide, tall; small puffs sprout off tops; usually no precipitation



- *Cumulus congestus*

- Narrow, tall; tops look like cauliflower; rain, snow, snow pellet showers; tops can be carried off by the wind and dissipate, sometimes having virga



- *Cumulus fractus*

- _____



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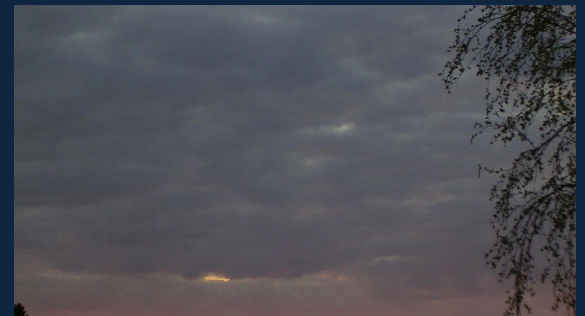
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Stratocumulus

- Seven varieties
 - *translucidus*: patchy or connected layer; translucent; forms in bands
 - *perlucidus*: patchy or connected layer; somewhat dense; patches of blue can be seen in openings
 - *opacus*: dense layer; rolls or round puffs; opaque; base can be uniform or uneven
 - *duplicatus*: two or more patchy or connected layers, on top of one
-



Stratocumulus

- Seven varieties

- *undulatus*: large, gray; nearly parallel bands; can observe undulations (ripples) perpendicular to bands (*Sc. stratiformis*)

- _____

- *lacunosus*: patchy or connected layer dotted with round holes (looks like net or honeycomb); edges of holes often fringed; amorphous (ever-changing)

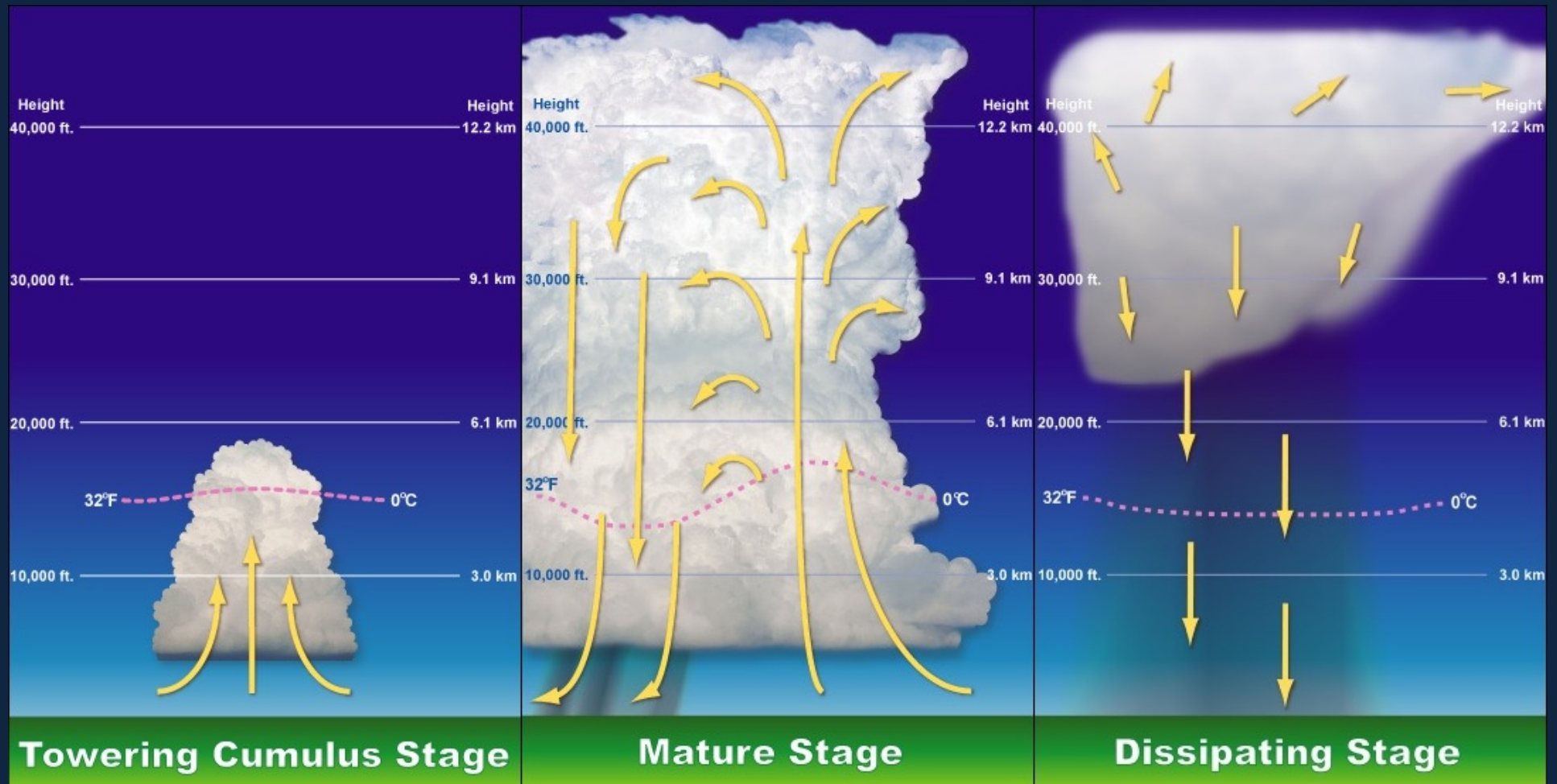


Cumulonimbus



- Formation: *Cumulus congestus* cloud rises rapidly
- Composition: Primarily liquid water, top: ice crystals
- Precipitation: Heavy rain, hail
- Color: White and dark gray
- Appearance:
 - Fluffy tower/mountain, extends from low atmosphere to high atmosphere
 - Dense
 - Top smooth or wispy, flattened into anvil shape
 - Virga
- _____

Cumulonimbus



Cumulonimbus

- Three species
 - *Cumulonimbus calvus*
 - Top fluffy and composed of ice crystals; rain showers
 - *Cumulonimbus capillatus*
 - Top wispy with some ice crystals; rain started or starting soon; showers, thunderstorms, hail, high winds; virga
 - *Cumulonimbus incus*
 - Top wispy and shaped like an anvil; top flattens and spreads out when it reaches top of troposphere



Nimbostratus



- _____
- _____
- Precipitation: Steady, continuous rain or snow; moderate to heavy
- Color: Dark gray
- Appearance:
 - Thick, dark
 - Covers sky
 - Ragged bottom of virga or precipitation shafts
- No species or varieties

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Alto cumulus

- Five species
 - *Alto cumulus floccus*
 - Small and ragged; usually have virga; sometimes forms from break-up of *Ac. castellanus* base
 - *Alto cumulus volutus*
 - Long, rod-shaped; appears to roll; single short line of cloud; rare



Alto cumulus

- Seven varieties

- *translucidus*: patchy or connected layer; translucent. (*Ac stratiformis* & *lenticularis*)



- _____



- *opacus*: patchy or connected layer; opaque; usually uniform base; uneven top (*Ac stratiformis*)



- *duplicatus*: two or more layers on top of one another; sometimes partially connected (*Ac stratiformis* & *lenticularis*)



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Cirrus

- Five species
 - *Cirrus fibratus*
 - Thin, wispy; parallel lines with wind direction; most common
 - *Cirrus uncinus*
 - Straight with hook at one end; “horse’s tail”; wispy
 - *Cirrus spissatus*
 - Located at top of troposphere; dense patches; covers most of sky
 - *Cirrus castellanus*
 - _____
 - *Cirrus floccus*
 - _____



Cirrus

- Four varieties
 - *intortus*: curved, hair-like wisps
 - *radiatus*: parallel lines; appear to converge at opposite horizons
 - *vertebratus*: look like vertebrae, ribs, or fish skeleton
 - _____



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Cirrostratus

- Two species
 - *Cirrostratus fibratus*
 - Like cirrus; long, straight tightly arrayed wisps; looks like fur; indicates incoming stratus clouds and drizzle
 - *Cirrostratus nebulosus*
 - Amorphous veil; uniform; sometimes thin and difficult to see, other times dense and easy to see; indicates warm front and rain
- Two varieties
 - *duplicatus*: layers on top of one another; sometimes partially connected
 - *undulatus*: has ripples



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Cirrocumulus

- Two varieties

— _____



- *lacunosus*: patchy or connected layer dotted with round holes (looks like net or honeycomb); Holes have frayed edges

