Clouds (Formation & Type) Notes

Air Compression and Expansion

- Adiabatic Temperature Changes
  - When air is allowed to ________________, it ________________, and when it is ________________, it ________________.

- Expansion and Cooling
  - ________________ is the rate of cooling or heating that applies only to ________________ air.
  - ________________ is the rate of adiabatic temperature change in ________________ air.

Processes That Lift Air

- ______ mechanisms that can cause air to rise:
  - ________________
    - Occurs when mountains act as ________________ to the flow of air, forcing the air to ________________.
    - The air cools adiabatically; clouds and ________________ may result.
  - ________________
    - A front is the ________________ between two adjoining air masses having ________________ characteristics.
  - ________________
    - Occurs when air flows ________________ and ________________.
  - ________________
    - Occurs where ________________ ________________ ________________ causes pockets of air to rise because of their buoyancy.

Stability

- Density Differences
  - ________________ air tends to ________________ in its original position, while ________________ air tends to ________________.

- Stability Measurements
  - Air stability is determined by ________________ of the atmosphere at various heights.
  - The rate of change of air temperature with height is called the ________________ ________________ ________________.

- Degrees of Stability
  - A ________________ occurs in a layer of limited depth in the atmosphere where the temperature increases rather than decreases with height.

- Stability and Daily Weather
  - When stable air is ________________ above the Earth’s surface, the clouds that form are ________________ and have little vertical thickness compared to their horizontal dimension.

Condensation

- For any form of condensation to occur, the ________________ ________________ ________________.

- Types of Surfaces
  - Generally, there must be a ________________ for water vapor to ________________ on.
are tiny bits of particulate matter that serve as surfaces on which water vapor condenses when condensation occurs in the air.

Types of Clouds

- Clouds are classified on the basis of their __________ and ____________.
  - ____________ (Cirrus = a curl of hair) are clouds that are high, white and thin.
  - ____________ (Cumulus = a pile) are clouds that consist of rounded individual cloud masses.
  - ____________ (Stratus = a layer) are clouds best described as sheets or layers that cover much or all of the sky.

- Cirrus Clouds
  - Cirrus clouds are high, white, and thin.
- ____________ clouds are flat layers of clouds.
- ____________ clouds consist of fluffy masses.

- Cumulus Clouds
  - ____________ clouds are composed of rounded masses that differ from cirrocumulus clouds in that altocumulus clouds are larger and denser.
  - ____________ clouds create a uniform white to gray sheet covering the sky with the sun or moon visible as a bright spot.

- Stratus Clouds
  - Stratus clouds are best described as sheets or layers that cover much or all of the sky.
  - ____________ clouds have a scalloped bottom that appears as long parallel rolls or broken rounded patches.
  - ____________ clouds are the main precipitation makers.

- Clouds of ____________ ____________
  - Some clouds do not fit into any one of the three height categories mentioned. Such clouds have their bases in the ________ height range but often ____________ upward into the middle or high ________.

- ________ is defined as a cloud with its base at or very near the ____________.

- Fog Caused by Cooling
  - As the air ________________, it becomes ________________ and ________________ into low areas such as river valleys, where thick fog accumulations may occur.

- Fog Caused by Evaporation
  - When cool air ________________ over warm ________________, enough moisture may ________________ from the water surface to produce ________________.

Cloud Classification

![Cloud Classification Diagram](image-url)