

Study Guide Meteorology and Atmosphere

- Convection is the transfer of heat energy through a substance and drives the weather on Earth
- On earth pressure decreases with altitude
- The sun is the ultimate source of energy that drives our atmospheric processes
- The major wind belts are the trade winds, westerlies and polar easterlies. The westerlies drive most of the weather in the United States
- The equator is where warm air is constantly rising creating permanent low pressure areas
The poles have sinking air and permanent High pressure areas because the air is sinking.
- The Sun's radiation can be reflected or blocked by certain gases or aerosols in the atmosphere causing the Earth to receive less solar radiation.
- The Coriolis Effect and uneven heating of Earth create the three major wind belts
- Condensation is the phase of change from a gas to a liquid, freezing from a liquid to a solid, Evaporation from a liquid to gas, Sublimation from a solid to a gas, deposition from a gas to a solid
- The Sun's rays are most direct at the equator and least direct at the poles. This causes the tropics to be warm and the poles to be cold
- Air masses are large bodies of air that acquire the characteristics of their source regions humid, dry, warm or cold
- Relative humidity is the amount of water vapor in the air compared to its saturation point (dew point)
- The dew point is the saturation point of water vapor in the atmosphere
- Cirrus clouds High thin clouds, Alto- thick middle level clouds Stratus thick low-level clouds associated with precipitation
- When air-cools to its dew point condensation will occur on objects grass, cars, porches, etc.
- Cold-fronts are where thunderstorms form due to vertical uplifting of warm moist air

- Lines of equal temperature are called isotherms; lines of equal pressure are isobars
- High pressure means sinking air, which inhibits cloud formation.
- Tornadoes form where winds at different speeds, heights and direction meet in Thunderstorm clouds.
- Tornadoes are the most powerful severe storms on earth
- Station models show the weather conditions of 1 specific location
- The burning of fossil fuels (coal, oil and natural gas) add Carbon dioxide to the atmosphere
- Seasons on Earth are caused by Earth's tilt as it revolves around the Sun
- Above 90 latitude, summer has 24 hours of sunlight and winter has 24 hours of darkness
- The lower the angle of sunlight striking an area the lower the amount of energy from the sun
- Climate is the average temperature and precipitation in an area weather is what is happening in the moment, Climate changes less frequently than weather.
- Maritime Tropical and Continental Polar air masses are primarily responsible for the weather that occurs in the central and eastern portions of North America

Know these topics for the diagrams:

Air Masses and where they originate

Calculating Relative humidity

Station model data temperature, dew point wind speed direction , cloud cover and pressure

