1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ forecasting is based on looking at a summary of the total weather picture at a particular time.

* A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- weather map is made by measuring atmospheric weather variables at thousands of weather stations around the world 4 times a day.

1. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a region of space that has a measurable quantity at every point.

* Field maps that measure elevation are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Contour lines connect points of equal \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Some field maps measure temperature. Lines that connect points of equal temperature are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Some field maps measure air pressure. Lines that connect points of equal pressure are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a generic term that means a line that connects points of equal values on a field map. Isolines can measure anything.

# \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are large regions of air with fairly uniform characteristics like temperature, humidity, winds, and air pressure.

* Air masses are identified by the \_\_\_\_\_\_\_\_\_\_\_\_\_ and the \_\_\_\_\_\_\_\_\_\_\_\_ content:
  + Polar – over \_\_\_\_\_\_ areas Maritime – over water, \_\_\_\_\_\_\_\_\_\_
  + Tropical – over \_\_\_\_\_ areas Continental – over land, \_\_\_\_\_\_\_\_\_
  + Arctic – over very \_\_\_\_\_\_ areas
  + \_\_\_\_\_\_\_ = moist and cold \_\_\_\_\_\_\_= dry and cold \_\_\_\_\_\_\_= moist and warm
  + \_\_\_\_\_\_\_ = dry and warm \_\_\_\_\_\_\_ = dry and frigid \_\_\_\_\_\_\_= moist and frigid
* The boundaries between air masses are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ boundaries (\_\_\_\_\_\_\_\_).
* Are masses are moved by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ winds.

# Weather Fronts

* There are usually several different air masses moving across the United States.
* When different air masses meet, very little \_\_\_\_\_\_\_\_\_\_ of air takes place and a sharp transition zone (weather front) forms between them.
* When the different air masses meet there is a rapid change and the weather is unsettled and rainy.
* There are four main types of frontal boundaries:
  + - 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occur when cold air moves in on warmer air.
         * The cold air is \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and stays near the ground as it pushes up the warmer air in its way.
         * The warmer air that is pushed up cools. It can no longer hold as much water vapor and heavy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occurs.
      2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occur when a warm air mass runs into a cold air mass.
         * The warmer air is forced up and it cools. It can no longer hold as much water vapor and heavy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occurs.
      3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occur along the boundary between a warm air mass and a cold air mass when neither move.
         * The warm air will eventually move on top of the cold and there will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for days until a new front moves in.
      4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occur when a cold air mass runs into another cold air mass (a warm air mass might be stuck between them).
         * Since cold air masses are more \_\_\_\_\_\_\_\_\_ the travel faster.
         * Large scale \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can occur.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are flows of air that are counter clockwise that move in a curved path. The air moves towards the center of the low pressure.
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are flows of air that are clockwise that move in a curved path. The air moves outward from the center.
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are bands of easterly moving air made by convection cells within the atmosphere. The winds can blow up to 200 mph. Jet streams help steer weather patterns across our continent.

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ weather forecasting using charts, maps, and computers.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ weather forecasting by looking at past weather.
* Weather patterns become \_\_\_\_\_\_\_\_\_\_\_\_\_\_ when weather variables are observed, measured, and recorded.
* Atmospheric moisture, temperature and pressure distributions, jet streams, wind, air masses, and frontal boundaries, and the movement of cyclonic systems and associated tornadoes, thunderstorms, and hurricanes occur in observable \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is Radio Detection And Ranging bounces electromagnetic energy off of clouds to get images on a computer.
* \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ is a special type of radar that gives accurate readings and is able to determine the conditions necessary for tornadoes.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ images show the position of clouds and storms as they travel over the earth.
* Earth’s systems have internal and external heat engines, which create heat.
  + Internal:
  + External:
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ results from the heating of the atmosphere from the sun.
* The transfer of energy from the atmosphere, hydrosphere, and the Earth’s interior results in the formation of regions with different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Density differences between regions results in motion of air and weather.
* Loss of property, personal injury, and loss of life can be reduced by effective emergency preparedness.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - updrafts and downdrafts of air occur because of unequal heating.
  + Strong up and down drafts keep water droplets up in the air \_\_\_\_\_\_\_\_. Because of the up and down movements \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ charges build up.
  + Sparks are given off in the form of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + Stay away from trees, don’t use electrical appliances, telephone, shower (any plumbing)
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are small, brief disturbances that usually develop over land from intense thunderstorms (from hot/wet air mixing with cold/dry air).
  + Narrow – 100 feet in diameter, can last up to an hour, wind speeds up to 320 mph
  + Go into the basement, cover your head and body, stay away from windows
  + Occur in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_ in the plains and in the SE.
* ­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ regions of very low pressure, cyclones, that form over open water, huge swirling wind mass.
  + Lose energy as they travel over land.
  + Have high winds 74 mph or more, storm surges, causes massive flooding
  + Occur from \_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ along the SE coastlines.
  + Evacuation from homes

## Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Unit 3

Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Weather Forecasting

Period \_\_\_\_\_\_\_\_ E. Science

I.

IV.

II.

III.

Unit 3

Weather Forecasting