

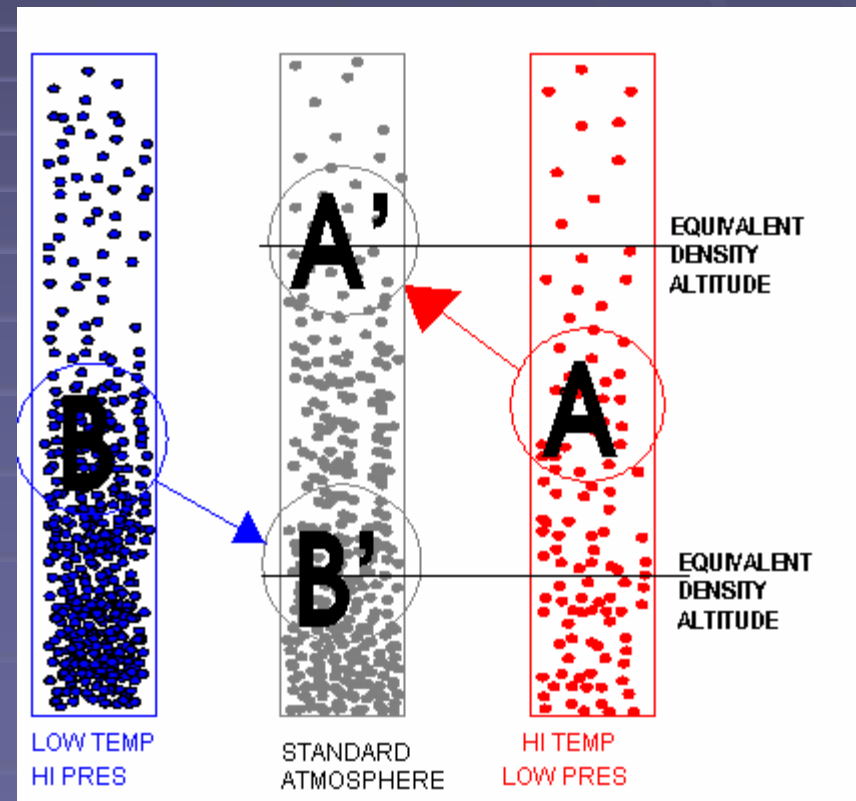
Handout 2 (yellow)

Weather

Weather Fronts
And Severe Weather

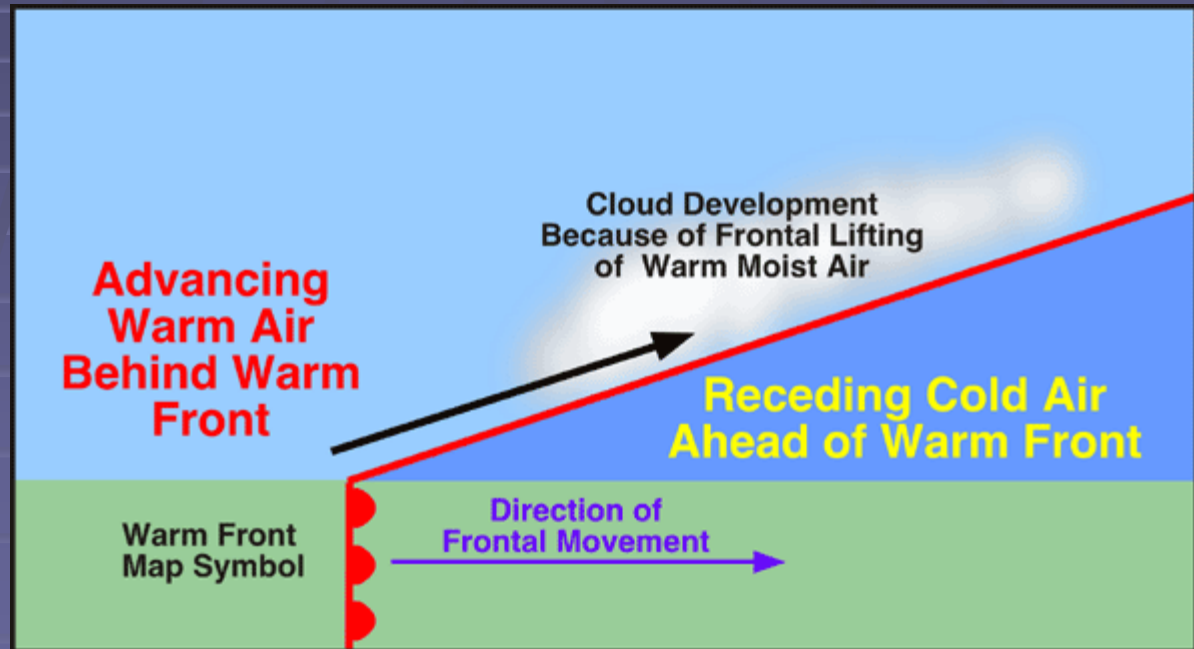
1

- When two unlike air masses meet, what usually keeps them separate?
 - Differences in density



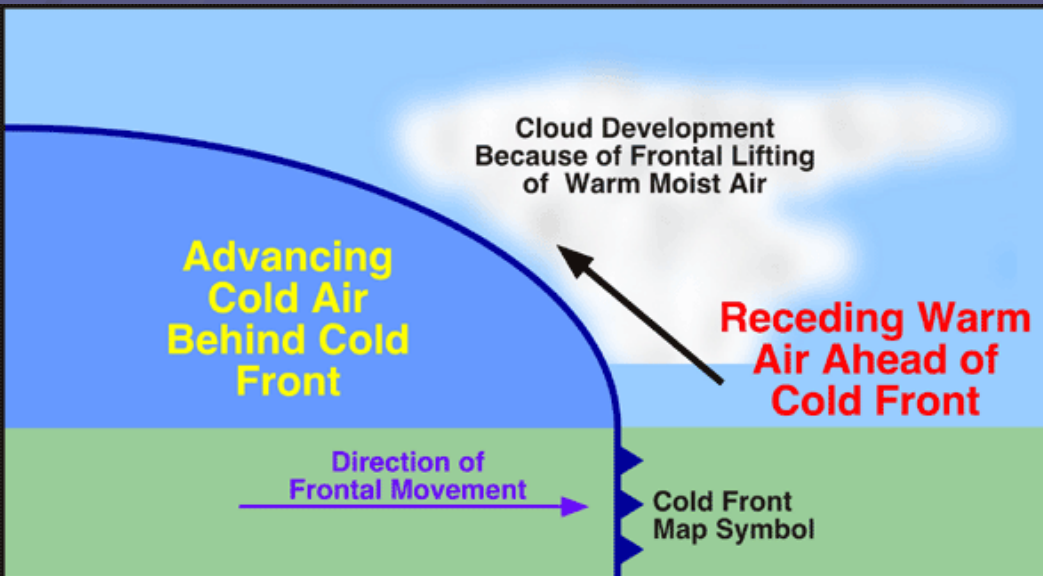
2

- The boundary that forms between two air masses when they meet is called a:
 - Front

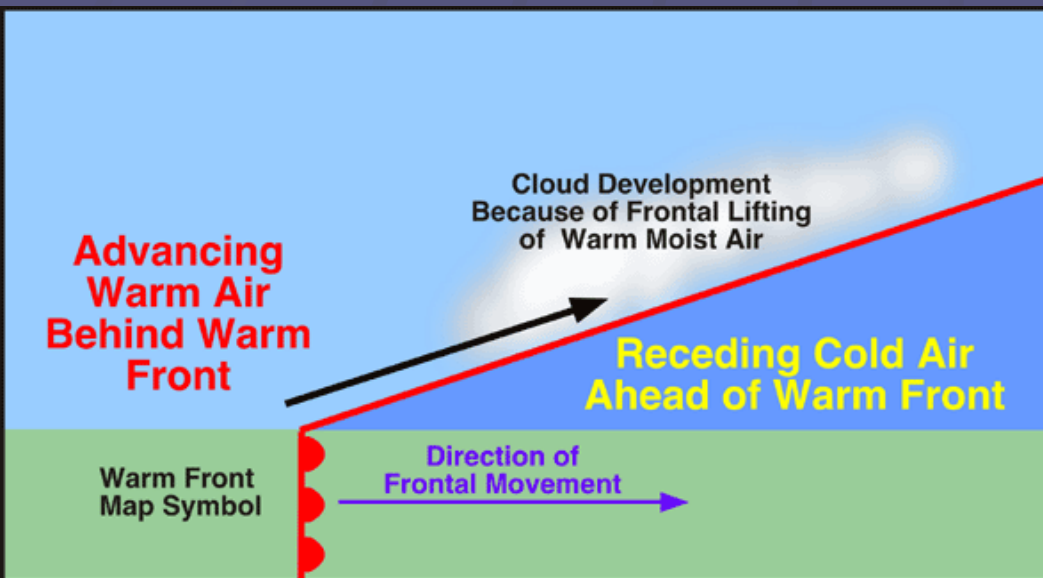


3

- Cold front:
 - **B**: The front edge of a moving mass of cold air that pushes beneath a warmer air mass like a wedge.

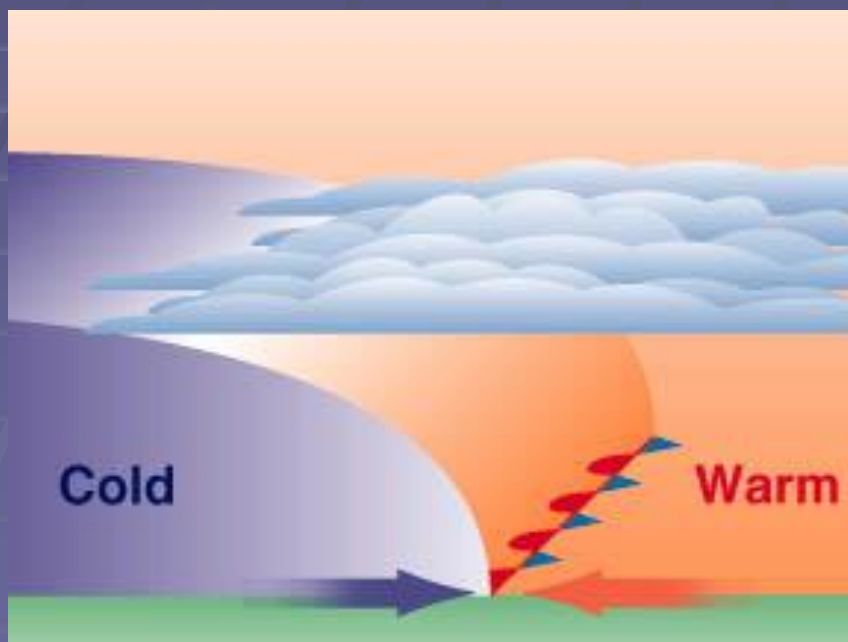


- Warm front:
 - **C**: The front edge of an advancing warm air mass that replaces colder air with warmer air.



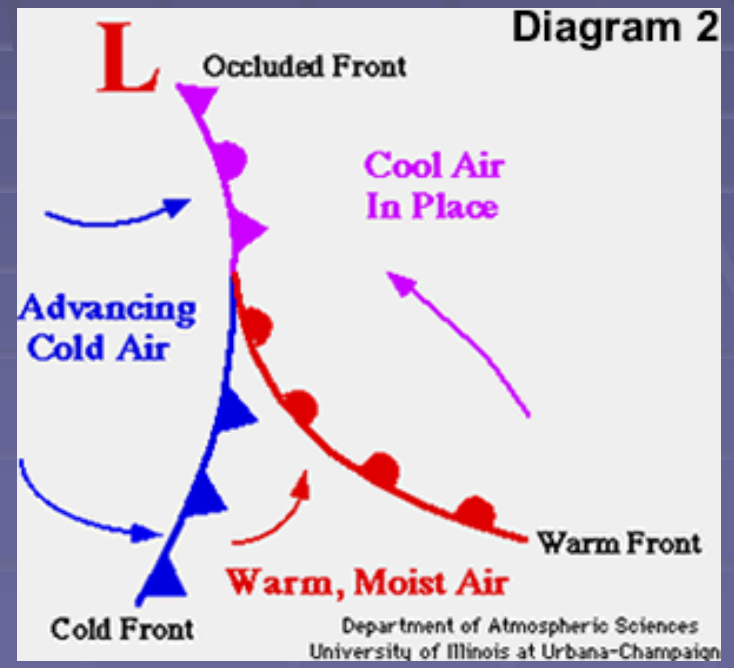
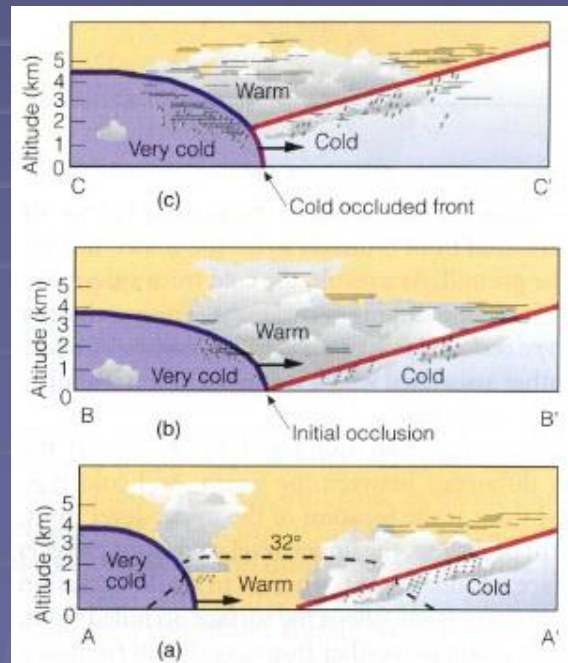
5

- Stationary front:
 - **A**: A front of air masses that moves either very slowly or not at all.



6

- Occluded front:
 - **D**: A front that forms when a cold air mass overtakes a warm air mass and lifts the warm air mass off the ground and over another air mass.



7

- Describe the storms that form along a cold front.
 - They are usually short-lived and sometimes violent.
 - A long line of heavy thunderstorms , called a squall line, may occur in the warm, moist air just ahead of a fast moving cold front.

8

- What kind of weather does a warm front generally produce?
 - It produces precipitation over a large area and may cause violent weather.

9

- List three weather events that are considered severe weather.
 - Large amounts of rain
 - Lightning
 - Hail
 - Strong winds
 - Tornadoes

10

- A severe storm that develops over tropical oceans and whose winds of more than 120 km/h or 74.56 mph spiral in toward the intensely low-pressure storm center is called a(n) _____.

10

- A severe storm that develops over tropical oceans and whose winds of more than 120 km/h or 74.56 mph spiral in toward the intensely low-pressure storm center is called a hurricane.

- During a hurricane, large amounts of _____ are released, increasing the force of the rising air.

- During a hurricane, large amounts of latent heat are released, increasing the force of the rising air.

12

- A fully developed hurricane consists of a series of thick cloud bands that spiral upward around the center of the storm.

12

- A fully developed hurricane consists of a series of thick cumulonimbus cloud bands that spiral upward around the center of the storm.

13

- Winds increase toward the calm, clear _____ of the storm and may reach speeds of 275 km/h or 170.88 mph.

13

- Winds increase toward the calm, clear eye of the storm and may reach speeds of 275 km/h or 170.88 mph.

14

- The most dangerous aspect of a hurricane is a rising sea level and large waves, called a storm surge.

15

- Explain how a tornado forms.
 - When a thunderstorm meets high-altitude, horizontal winds
 - The winds cause the rising air in the storm to rotate
 - A storm cloud may develop a narrow, funnel-shaped extension that sometimes touches ground

16

- What happens when a tornado funnel touches ground?
 - It moves in a wandering, unpredictable path not more than 100 m wide
 - It usually destroys everything in its path

17

- When and where do most tornadoes occur?
 - In the spring and early summer in Tornado Alley
 - Which extends from Texas up through the Midwestern United States.

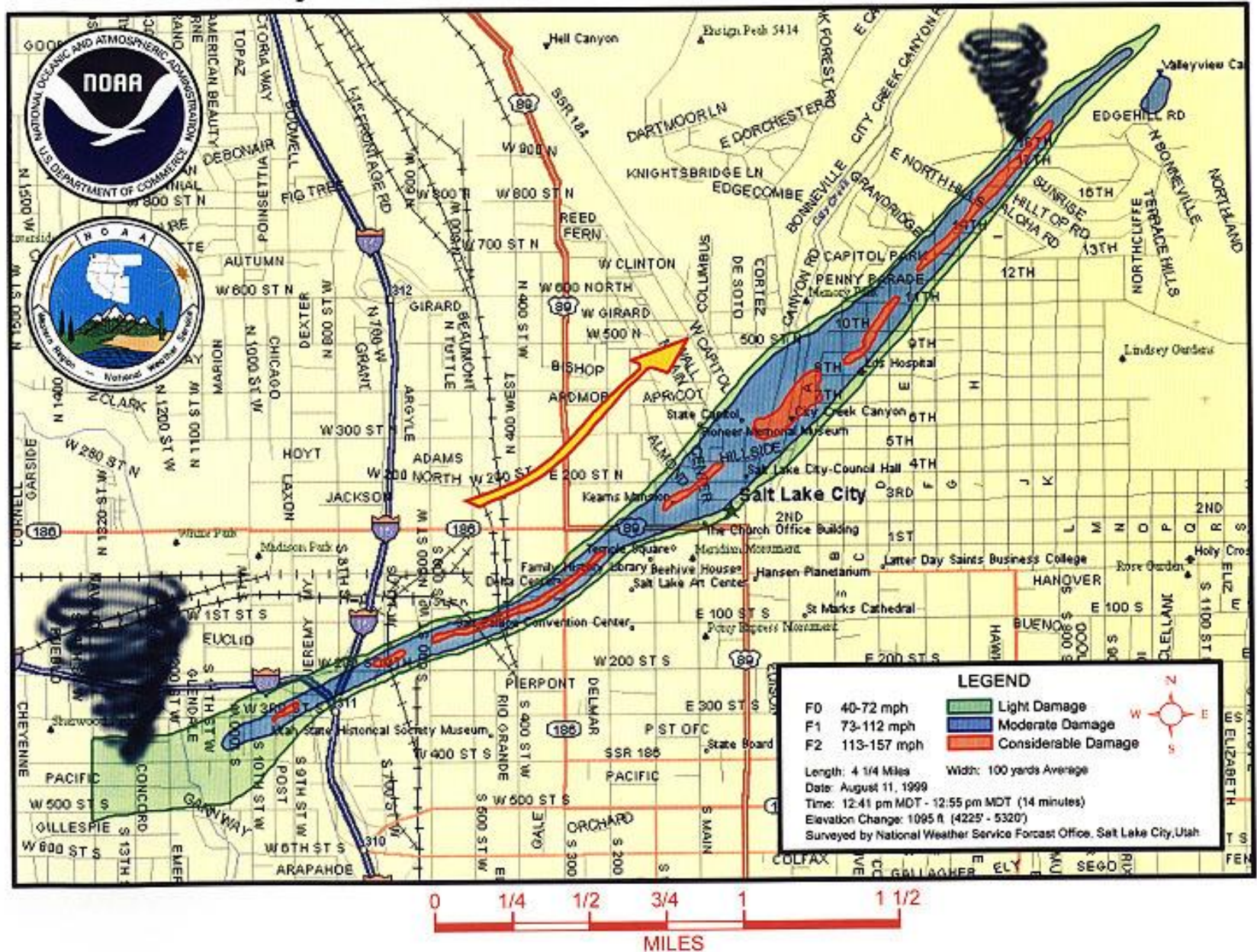
18

- What makes a tornado so destructive?
 - The speed of its winds make it destructive
 - Up to 400 km/h or 248.55 mph

Salt Lake Tornado, August 11, 1999: 1 killed more than 100 injured



Salt Lake City - Tornado - Wednesday, August 11th, 1999



The Aftermath.....



The Aftermath.....



The Aftermath.....



The Aftermath.....



Chapter 24 Section 3 Handout

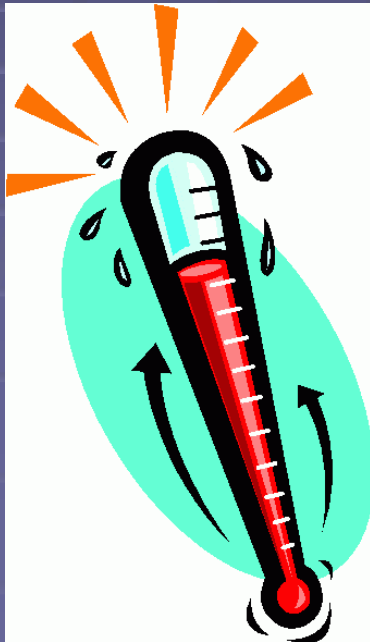
Weather Instruments

19

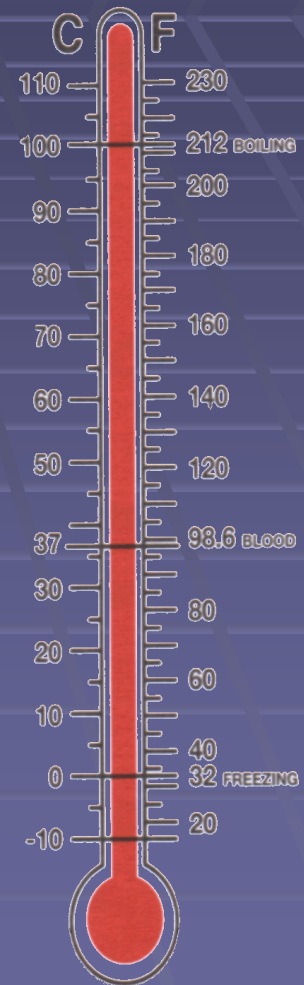
- Name five measurements of which weather observations are based.
 - Atmospheric pressure
 - Humidity
 - Temperature
 - Wind speed
 - Precipitation

20

- Thermometer:
 - An instrument that measures and indicates temperature, often in the form of a sealed gas tube filled with mercury or alcohol.



Thermometer Comparisons



- Barometer:
 - An instrument that measures atmospheric pressure.



- Anemometer:
 - An instrument that measures wind speed.



23

- Wind vane:
 - An instrument that determines the direction of wind with an arrow shaped device that turns freely as the tail catches the wind.

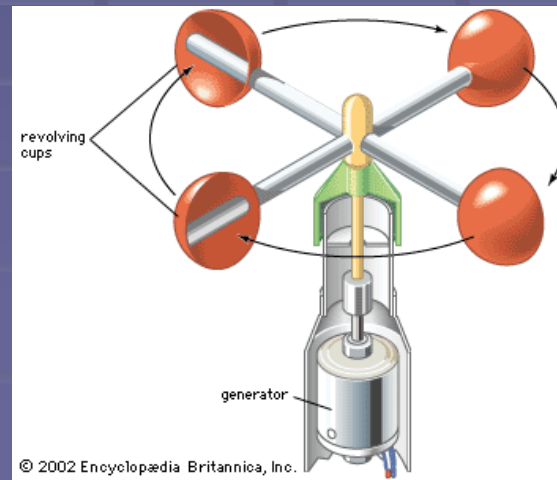


24

- Why do scientists use barometers to help them predict the weather?
 - Because a drop in air pressure usually means that a front is approaching.

25

- Explain how an anemometer works.
 - Small cups are attached by spokes to the shaft of an anemometer.
 - The wind pushes against the cups and they rotate, triggering an electrical signal that register the speed of the wind.



26

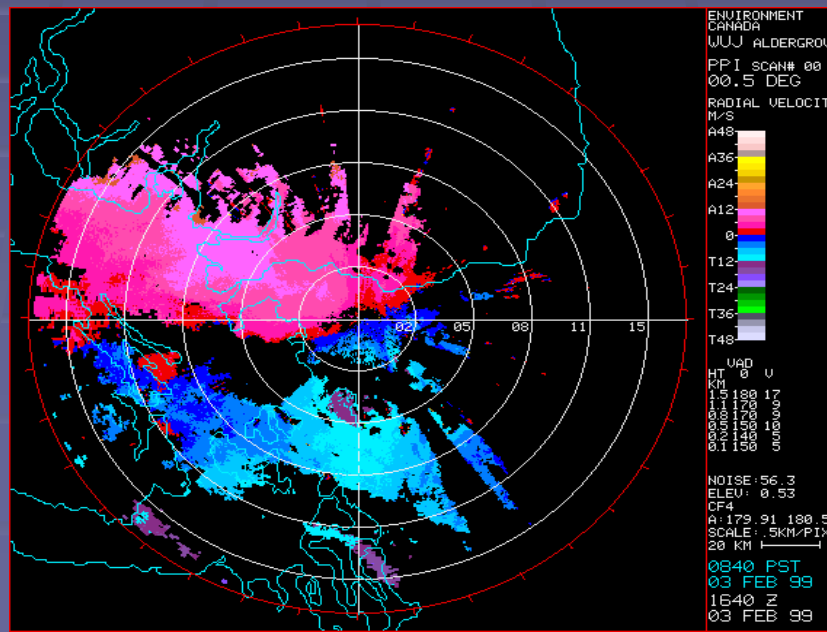
- Why do meteorologists study upper-atmospheric conditions?
 - To get a better understanding of local and global weather patterns.

27

- How does radar track a storm?
 - Large particles of water in the atmosphere reflect radar pulses.
 - So, precipitation and storms are visible on a radar screen.

28

- Explain what Doppler radar can tell meteorologists.
 - It can locate the precise location, movement, and extent of a storm.
 - It can also report the intensity of precipitation and wind patterns within a storm.



29

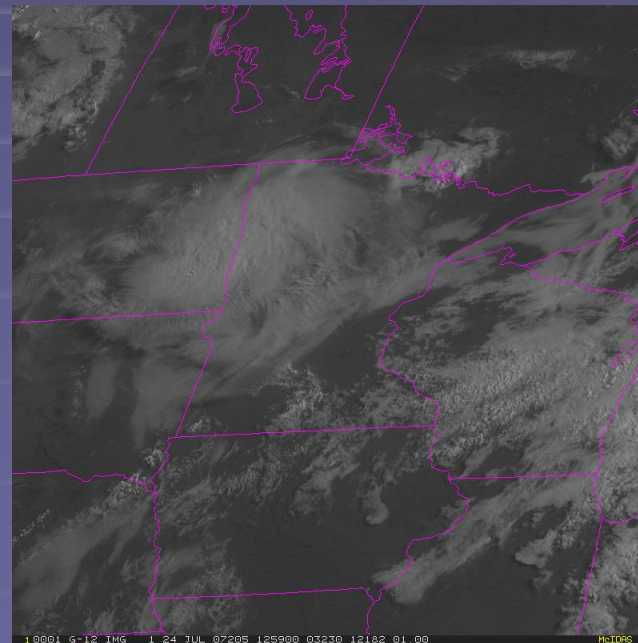
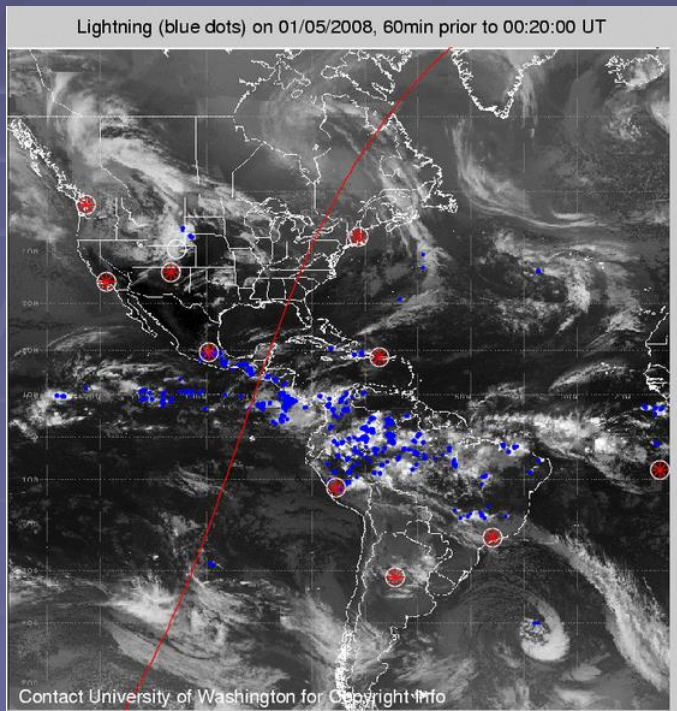
- What important purpose do weather satellites serve?

They give us information about the atmosphere for regions where observations cannot be made from the ground.

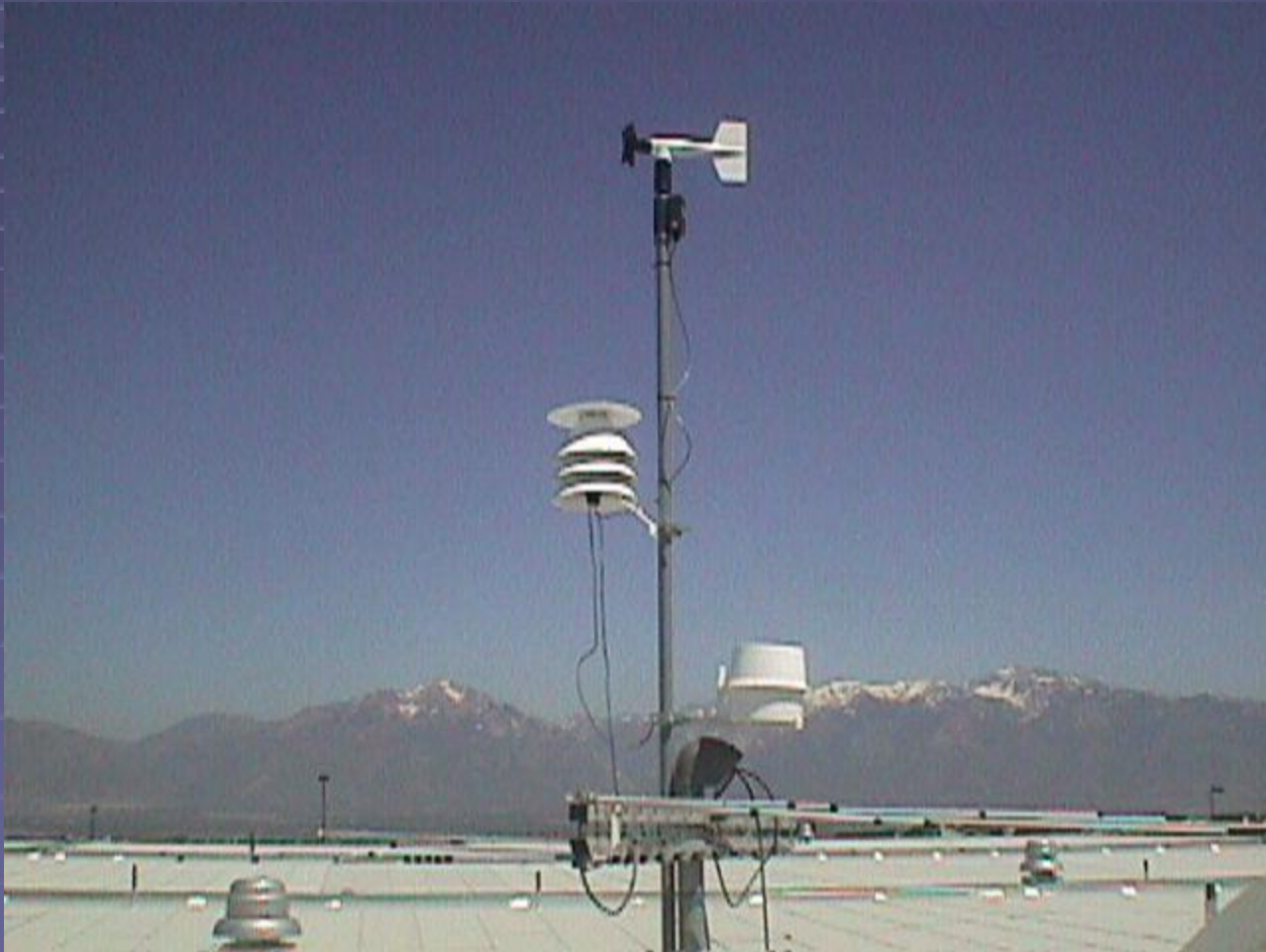
30

- How do weather satellites measure the direction and speed of the wind at the level of the clouds?

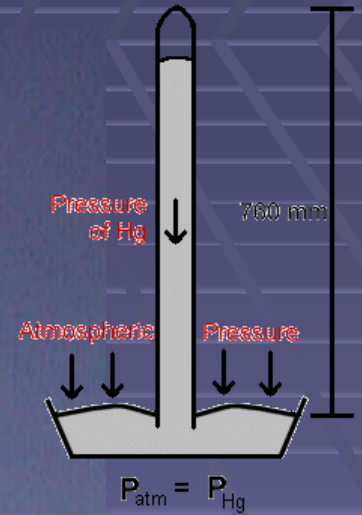
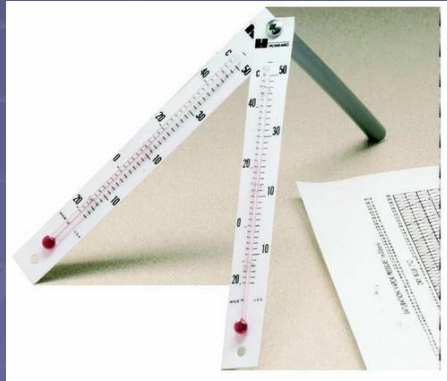
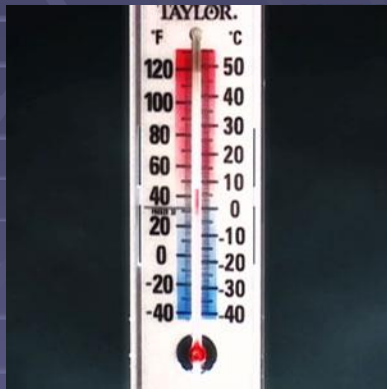
We can look at a continuous loop (a movie) of cloud images..



OUR Weather Station



Humidity, Temperature, Pressure, and Light



What measures wind speed and wind direction?



ANEMOMETER and Wind Vane!!!!



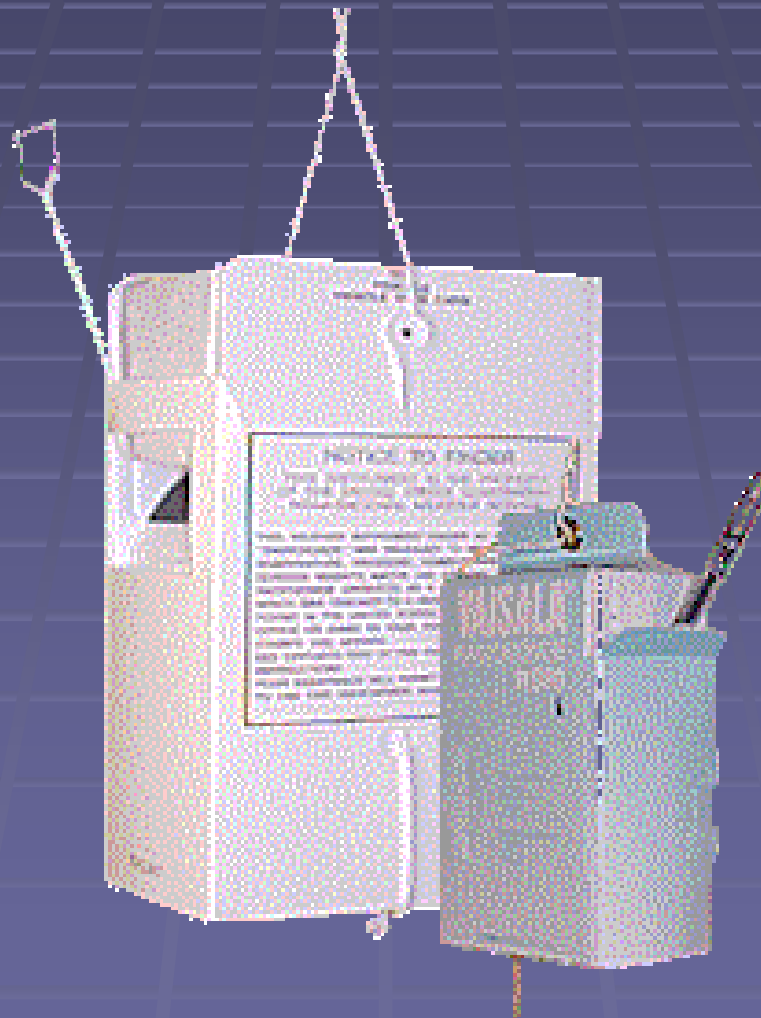
Rain Gauge

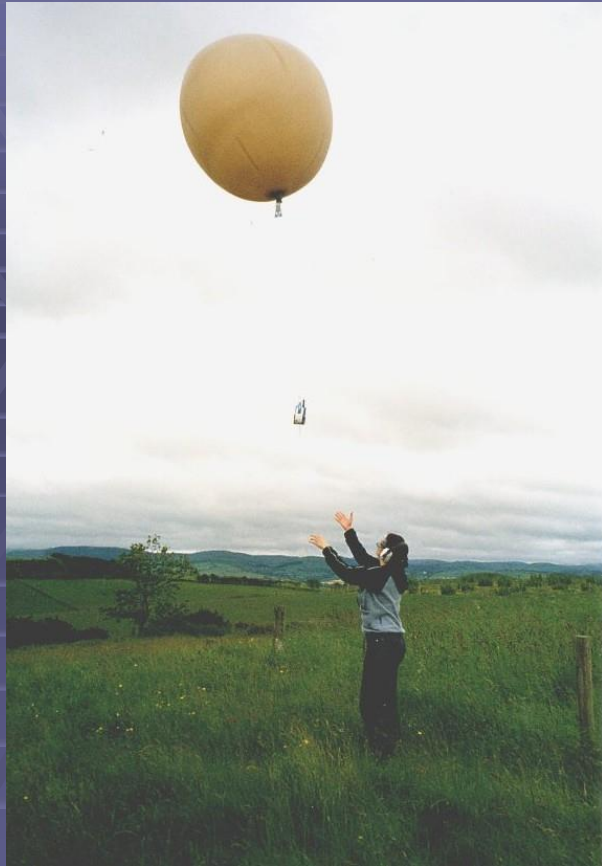


Inside Rain Gauge



Radiosonde



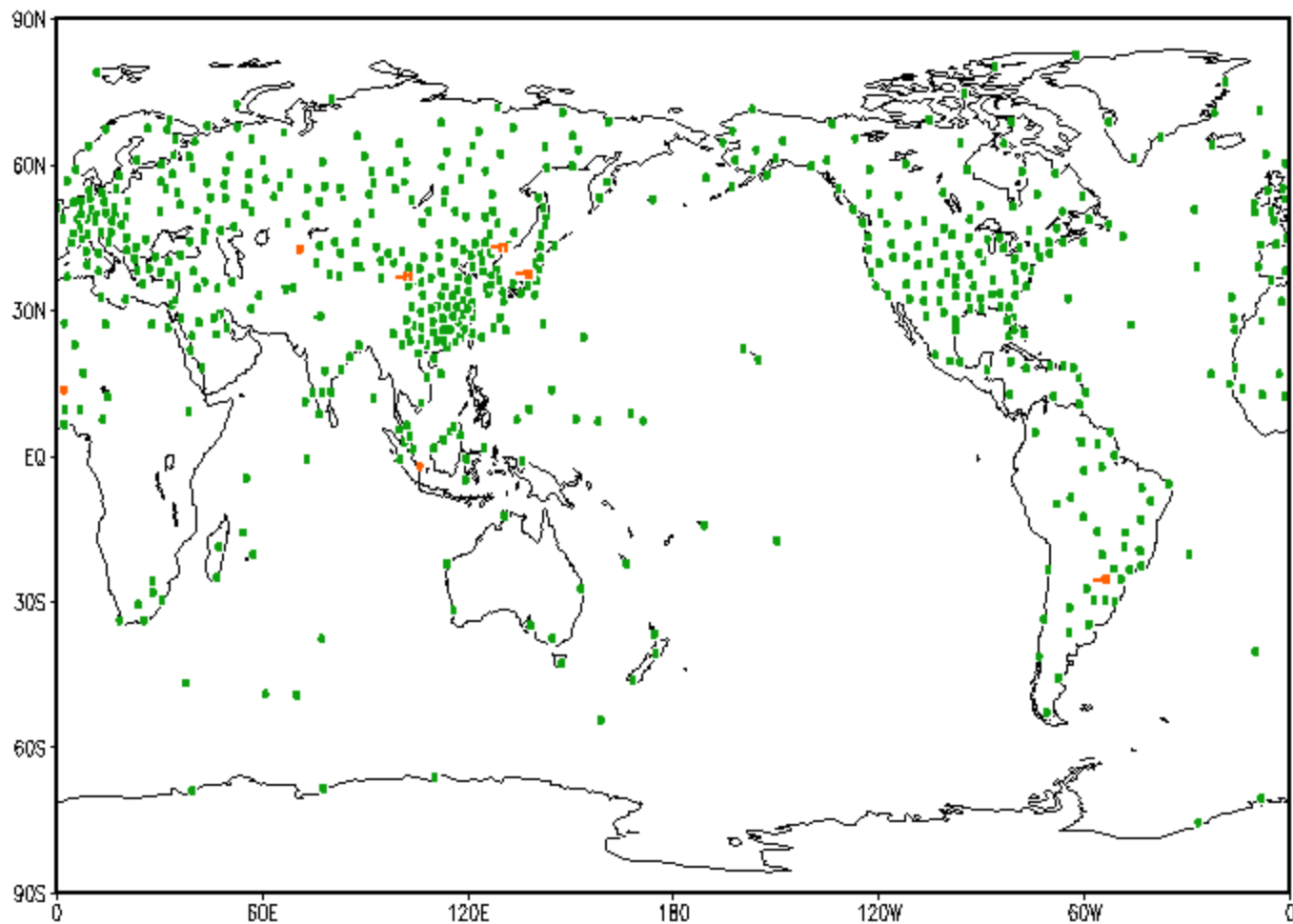


12Z31MAR2007 FNL HEIGHT Coverage from RADIOSONDES 1000–700 mb

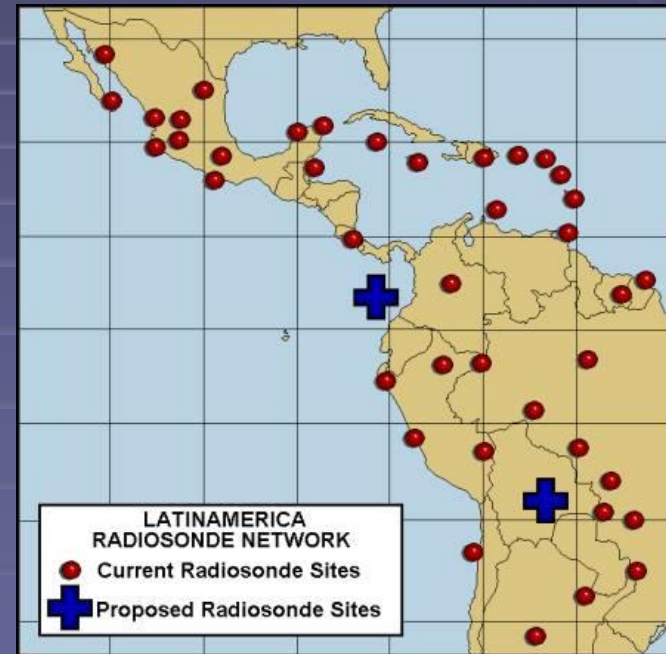
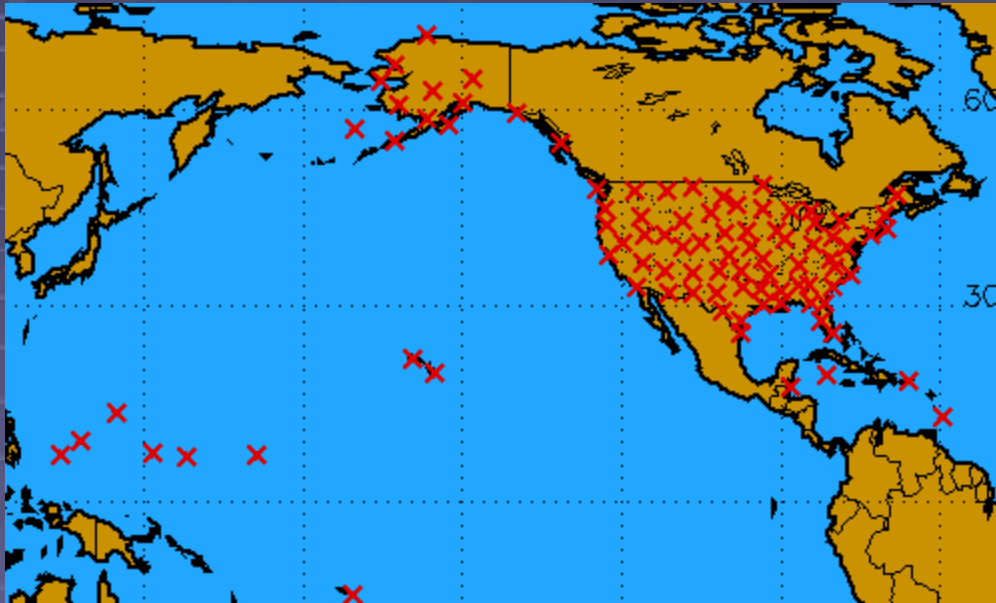
Accepted 2423

Rejected 29

Type 120



Launch Sites of Radiosondes



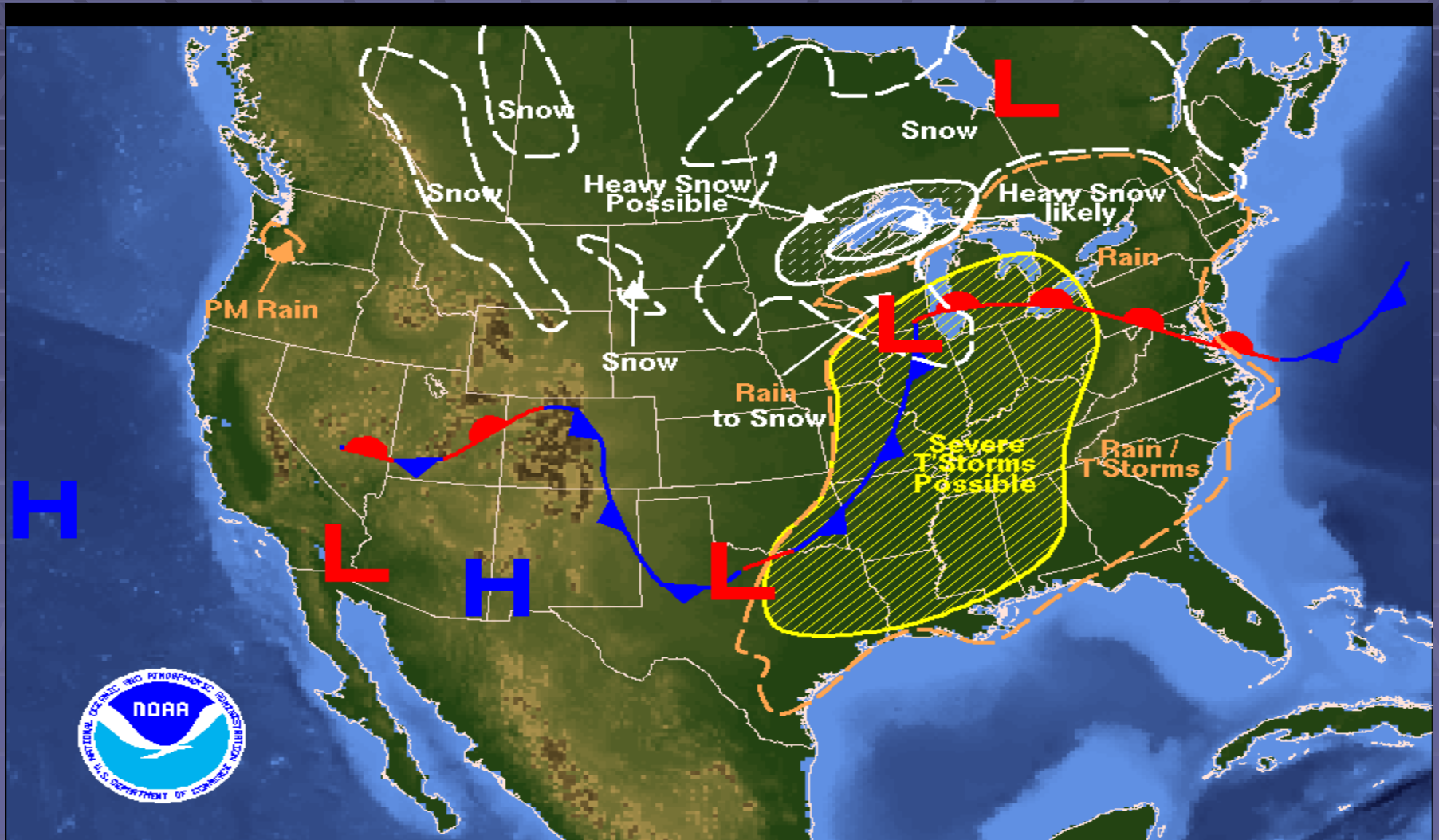
Ground Tracking Equipment



Radiosonde Equipment Package

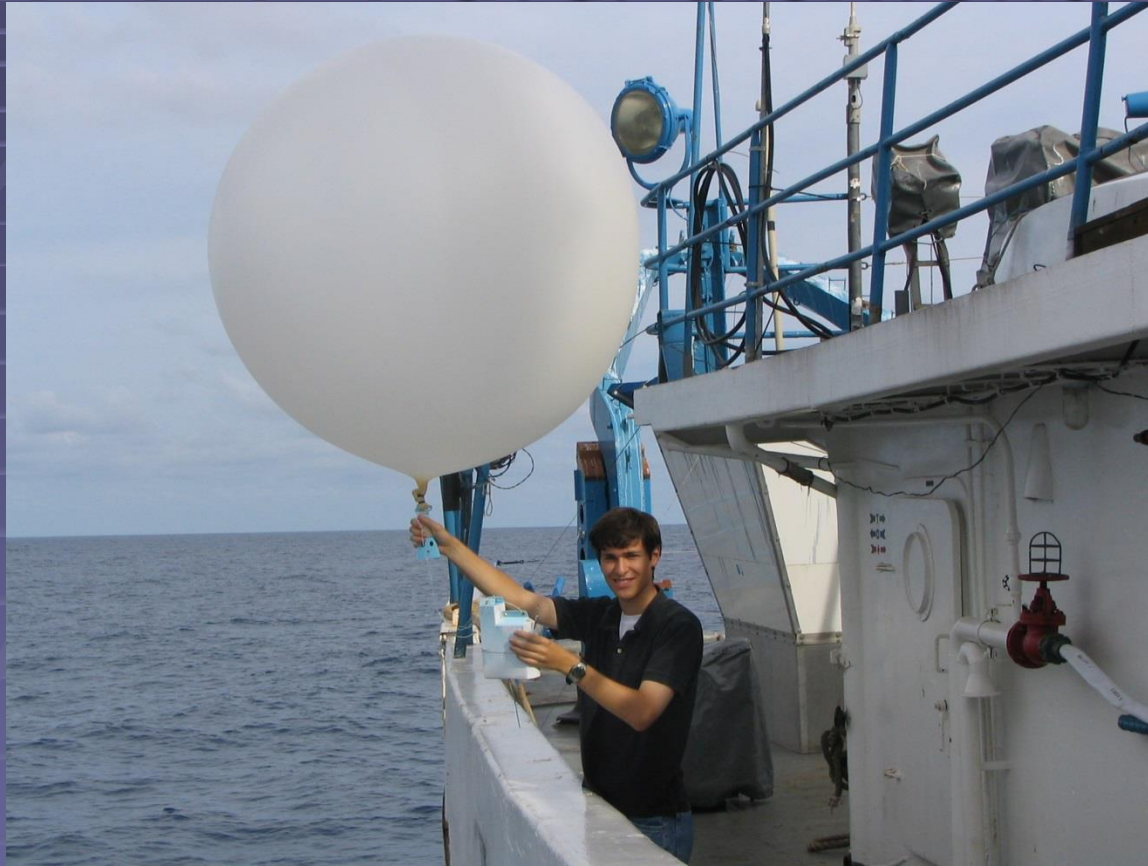


How do we know this?



Weather Forecast for Tuesday, April 03, 2007
DOC/NOAA/NWS/NCEP/Hydrometeorological Prediction Center
Prepared by Kong based on HPC, SPC, and TPC forecasts.

From Radiosondes launched all over the world.....



Typical Radiosonde path



The End??????

