TEACHERS NARRITIVE—WEATHER SYSTEMS

PLATE 1—The ***National Weather Service***, National Oceanic and Atmospheric Administration provides information about clouds, temperature, precipitation, winds, and storms that we observe and hear on the weather news broadcast on our local TV channel. Satellite images show were ***convection currents*** covering the earth from pole to pole.

- ***Air Masses*** are large bodies of air that form these global wind patterns. The characteristics of these air masses will be determined by the type of landscape it passes over and will create hot, cool or humid air.
- ***Fronts*** are movements of air masses that will change the conditions from a possible hot front of air to a cold front and will bring wind, rain showers, snow showers or just overcast skies.
- ***Jet Streams*** are bands of strong, narrow wind patterns that are high above in the atmosphere that move and influence air masses that give us weather that we experience on a daily bases.
- ***Coriolis Effect*** is Newton's Law of motion and is an explanation of why air masses and winds do not move in a straight line. As the earth revolves the forces cause the winds to be deflected from straight line paths as they move across the rotating earth moving the weather systems in large circular patterns that create high or low pressure areas. The circulation of these large air masses moves to the right in the Northern Hemisphere and to the left in the Southern Hemisphere.

PLATE 2—Weather conditions can change quickly. Pilots do rely on a number of instruments and modern technologies but they also rely on their inner instincts based on hours of training and learning about the plane they will fly. Modern equipment has weaknesses in that they cannot predict quick changes in weather patterns.

PLATE 3—Clouds form rapidly. When you see an unusual cloud formation it is a good indication to be alert to changes that will soon affect weather where you are. This photo was taken a short time before it moved like a wave over the airport with no immediate effect. This was a cold front that created a rapid change in temperature that created forceful wind and rain in the opposite direction.

PLATE 4—Types of clouds. Learning cloud formations will help in reliance on your own knowledge of weather patterns.

PLATE 5—Wind and precipitation is important to all of us in planning our day and preparation for our activities.

PLATE 6—Wind and rain will delay the takeoff of this plane. What do you see here? How do the students feel about going out in a storm? Can a rain storm be fun to play in? How about after the storm is over and water is standing in puddles, can that be a fun experience to splash in the puddles?

PLATE 7—Weather conditions can be predicted. There are three basic instruments that are used for predicting the weather.

- The instrument on the left is Barometer that measures the pressure of the air where you are. If the needle is pointing to the left it is a possible indicator that it may rain. If the needle is pointing to the right it indicates a fair weather day.
- The instrument in the center is a Thermometer measuring the temperature where you are. This instrument will not measure Wind Chill. That is another measurement that is the effect of wind and temperature on exposed skin so as the wind increases so will the Wind Chill effect is greater.
- The instrument on the left is a Humidity Gauge that can be a part of your home weather station and plays a part in how the temperature in your home feels.

PLATE 8—The airport has several visual instruments that tell weather conditions. When you visit the airport, look for these instruments that indicate wind direction and wind speed.

- Wind Sock
- Weather Vain
- Anemometer

PLATE 9—Weather stations have rain gauges. Rain conditions at an airport influence the flights of aircraft and the ground conditions for safe movement of aircraft on the field.

PLATE 10—A laser beam ceilometer measures cloud density. A beam of a laser is directed straight up so that cloud formations can be detected as they pass over the instrument. When a cloud passes over the beam of high intensity light of the laser will be reflected back to the instrumentation that will record the density and will be an indicator of possible precipitation and height of the cloud.

PLATE 11—Recording conditions at the airport will make flying safer.

PLATE 12—Information is recorded and is sent to the control tower and to weather reporting stations for evaluation.

PLATE 13—The weather information is made available to pilot on special weather frequencies that the pilot can receive in his airplane radio and computer during his pre-flight planning.

PLATE 14—The study of prairie dog homes can reveal some secrets of how they create air conditioned living quarters that also provide insight in how weather patterns are created.

PLATE 15—Special equipment can detect small elements in our environment by the collection of precipitation and measure the amounts to indicate traces of pollution in the atmosphere.

PLATE 16—The elements in our environment include solid, liquid, gas, and synthetics.

PLATE 17—The study of these environmental elements can only be conducted in a special structure that is climate controlled and monitored twenty for hours a day.

PLATE 18—This monitoring will show element partials as small as 10 micron and will provide an early warning of air pollution threats to the immediate vicinity.

PLATE 19—Encourage your students to look closer to our natural world and make choices that will provide a future of a safe environment.

PLATE 20—Flying safe and living safe can be dependent on how we know our self and our own preparation in career oppertunities.