

AMS Weather Studies Investigations

1A SURFACE AIR PRESSURE PATTERNS

- * Draw isobars on a surface weather map and interpret isobar patterns.

1B AIR PRESSURE AND WIND

- * Apply the hand-twist model to surface winds in highs and lows.

2A SURFACE WEATHER MAPS

- * Decode symbols on a surface weather map and interpret weather conditions.

2B THE ATMOSPHERE IN THE VERTICAL

- * Plot a sounding on a Stüve diagram and compare to the U.S. Standard Atmosphere.

3A WEATHER SATELLITE IMAGERY

- * Compare visible and infrared satellite images for weather interpretation.

3B SUNLIGHT THROUGHOUT THE YEAR

- * Describe variations in solar radiation throughout the year by latitude.

4A TEMPERATURE AND AIR MASS ADVECTION

- * Draw isotherms on a surface map and determine areas of warm and cold air advection.

4B HEATING DEGREE-DAYS AND WIND CHILL

- * Calculate heating and cooling degree-days and determine wind chill.

5A AIR PRESSURE CHANGE

- * Use a meteogram to describe changes in air pressure and other weather conditions with the passage of a warm front and a cold front.

5B ATMOSPHERIC PRESSURE IN THE VERTICAL

- * Use the pressure block concept to demonstrate the influence of air density and air temperature on changes in air pressure with altitude.

6A CLOUDS, TEMPERATURE, AND AIR PRESSURE

- * Use cloud-in-a-bottle demonstration and a sounding on a Stüve diagram to illustrate how temperature changes are related to pressure changes.

6B RISING AND SINKING AIR

- * Use a Stüve diagram to illustrate dry and saturated adiabatic processes as air parcels ascend and descend in the atmosphere.

- 7A PRECIPITATION PATTERNS**
* Locate and track areas of precipitation using weather radar operating in the reflectivity mode.
- 7B DOPPLER RADAR**
* Describe the wind pattern detected by Doppler weather radar for a severe weather situation.
- 8A SURFACE WEATHER MAPS AND FORCES**
* Examine the influence of forces on horizontal air motion near the Earth's surface.
- 8B UPPER-AIR WEATHER MAPS**
* Describe the properties of a 500-mb map analysis and identify highs, lows, ridges, and troughs.
- 9A WESTERLIES AND THE JET STREAM**
* Examine upper-air westerly wave patterns, the jet stream, and how these features influence midlatitude surface weather.
- 9B ¡EL NIÑO!**
* Describe atmospheric and oceanic conditions that accompany periodic warmings of the tropical Pacific Ocean.
- 10A THE EXTRA-TROPICAL CYCLONE**
* Describe weather conditions surrounding the center of a typical extra-tropical cyclone in the midlatitudes.
- 10B EXTRA-TROPICAL CYCLONE TRACK WEATHER**
* Compare weather conditions on either side of an extra-tropical cyclone in the midlatitudes.
- 11A THUNDERSTORMS**
* Examine thunderstorms as they appear on visible, infrared, and water vapor satellite images.
- 11B TORNADOES**
* Determine some of the characteristics of two intense tornadoes.
- 12A HURRICANES**
* Plot a hurricane as it approaches a coastal area and assess the potential threats to life and property.
- 12B HURRICANE WIND SPEEDS AND PRESSURE CHANGES**
* Explore the relationships between central sea-level pressures and wind speeds throughout the life of a hurricane.

13A WEATHER INSTRUMENTS AND OBSERVATIONS

- * Explore the data provided by the Automated Surface Observing System (ASOS) and access weather observations for the U.S. and the world via the Internet.

13B WEATHER FORECASTS

- * Describe the general elements of a weather forecast and explore the NWS office forecast made available for the public.

14A OPTICAL PHENOMENA

- * Describe interactions of light with atmospheric water droplets and ice crystals and the resulting optical phenomena.

14B ATMOSPHERIC REFRACTION

- * Describe how refraction of light varies with solar altitude and how it affects periods of daylight.

15A VISUALIZING CLIMATE

- * Portray statistical climate values on a climograph and compare climographs from various locations to explore climate controls.

15B LOCAL CLIMATIC DATA

- * Interpret data appearing in the *Local Climate Data, Annual Summary With Comparative Data* and determine how to access archived data.