STORM-E Weather simulation

Day 1 PDF Files

- Conditions for Severe Weather

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Temperature

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Conditions for Severe Weather

For thunderstorms to develop, the air must become unstable, and the following conditions must be present:

- Abundant moisture, which means relatively high dew point readings.
- Some "trigger" that will make the air lift, which could be an approaching cold front or upper air trough.
- The right atmospheric conditions for unstable air, which means air pressure is dropping.

Team condition	Weak possibility of severe weather	Moderate possibility of severe weather	Strong possibility of severe weather
Air pressure pressure reading over threatened area	>1010 mb	1010 to 1005 mb	< 1005 mb
Humidity surface dew point readings	55° F	56° to 64° F	> 64° F
Temperature cold front	Is a cold front moving into the area? If yes, how close is it?		
Wind jet stream	Is a trough approaching the area? If yes, how close is it?		

Air Pressure Team - Day 1

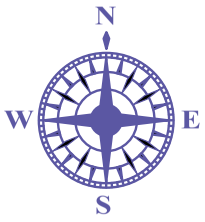
Isobars are lines connecting places of equal air pressure. They have a regular interval of four millibars. First, fill in the key with a pattern of numbers increasing or decreasing by four.

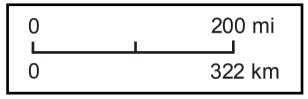
Some isobar lines might not be numbered. Next, print the correct numbers next to those lines. Then, using the color key, trace over all isobar lines.

Now, locate the closed isobar. Is it a high or low pressure area? Mark an "H" or "L" inside the closed isobar.

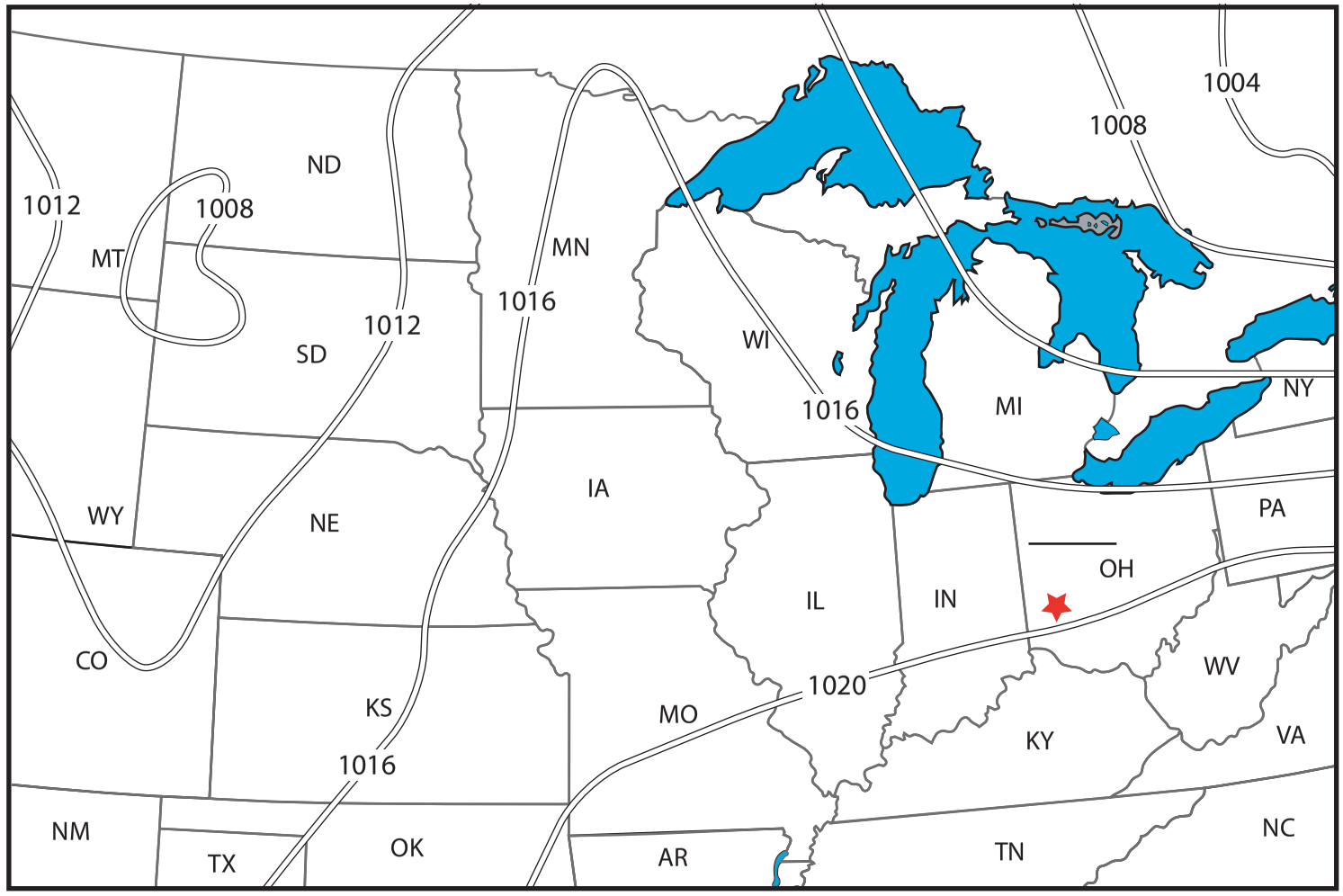
The star in Ohio marks Dayton. Estimate the air pressure reading for Dayton. Record it on the line.

KEY	
Color	**Millibars**
Red	1020
Yellow	
Orange	
Green	
Blue	
Purple	
Brown	996
Black	





Sea Level Pressure (mb) **Day 1** Analysis for 18Z 17 SEP 00



Interval 4.0

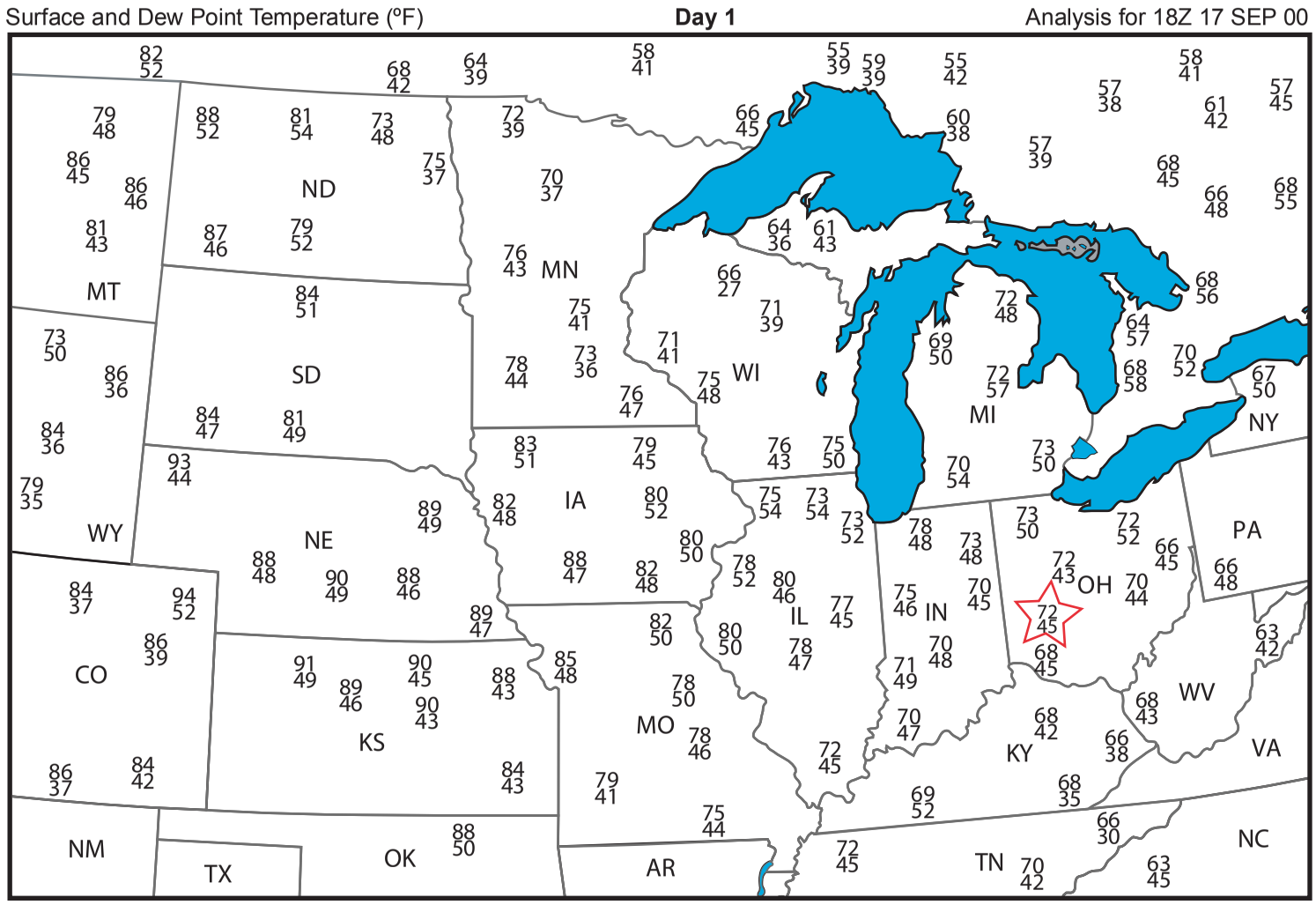
Humidity Team - Day 1

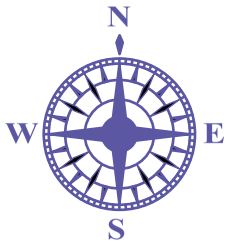
Dew Point Temperature

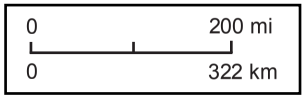
Dew point is the temperature to which air must be cooled to achieve saturation. The possibility of cloud formation increases as the air temperature drops closer to its dew point.

Important: Use the relative humidity map you have already completed to assist you. Find the places on that map with relatively high humidity and begin the following search in those areas.

Circle the places on the dew point temperature map where the difference between the surface air temperature (top number) and the dew point temperature (bottom number) is 10 degrees or less. What weather is possible in those places?







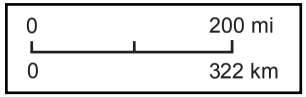
Humidity Team - Day 1

Relative Humidity

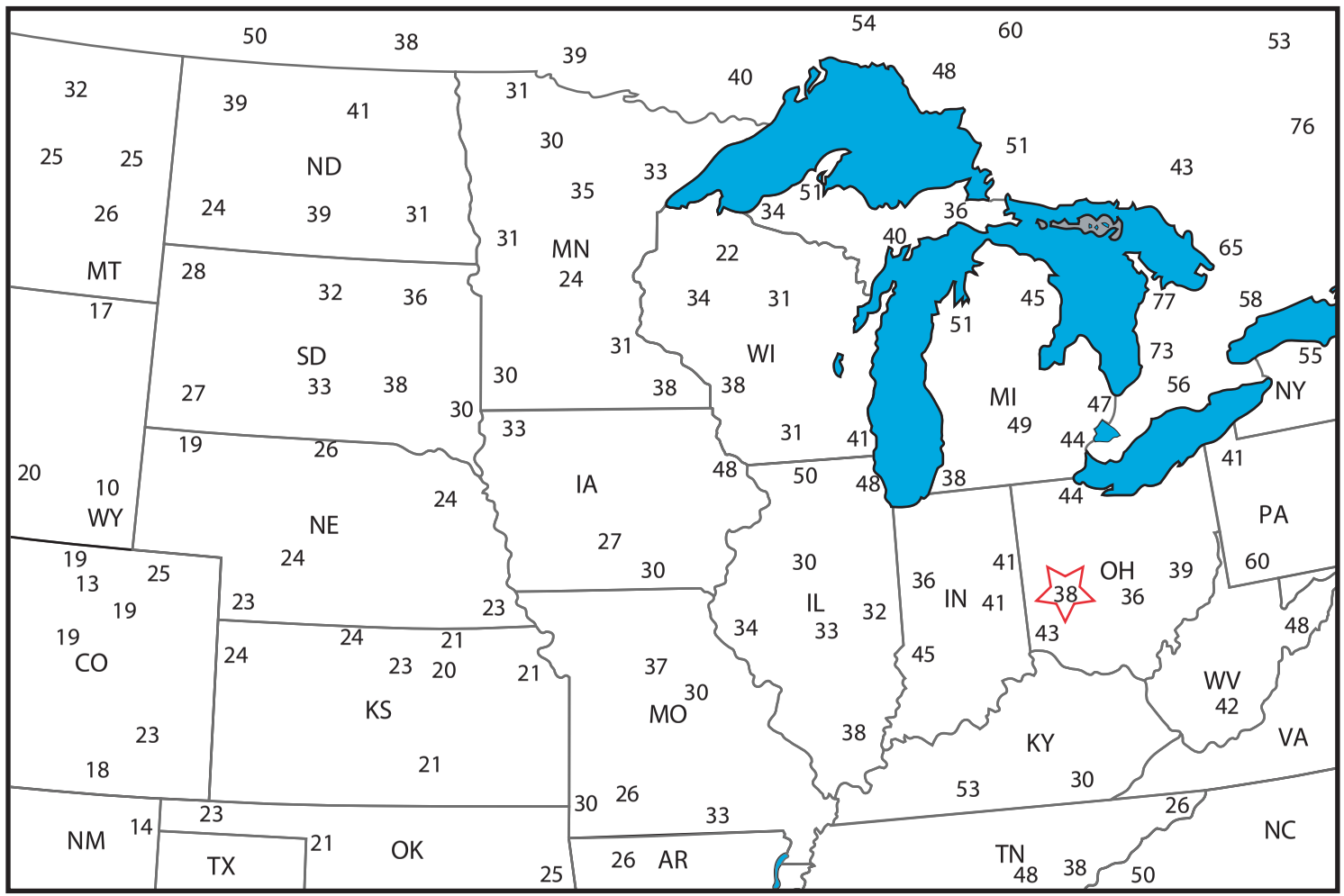
Important: Complete this map *before* starting the dew point temperature map.

Relative humidity measures how close air is to saturation. The possibility of precipitation *increases* as the relative humidity approaches 100 percent. Circle each number with the corresponding color in the key. DO NOT shade in the circle. Where might precipitation be possible?

KEY	
Color	**%**
Red	≥90
Orange	80-89
Yellow	70-79
Green	60-69
Blue	50-59
Purple	40-49
Brown	30-39
Black	≤29



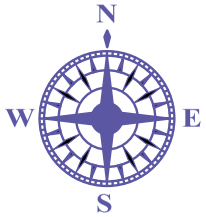
Surface Relative Humidity (%) Day 1 Analysis for 18Z 17 SEP 00

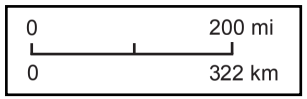


Temperature Team - Day 1

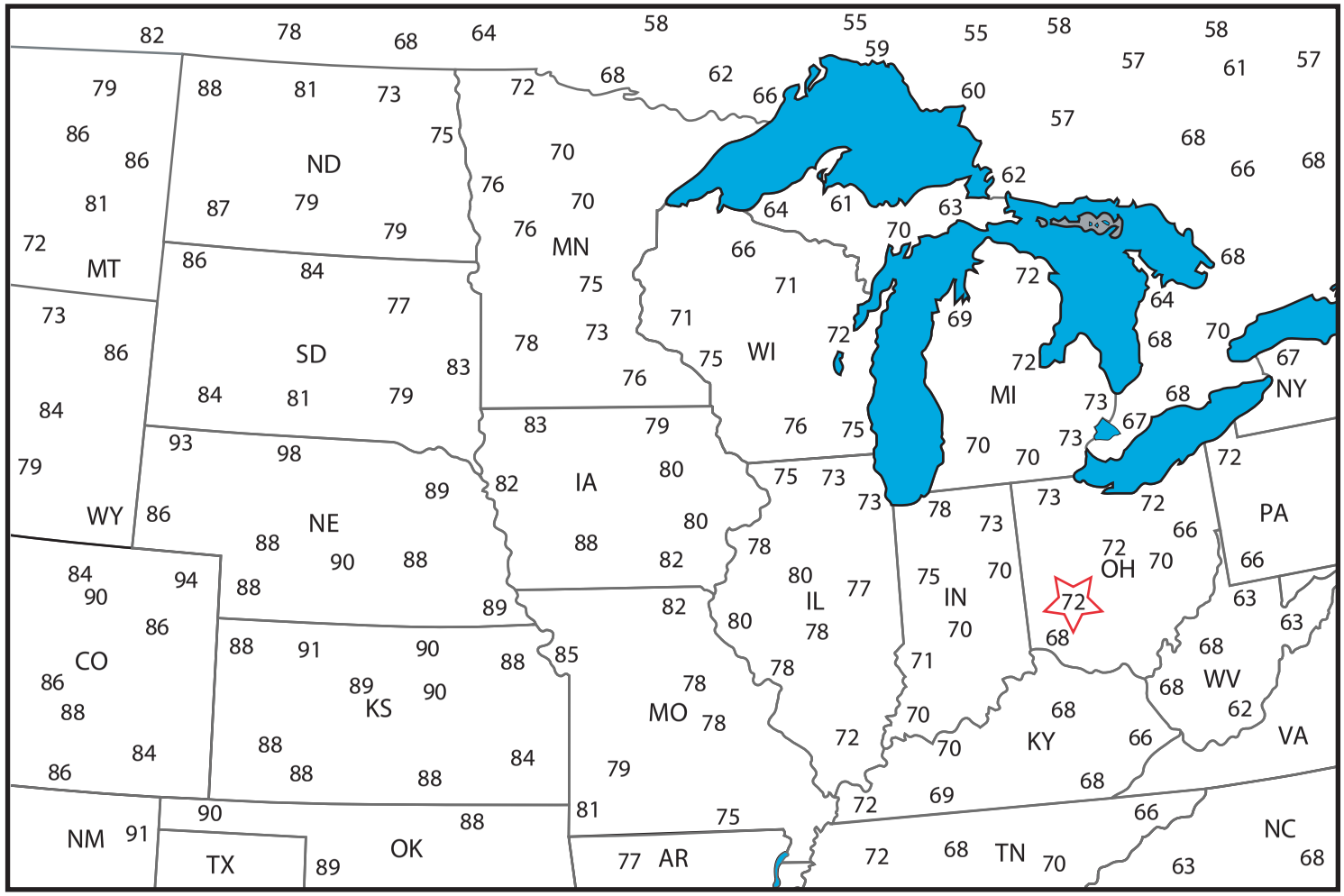
The surface temperature readings on this map are in degrees Fahrenheit. Circle each number with the corresponding color in the key. DO NOT shade in the circle.

KEY	
Color	**ºF**
Red	90s
Orange	80s
Brown	70s
Green	60s
Blue	50s
Purple	40s





Surface Temperature (ºF) **Day 1** Analysis for 18Z 17 SEP 00



Wind Team - Day 1

Jet streams are narrow corridors of very strong winds at altitudes from 30,000 to 50,000 feet. They blow in a wavy pattern from west to east across North America at speeds exceeding 60 knots.

The shape of the jet stream is important in weather forecasting. Troughs (U) of low pressure air that dip south bring cool, cloudy weather. Ridges (∩) of high pressure air that rise north bring warm, clear weather.

Circle each number with the corresponding color in the key. DO NOT shade in the circle. Do you notice a trough or ridge? What is the position of the jet stream in relation to Dayton, OH (indicated by a star)? How might the shape of the jet stream affect the weather in Dayton?

KEY	
Color	**Knots**
Red	≥120
Orange	100-119
Blue	80-99
Green	60-79
Don't Color	<60