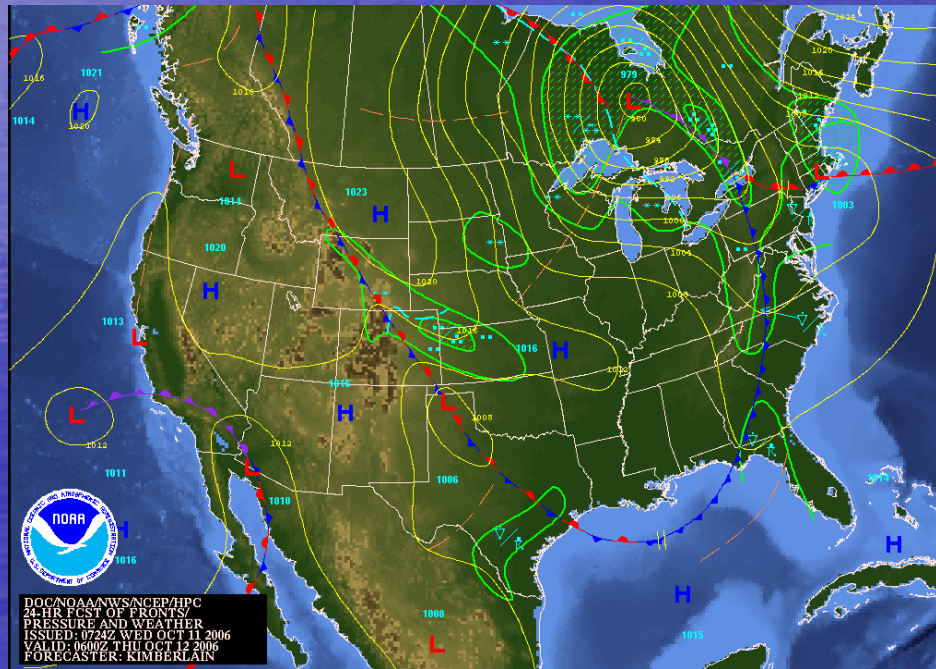
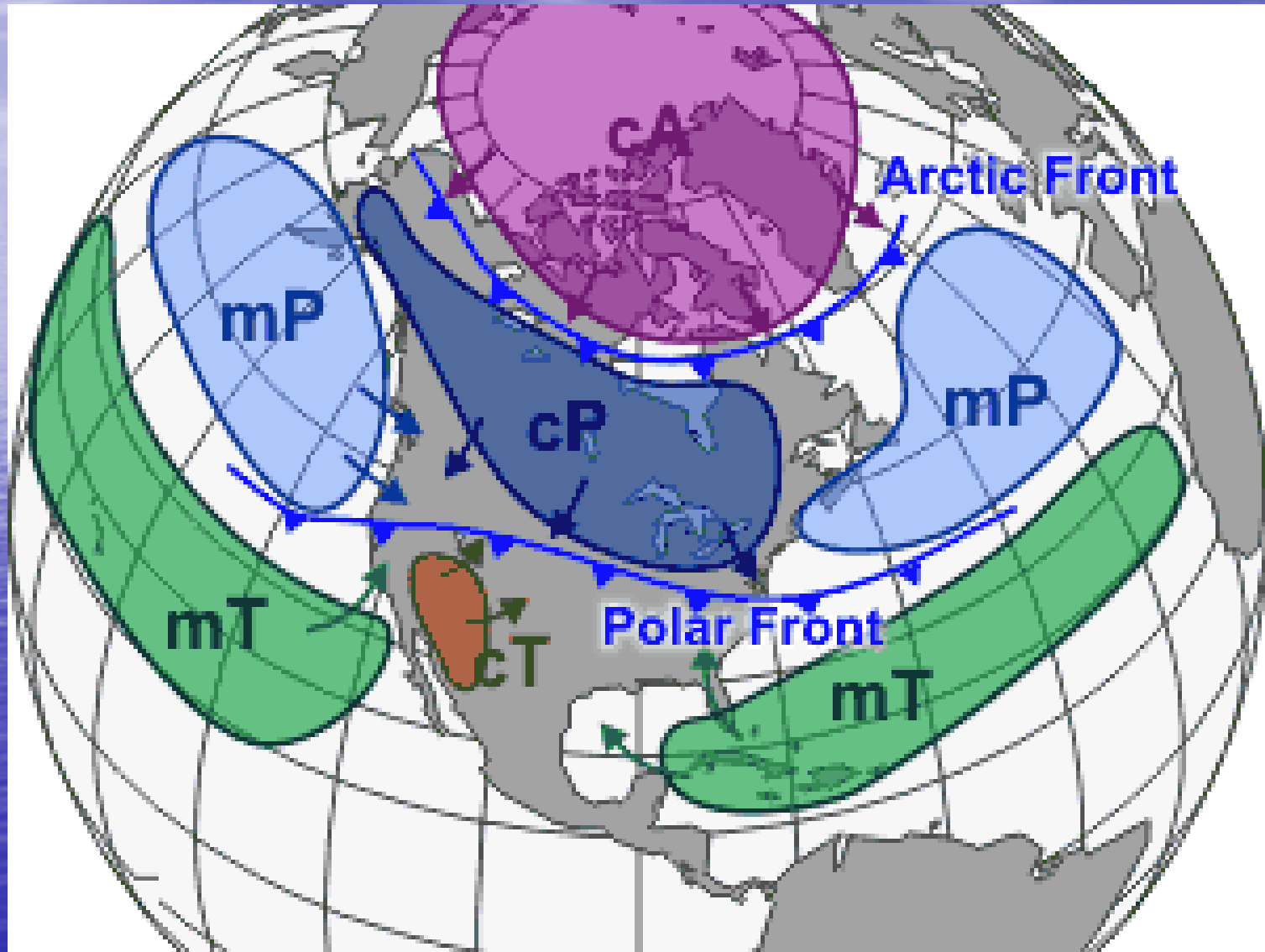


General Meteorology and Their Application Towards Forecasting

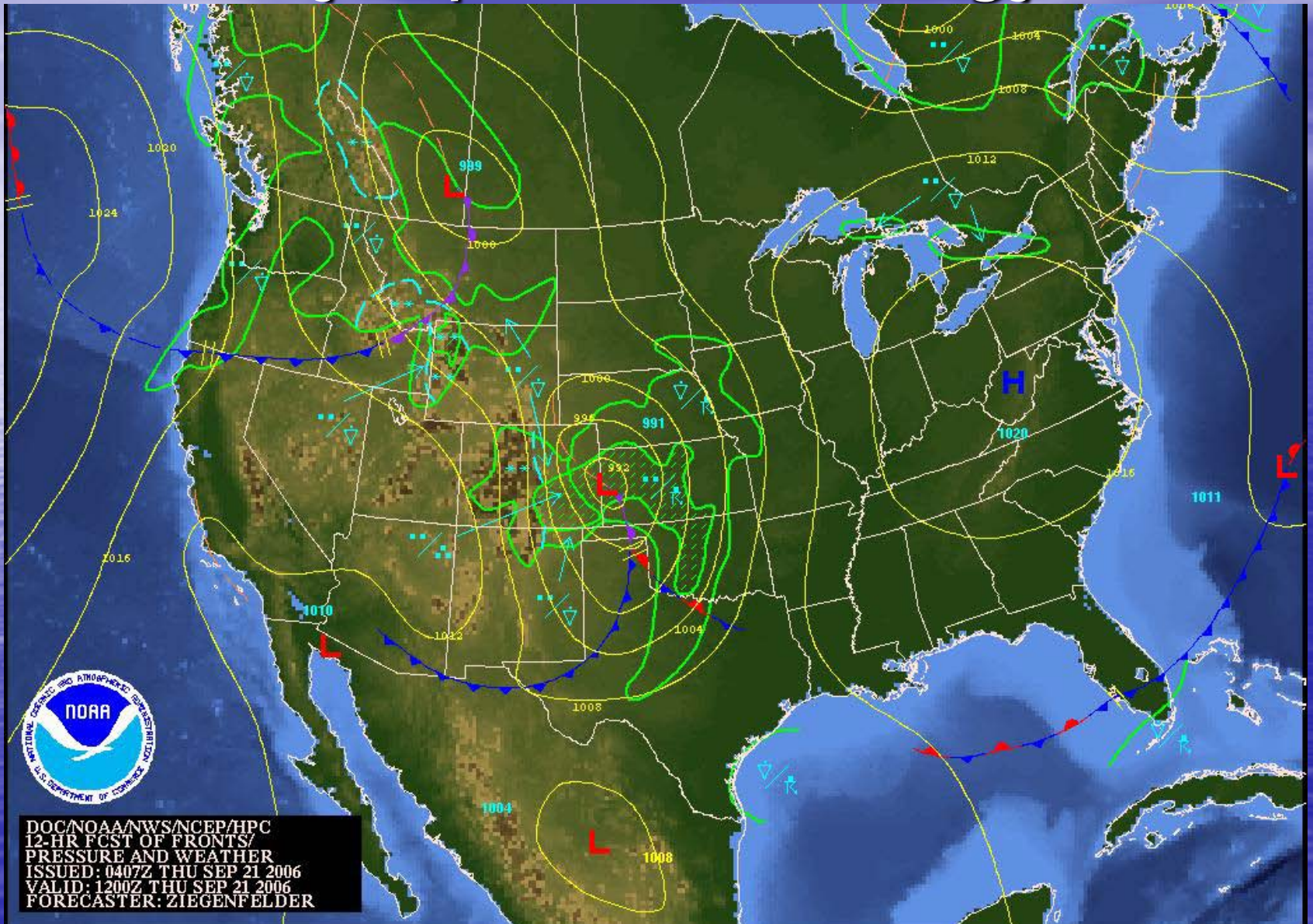


National Weather Service Shreveport, LA
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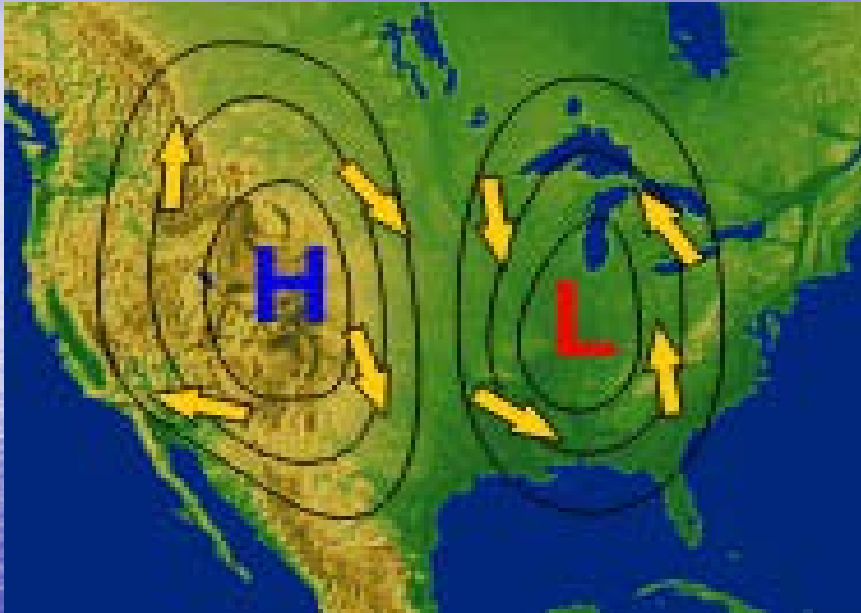
Air Masses



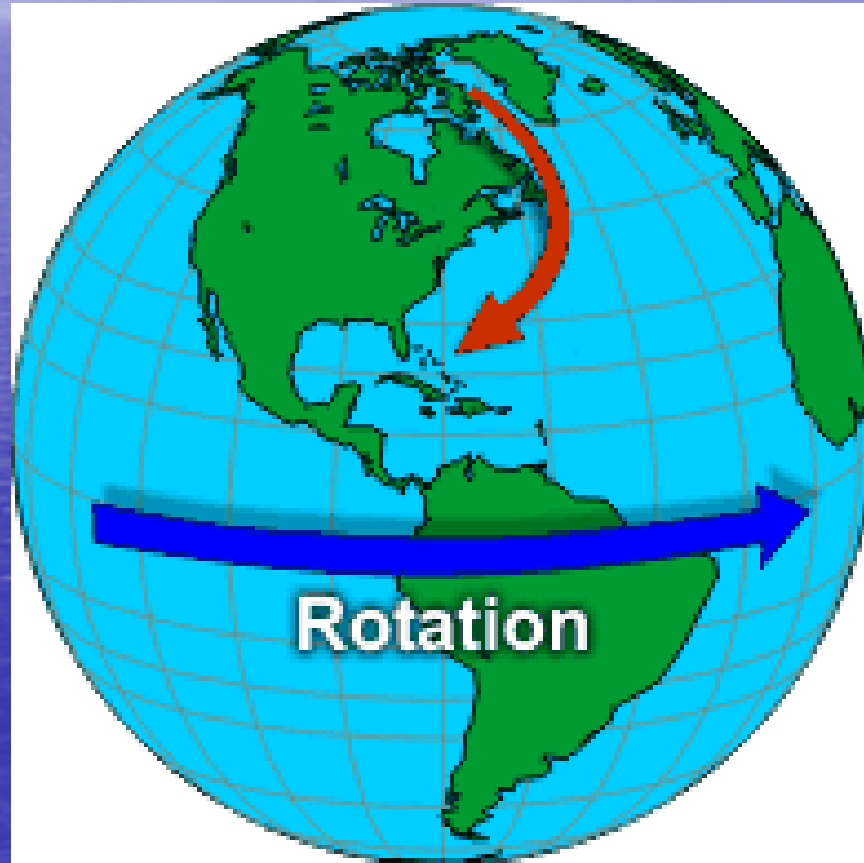
Synoptic Meteorology



Pressure and Wind



Origin of Wind



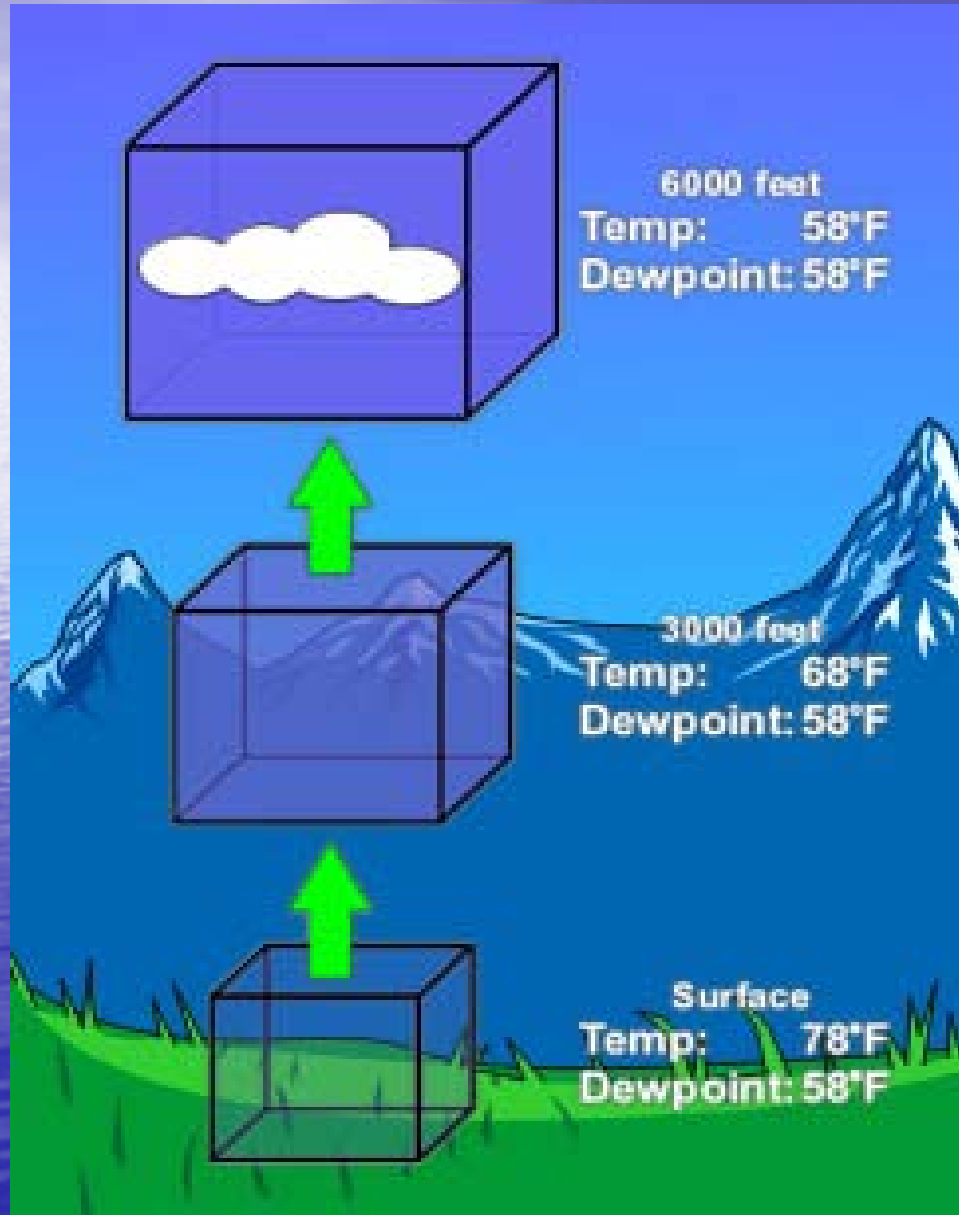
How Do Clouds Form?

- In order to understand this process, we must first understand cold/warm air, and their relationship with density.
- What is density???

Cloud Formation



Cloud Formation (Cont'd)



Warm air rises (less dense), and will gradually cool. The air will begin condensing (when the temperature and dewpoint become closer together), and water droplets bond onto condensation nuclei. These nuclei will collide with other nuclei, eventually forming a cloud.

Types of Clouds

Low clouds: Consist of stratoform (flat) clouds, or cumuloform (puffy) clouds, lying on or just above the surface (up to ~10,000 ft).

Stratus:

Cumulus:



Types of Clouds (Cont'd)

Middle Clouds: Consist of altoform (meaning a middle cloud) type clouds, extending from 10,000 – 20,000 feet above the surface.

Altostratus:



Alto cumulus:



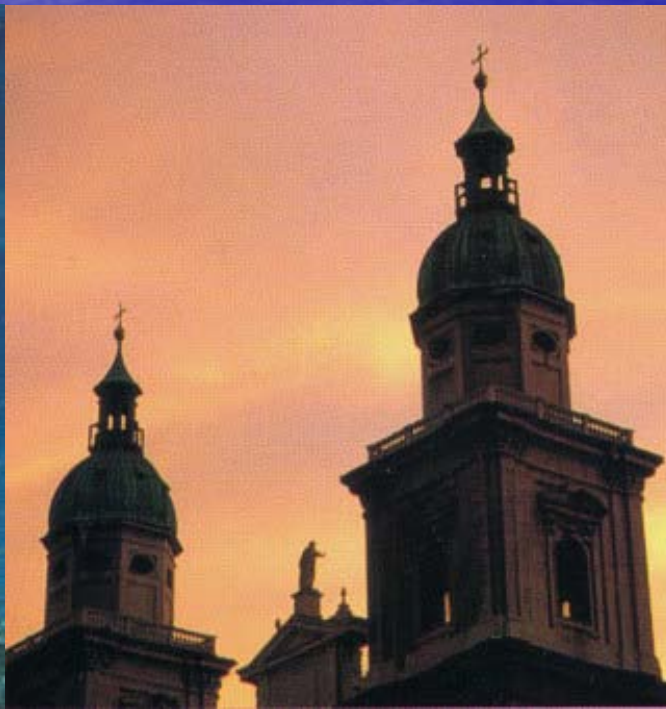
Types of Clouds (Cont'd)

High Clouds: Consists of mainly ice crystals suspended above 20,000 feet from the surface. These clouds are wispy/crisp/featherlike in appearance, and do not produce precipitation.

Cirrus:



Cirrostratus:



Cirrocumulus:



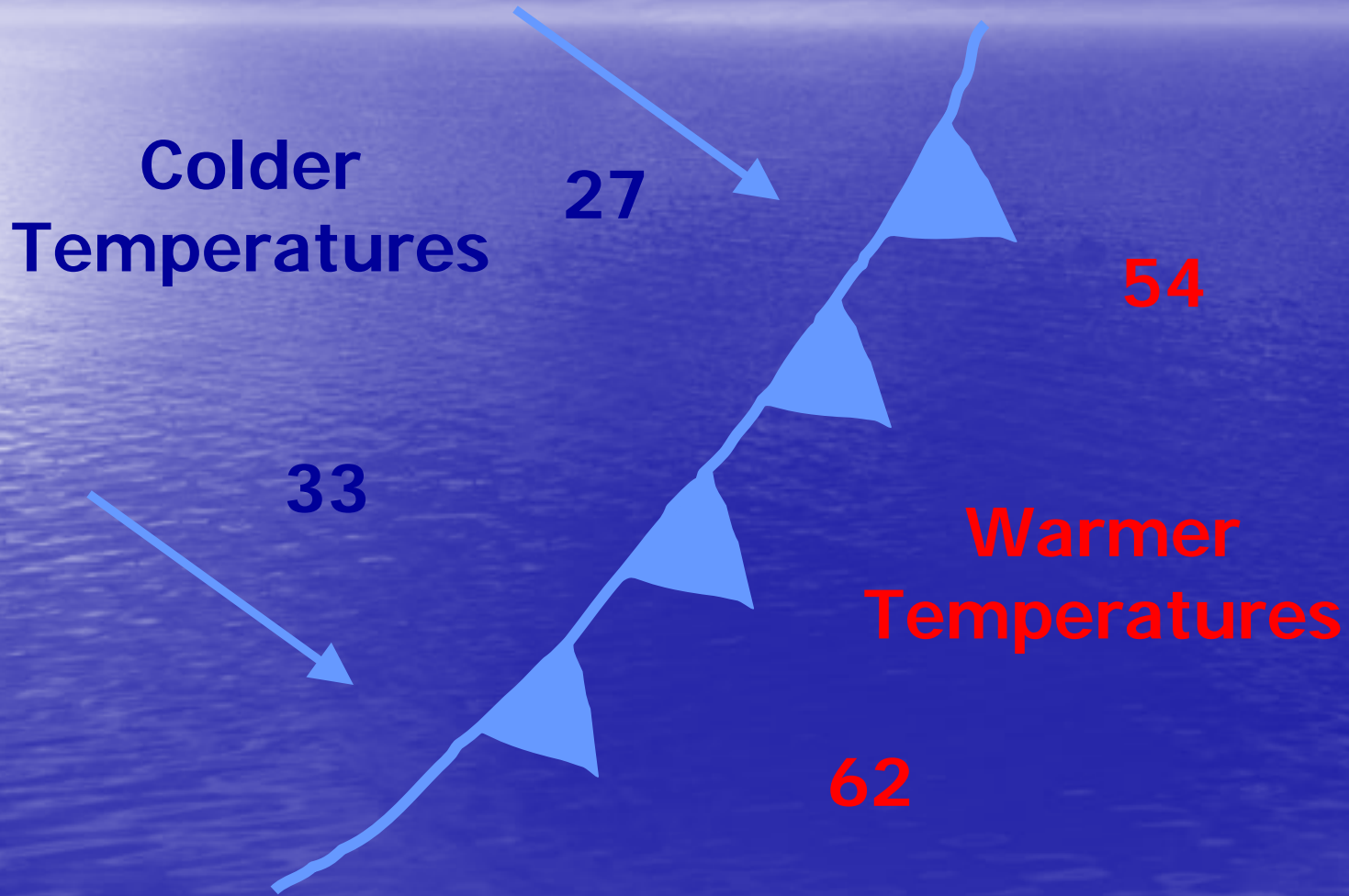
How Does Rain Form???

- Through the collision/coalescence process, water droplets continue to grow, forming clouds. If enough lift is present in the atmosphere (produced by fronts for example), updrafts are created, which forces the cloud to grow taller. The water droplets continue to grow inside of clouds, until they become too heavy to be suspended by the updraft. It is then that these droplets fall down to the earth as rain.

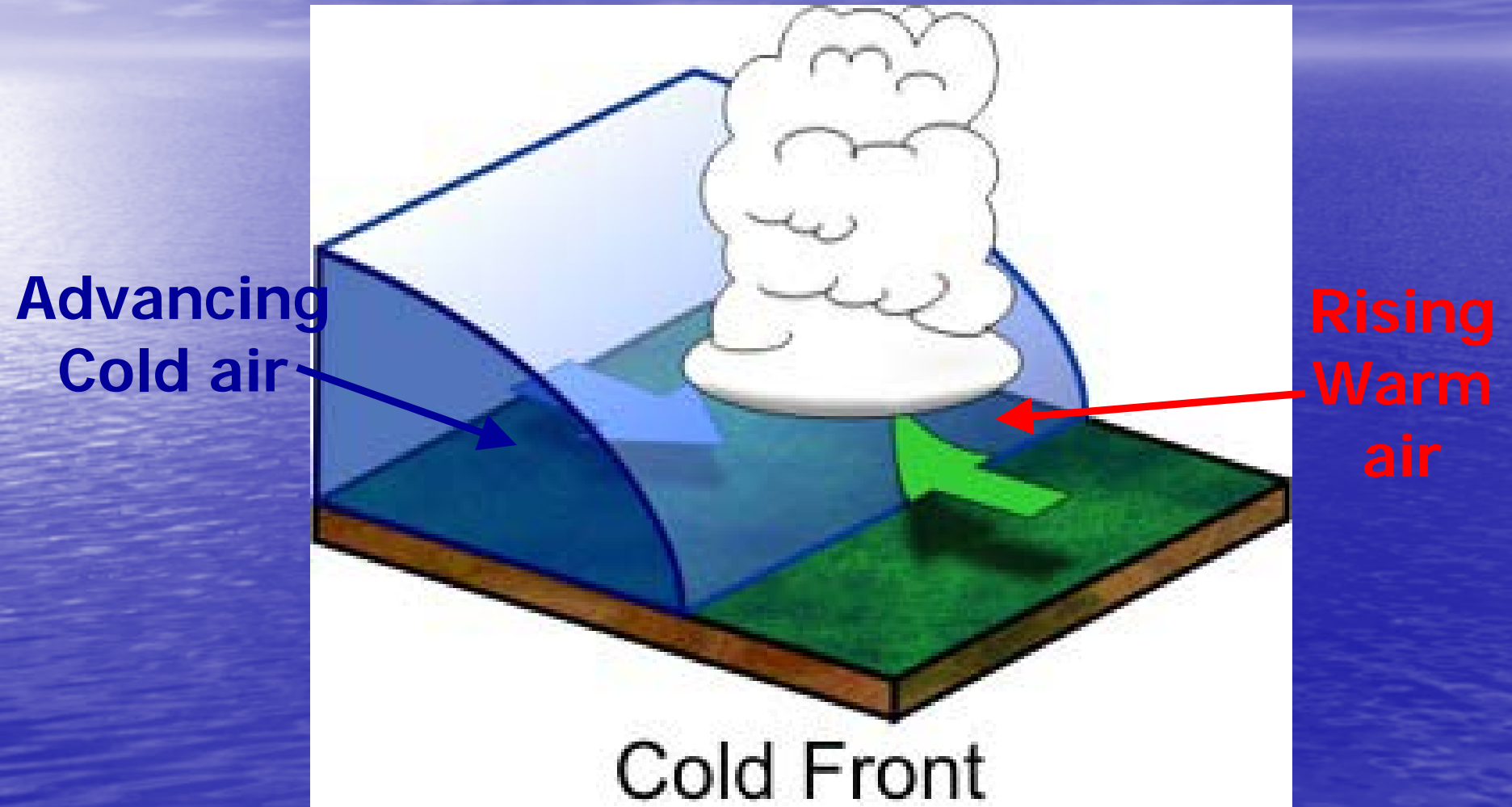
Types of Fronts

- Now that we have learned the concepts of density, we can better understand what fronts are and how they affect the weather.
- 1) Cold Front: A transition zone where cold/dry, and stable air, replaces warm/moist, and unstable air. It is depicted by a blue line with triangles pointing towards the direction of movement.

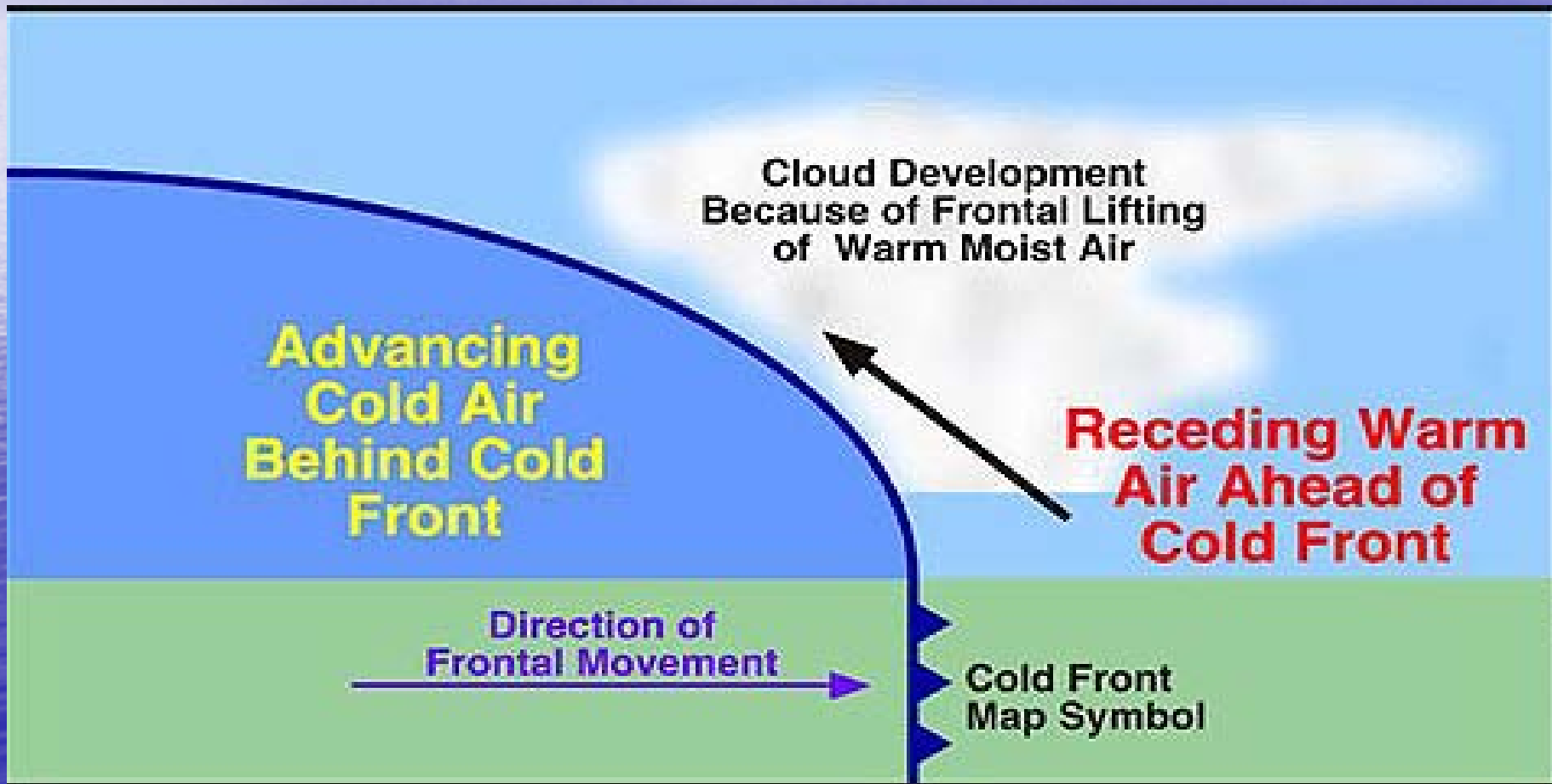
Cold Front



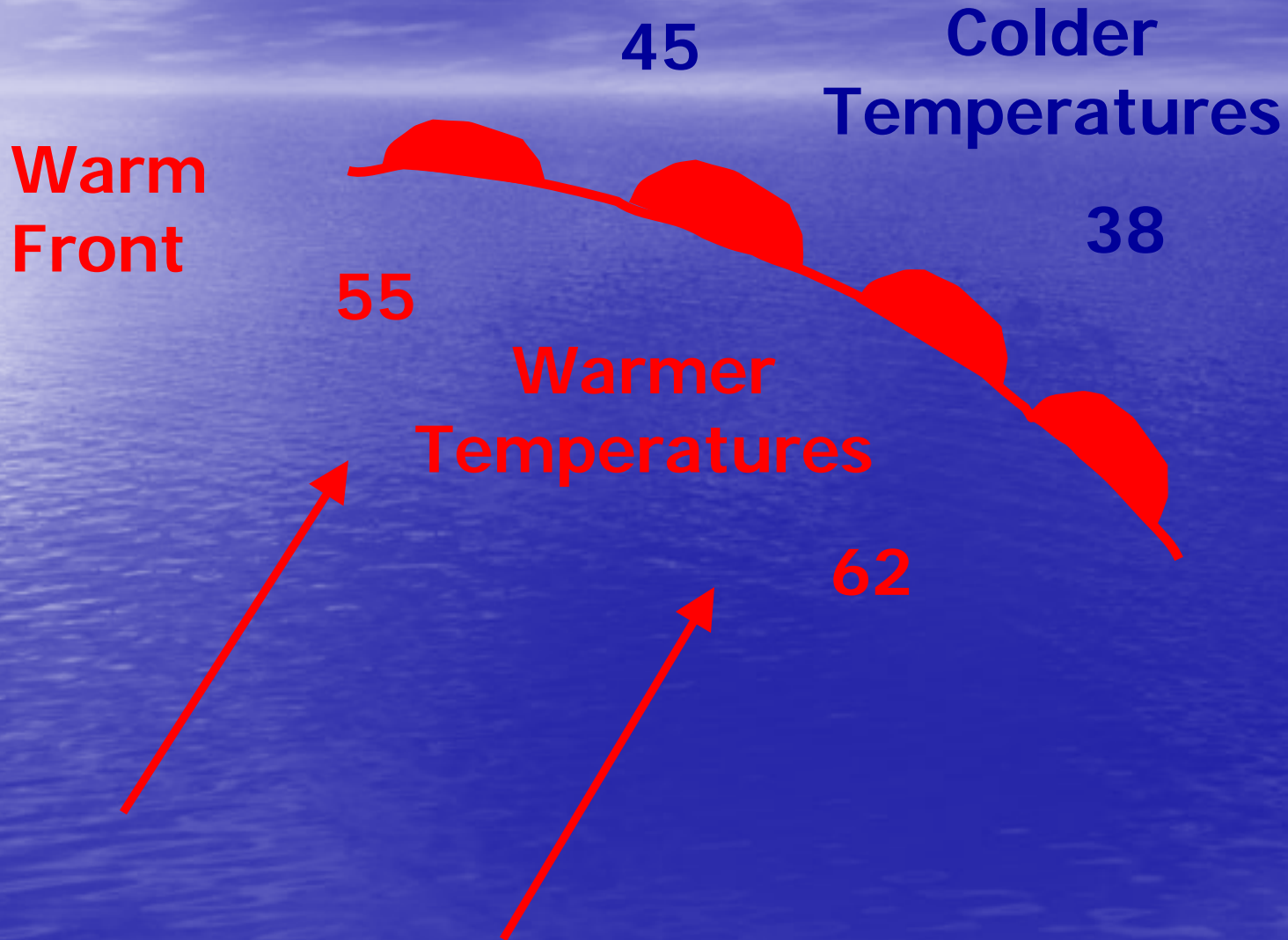
Cold Front (Vertical Profile)



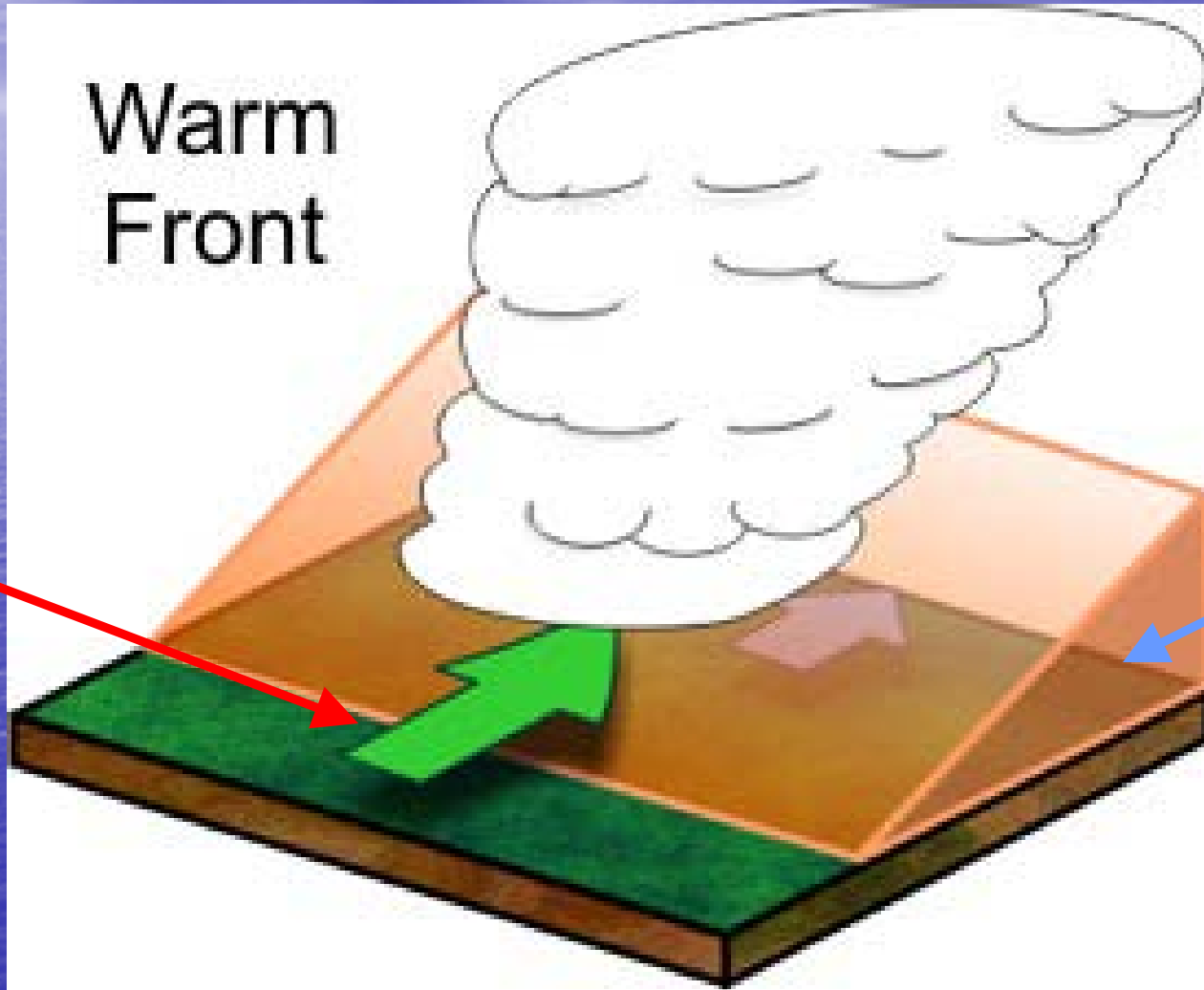
Cold Front (more detail)



Warm Front



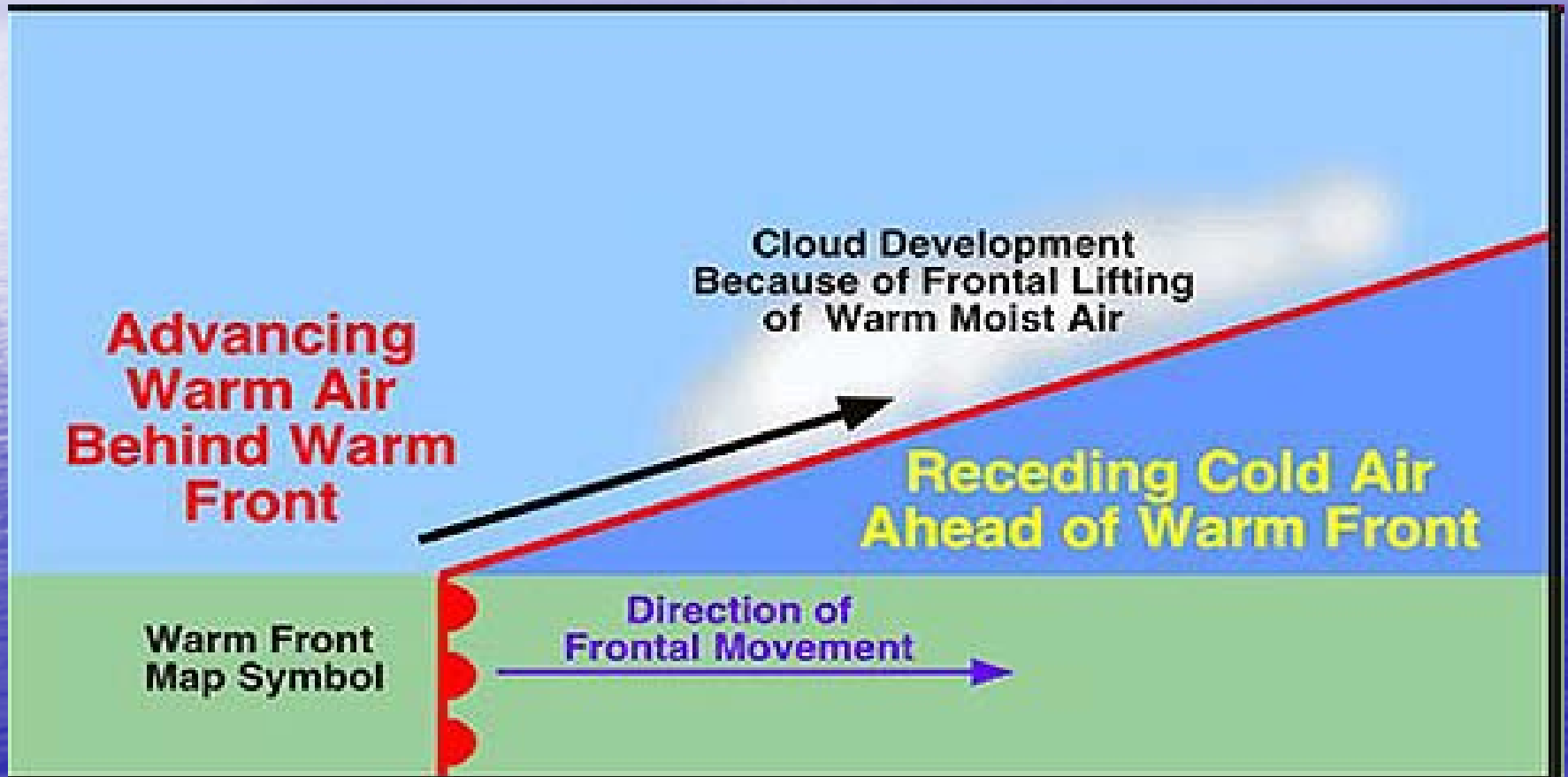
Warm Front (Vertical Profile)



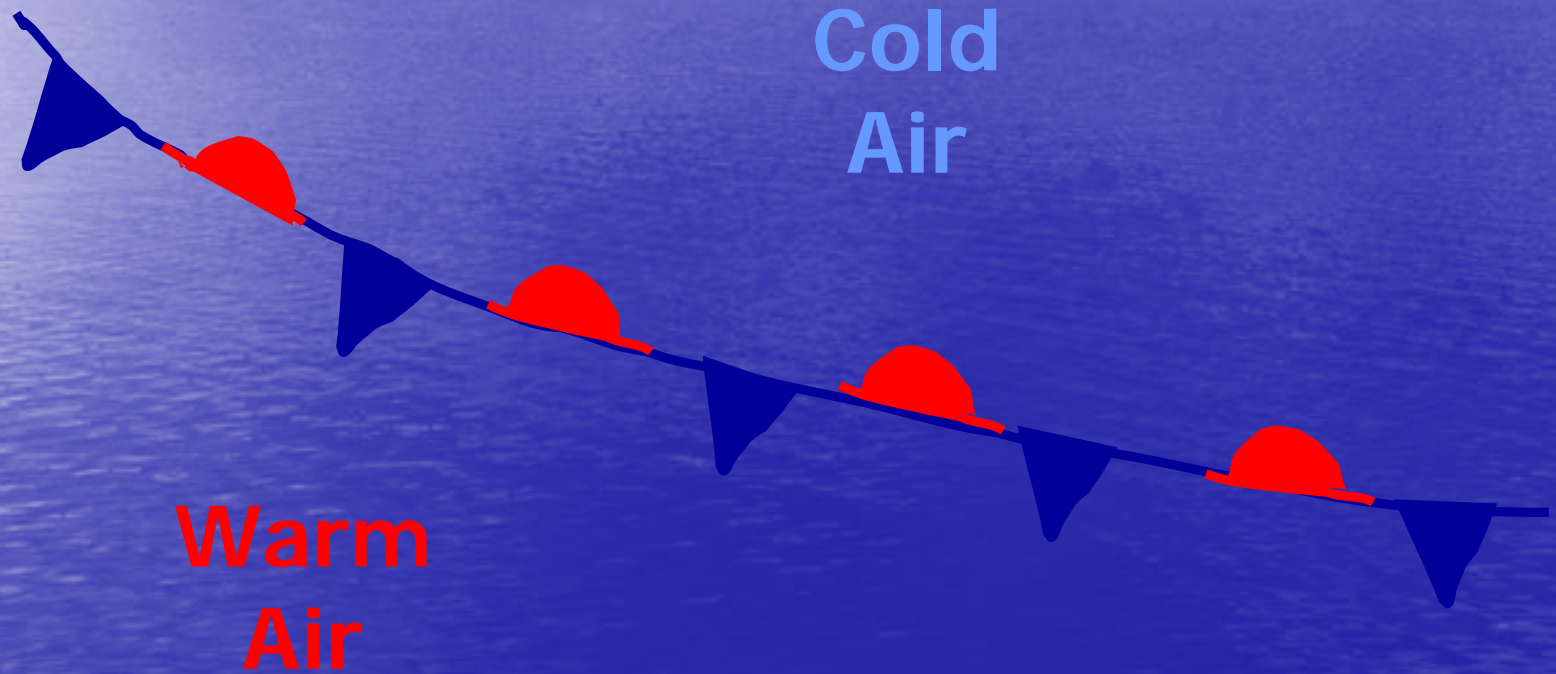
Warm
air

Cold air

Warm Front (more detail)



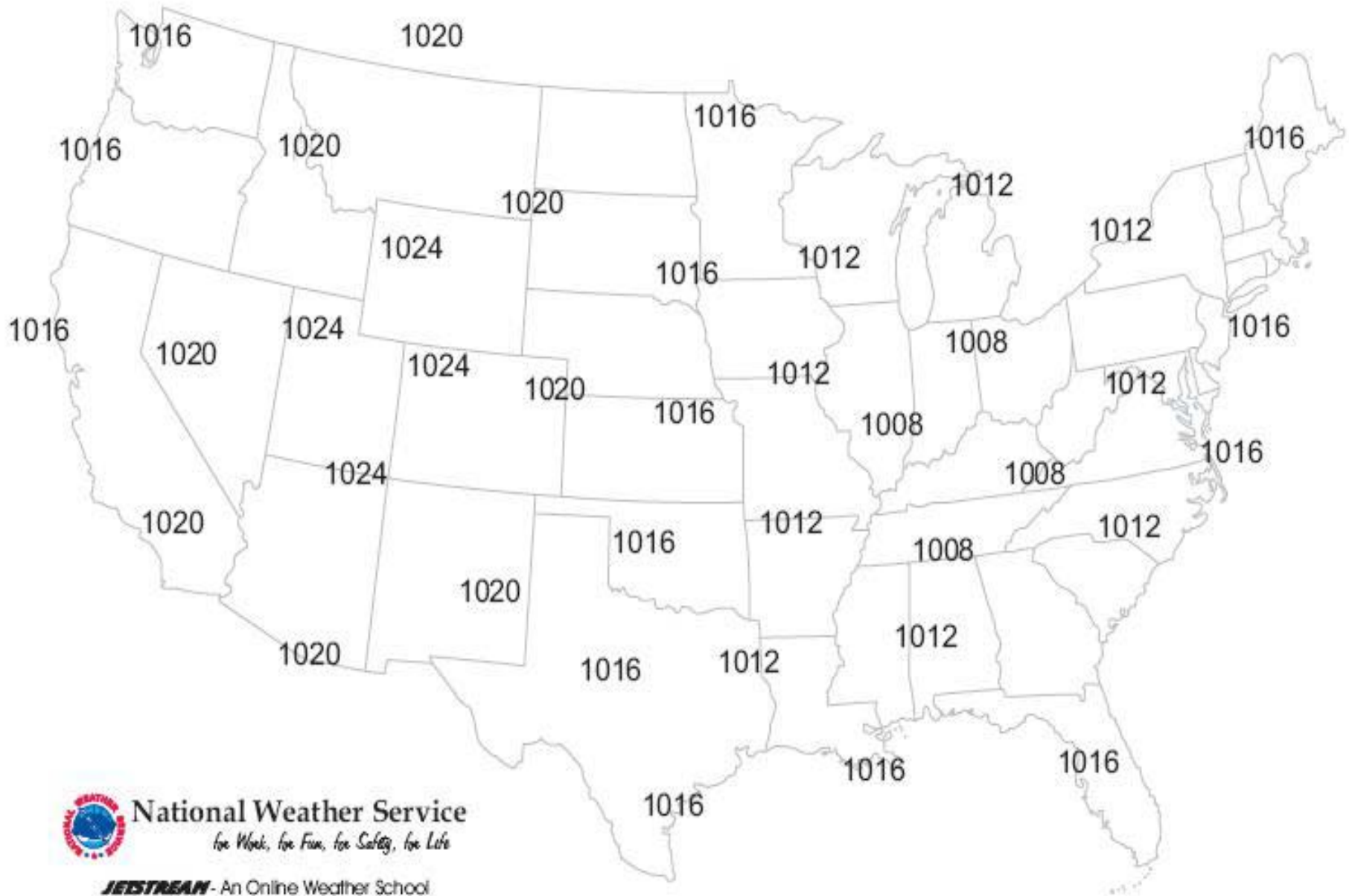
Stationary Front



Mapping Exercise

- Draw and analyze a surface weather map for pressure and temperature, and draw the fronts that are indicated by these two variables.
- Discuss our results.

Surface Pressure



National Weather Service

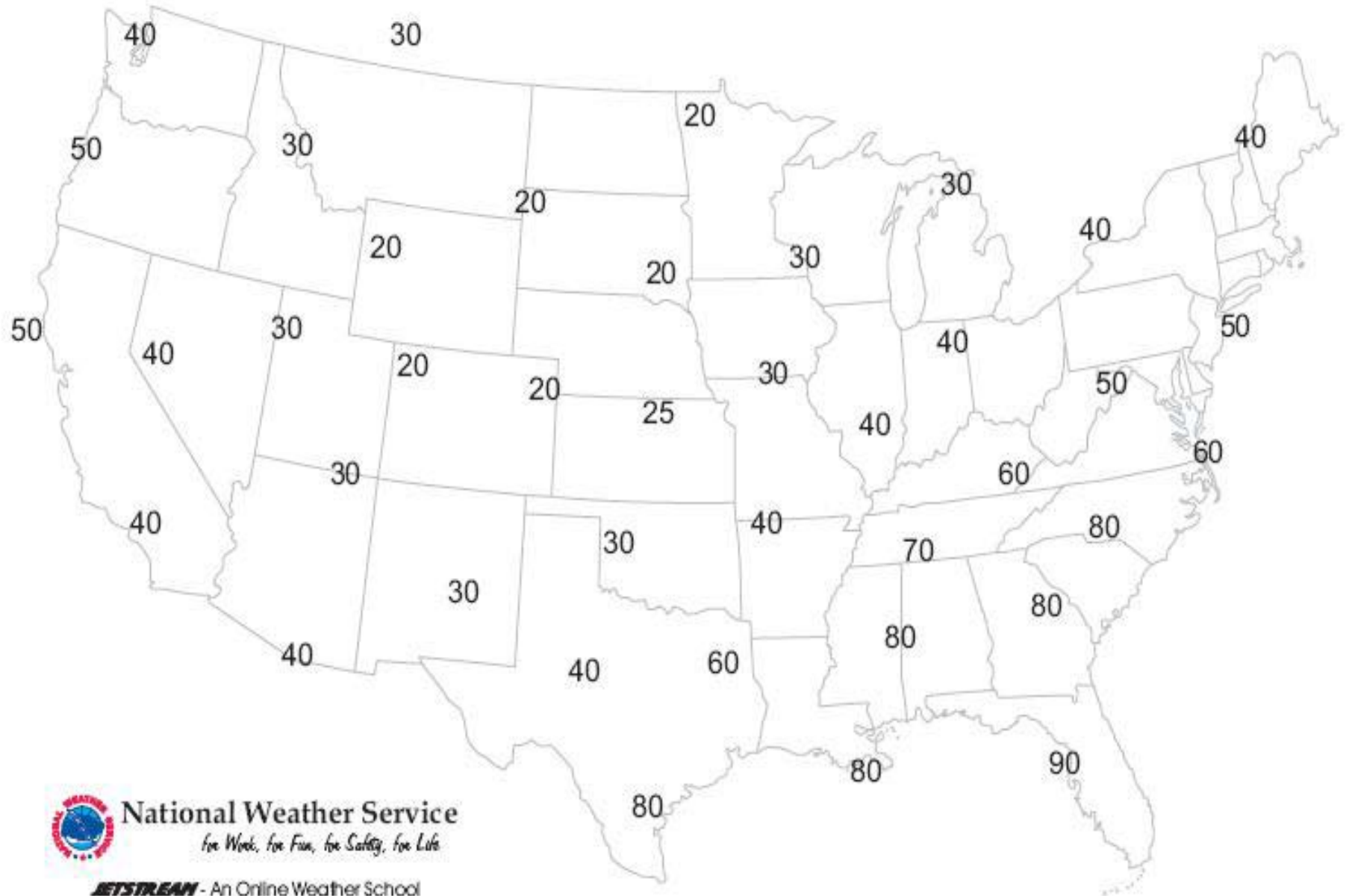
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JETSTREAM - An Online Weather School

Learning Lesson: Analyzing a Weather Map

<http://www.srh.weather.gov/srh/jetstream/synoptic/images/press.pdf>

Surface Temperature



National Weather Service

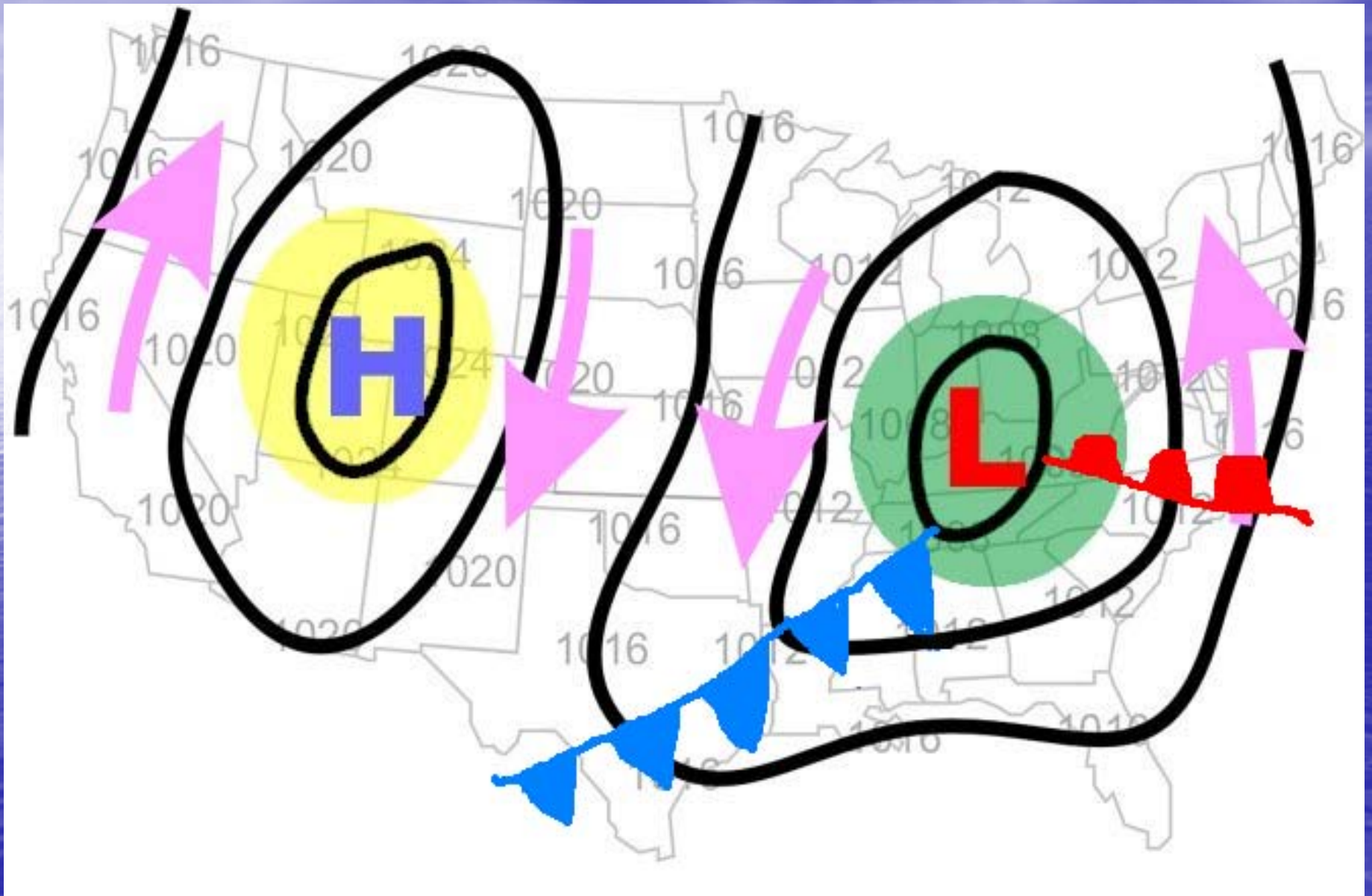
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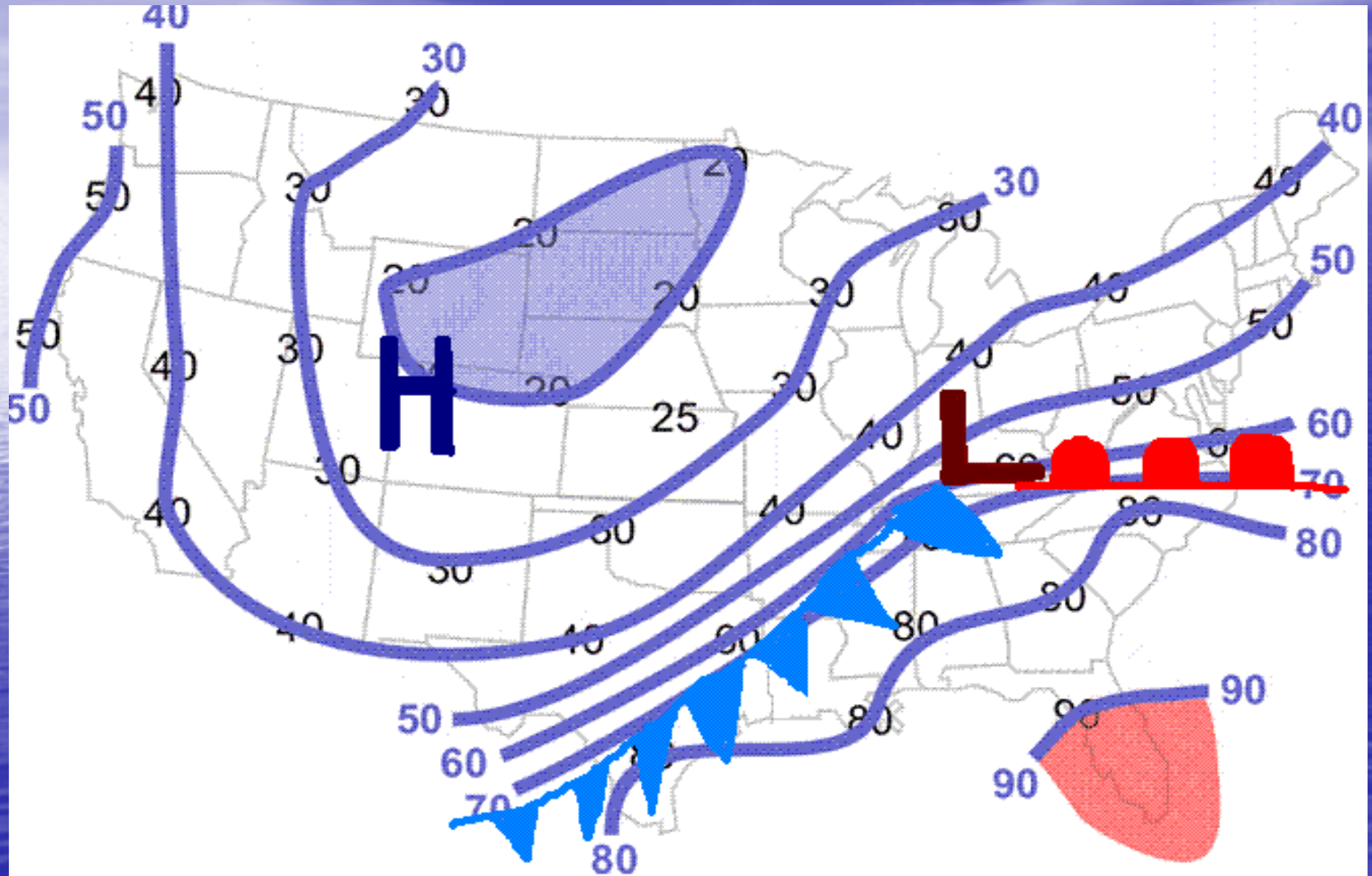
Learning Lesson: Analyzing a Weather Map

http://www.srh.weather.gov/srh/jetstream/synops/colimages/temp_large.pdf

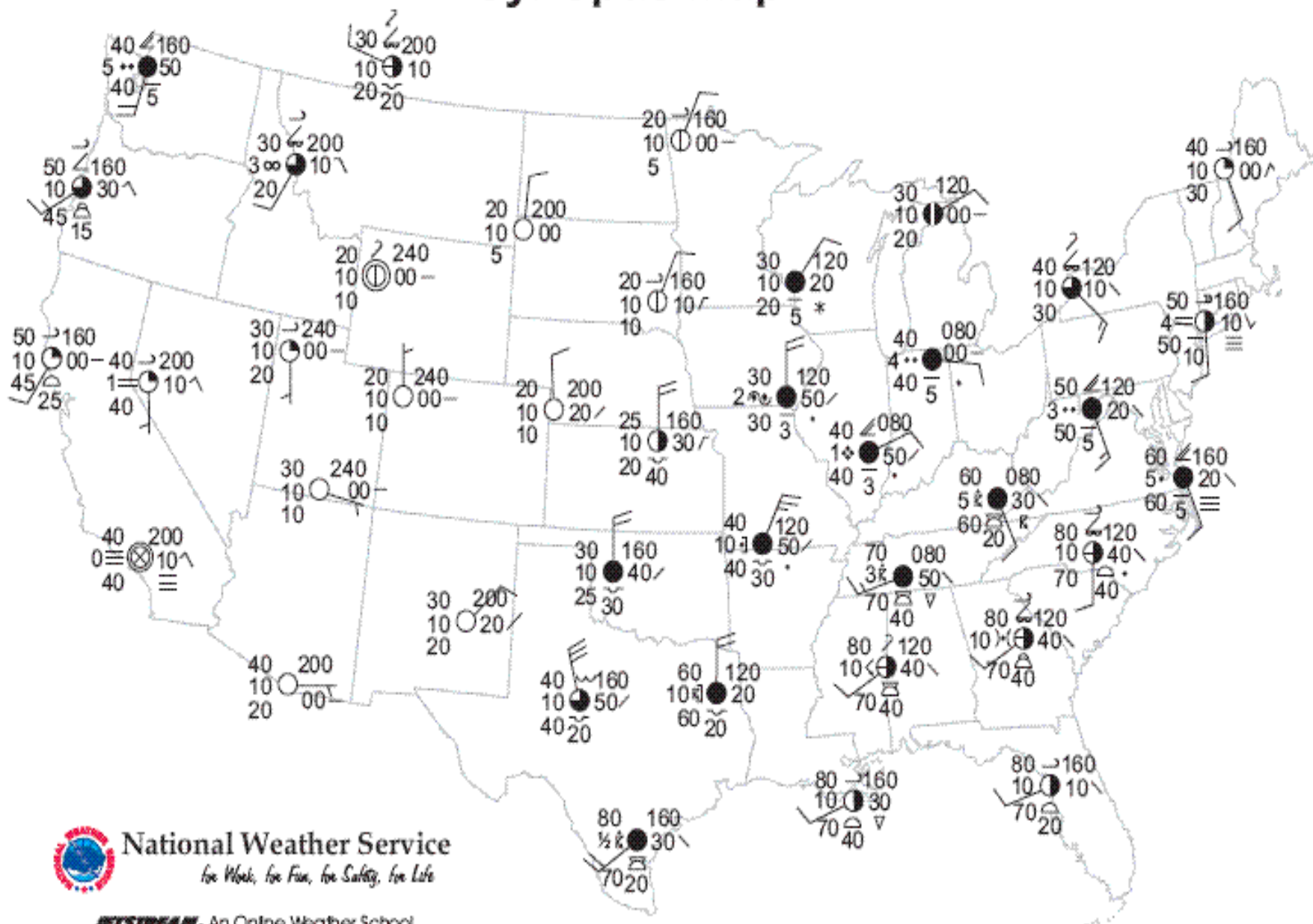
Pressure/Front Map



Temperature/Front Map



Synoptic Map



National Weather Service

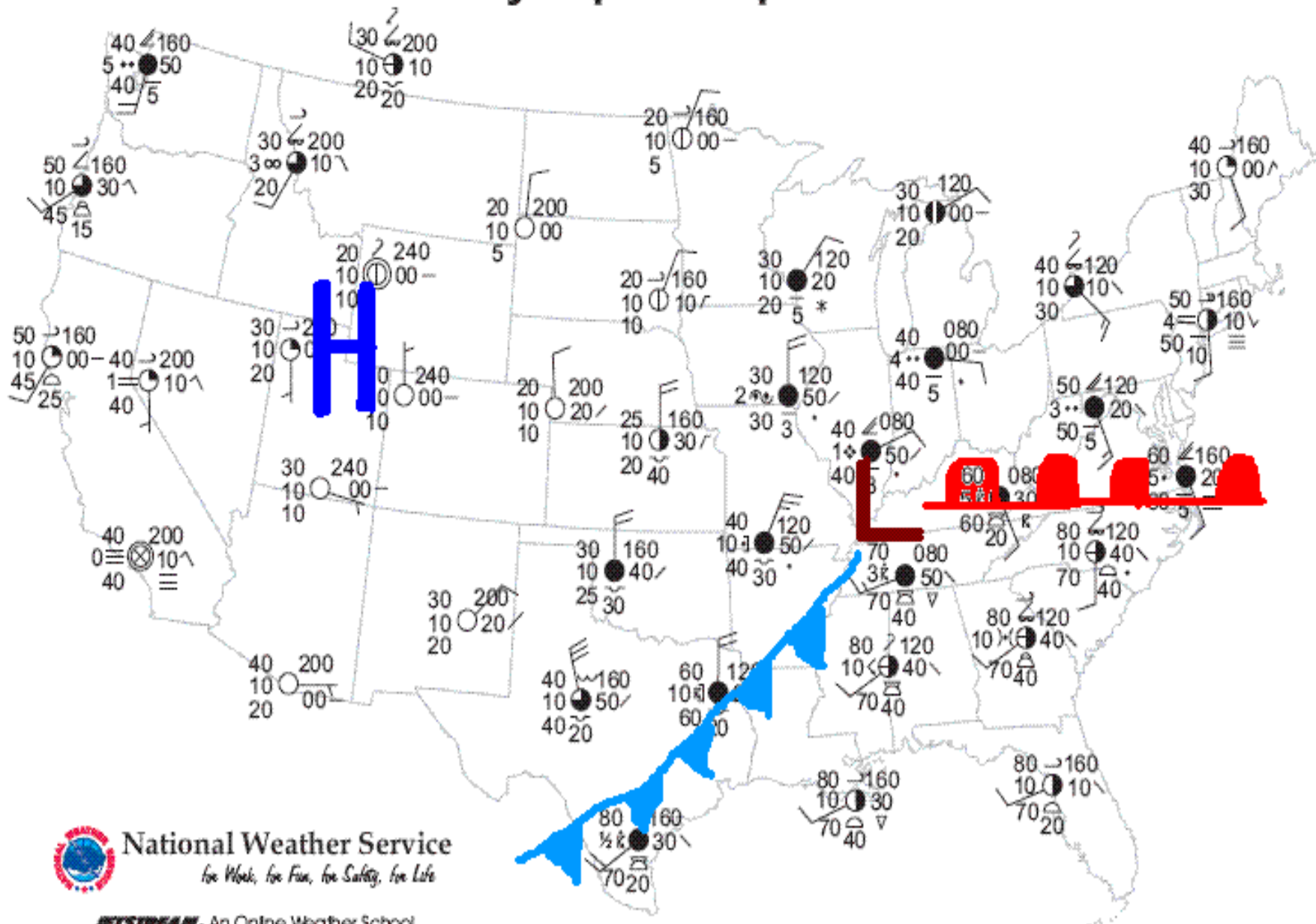
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Learning Lesson: Analyzing a Weather Map

http://www.srh.noaa.gov/wichjet/teamb/synopticofimages/synoptic_map.pdf

Synoptic Map



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Learning Lesson: Analyzing a Weather Map

http://www.srh.noaa.gov/wch/jetstream/synopticimages/synoptic_map.pdf

Acknowledgments

- *Jetstream* website – Southern Region Headquarters ,
National Weather Service

www.srh.noaa.gov/srh/jetstream

Weather Front and Pressure System Notes

Name _____	
Per _____	
Guiding Questions:	Briefly describe each answer in your own words. Include any important equations and examples.
<p>What is an air mass? List the four main air masses described in the PowerPoint.</p> <p>How are the four main air masses characterized?</p> <p>What symbols are used to represent high and low pressure systems? How does air flow around each system and what type of weather is associated with each?</p> <p>What three factors cause the wind to move in the direction that it does?</p> <p>How do clouds form?</p> <p>Where does each type of cloud form? What kind of weather is associated with each type of cloud?</p> <p>How does rain form?</p> <p>How is a cold front symbolized on a weather map? Why are thunderstorms typically associated with cold fronts?</p>	

How are warm fronts symbolized on a weather map? Why are light rains to moderate showers associated with a warm front?

How does a cold front typically move in the northern hemisphere? How does a warm front typically move in the northern hemisphere?

What are isolines? What are the rules for drawing isolines on a weather map?

Briefly summarize the entire page in your own words. (You do not have to be exhaustive.)