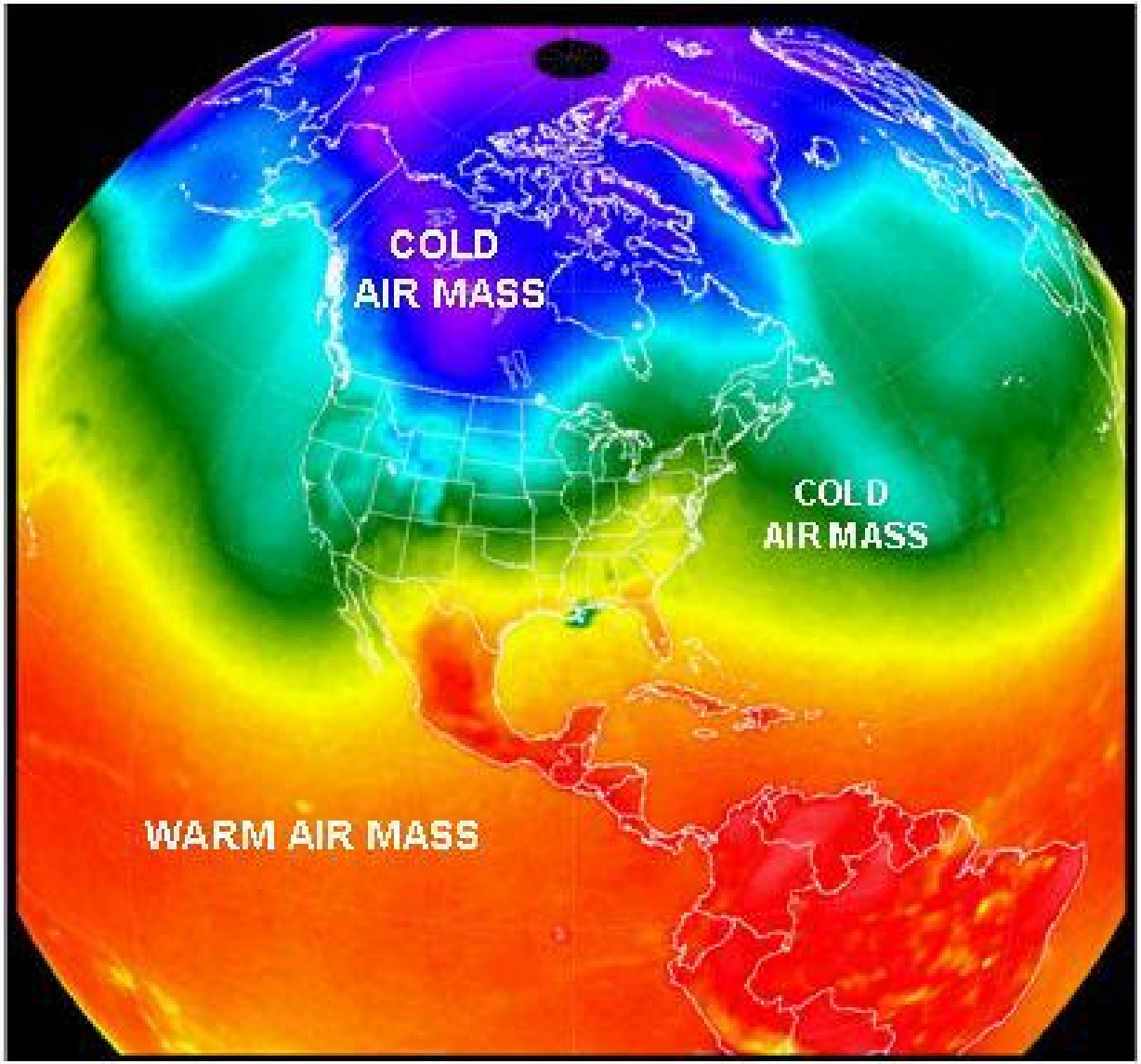
Air Masses and Fronts

Wind

- Wind is the movement of air from places of high pressure to places of low pressure

- Wind moves in large masses called air masses
  - **Air masses also move from areas of high pressure to areas of low pressure**

- These air masses retain the characteristics of where they form


COLD
AIR MASS
COLD
AIR MASS
WARM AIR MASS

Types of Air Masses

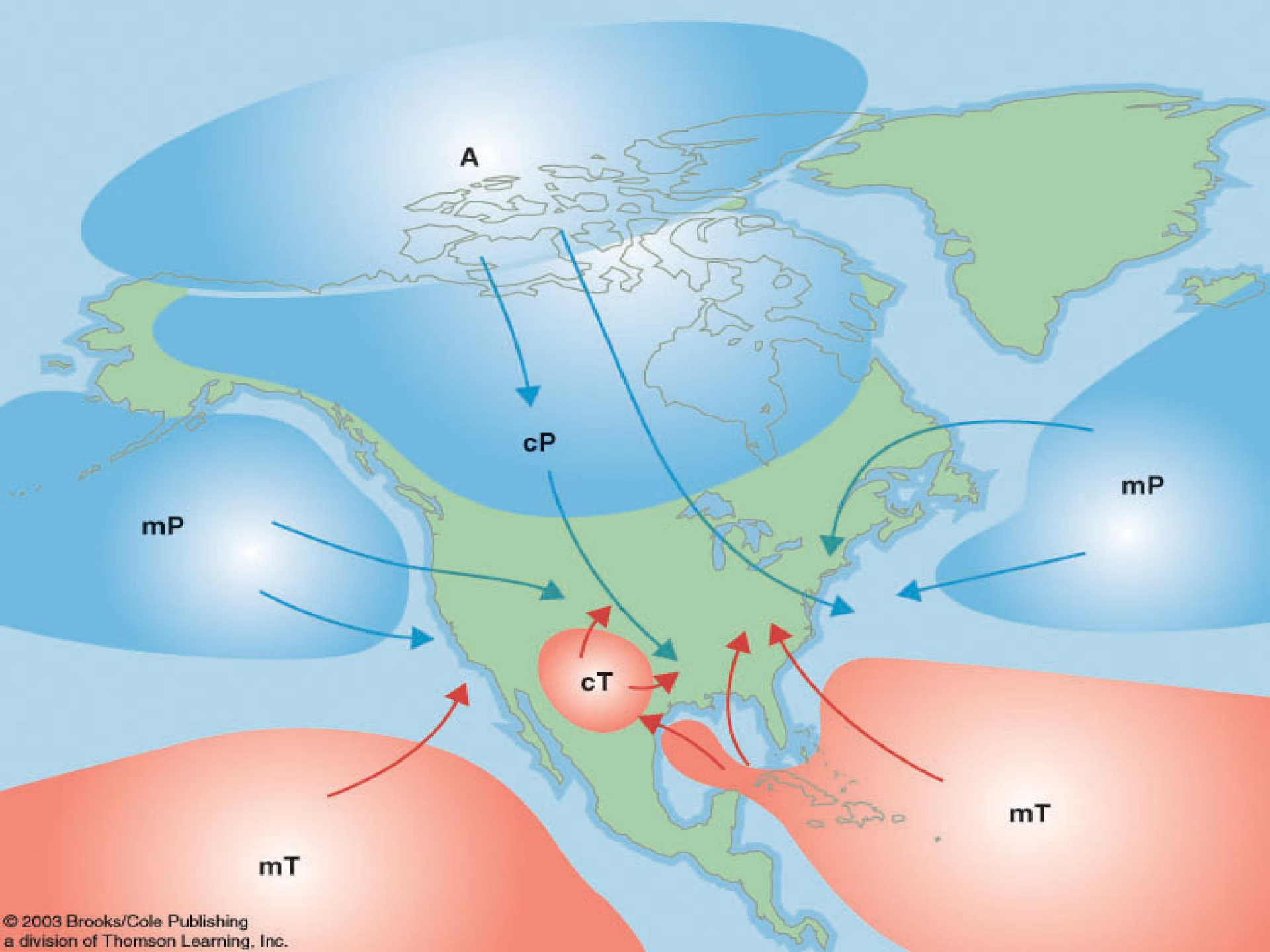
- Air masses can be described in two ways
- **<u>Moisture</u>**
- Continental (dry air) vs. Maritime (moist air)
  - Depending on if the air mass forms over land or water depends on if it carries a lot of moisture
- **<u>Temperature</u>**
- Tropical (warm air) vs. Polar (cold air) vs. Arctic (coldest air)
  - The temperature of the air mass depends on if it formed closer to the equator or closer to the poles

Putting it all together

	Continental	Maritime
Tropical	Continental Tropical: cT	Maritime Tropical: mT
Polar	Continental Polar: cP	Maritime Polar: mP
Arctic	Continental Arctic: cA	

Knowing moisture and temperature, what would the characteristics be of…

- Continental Polar (cP)?
- **Maritime Tropical (mT)?**
- Continental Arctic (cA)?

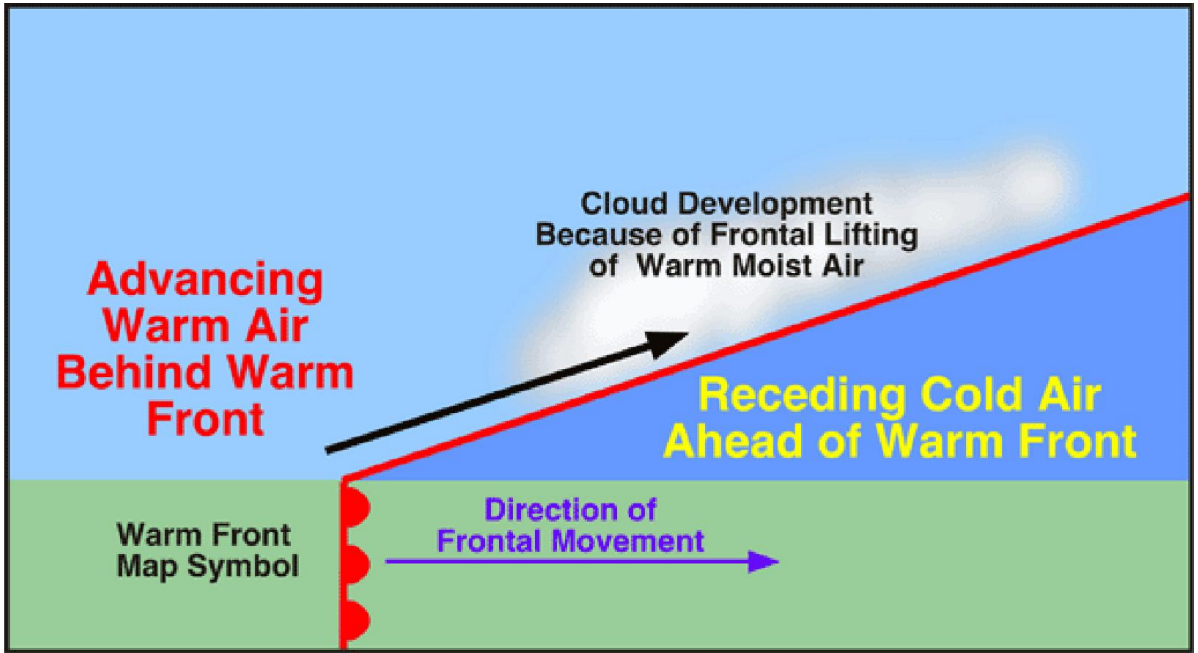


Fronts

- Front – the boundary between two different air masses
- **Along a front, warmer, less dense air is always forced upwards**
- 4 types of fronts
  - Warm
  - Cold
  - Stationary
  - Occluded

Warm Front

- A warm front occurs when warm air slowly moves into an area covered by cooler air.
- Takes a long time for warm air to displace colder air
- Marked by long and steady rain
- **Red semi-circles are symbols for warm front**

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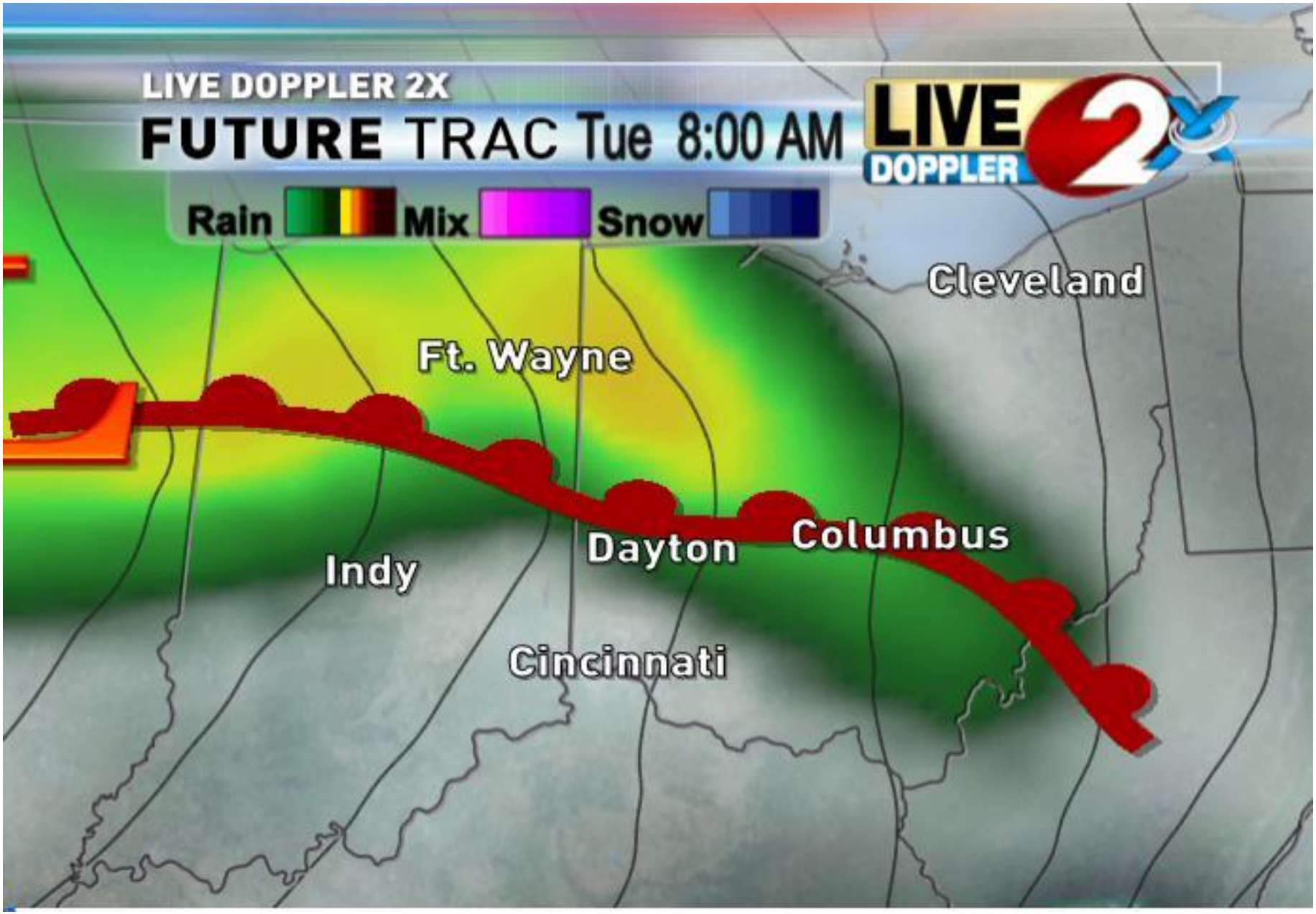
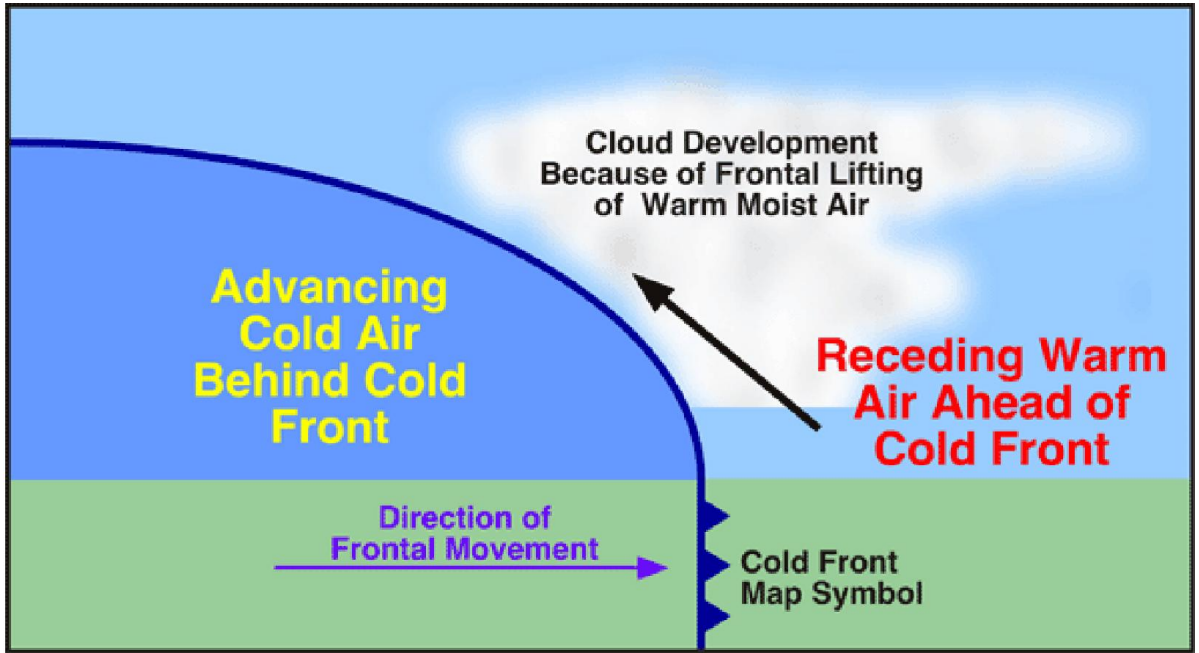

LIVE DOPPLER 2X
FUTURE TRAC Tue 8:00 AM
LIVE
DOPPLER
2
Rain
Mix
Snow
Cleveland
Ft. Wayne
Columbus
Dayton
Indy
Cincinnati

Cold Front

- A cold front forms when cold, dense air quickly moves into an area occupied by warm air
- Compared to speed of warm front, cold fronts move very fast
- **Marked by heavy precipitation/thunderstorms for a short period of time**
- **Blue triangles are symbols for cold front**

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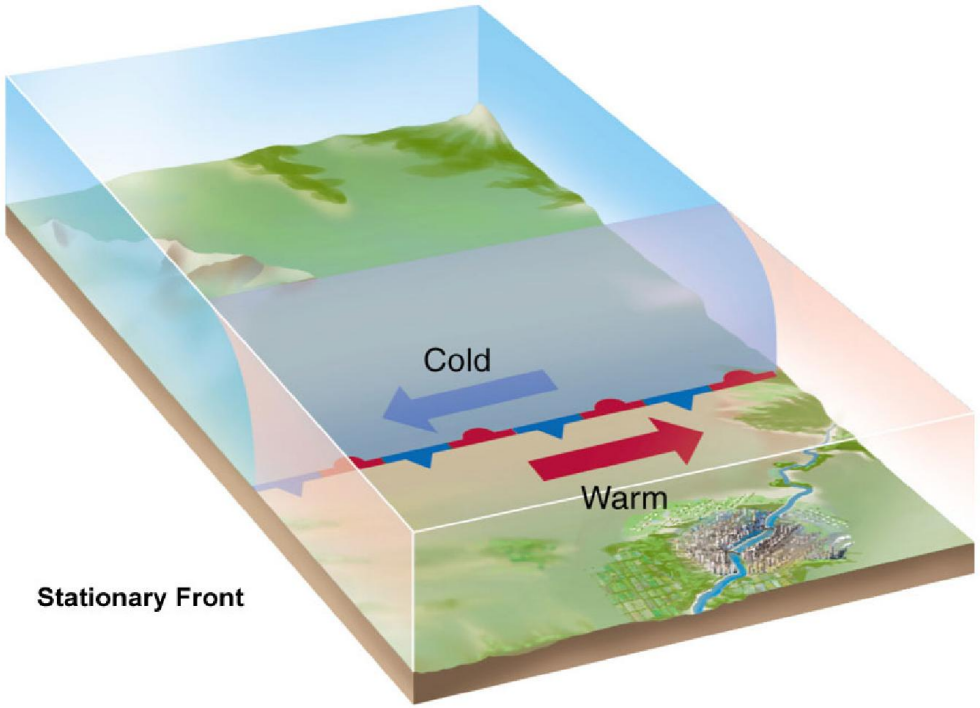
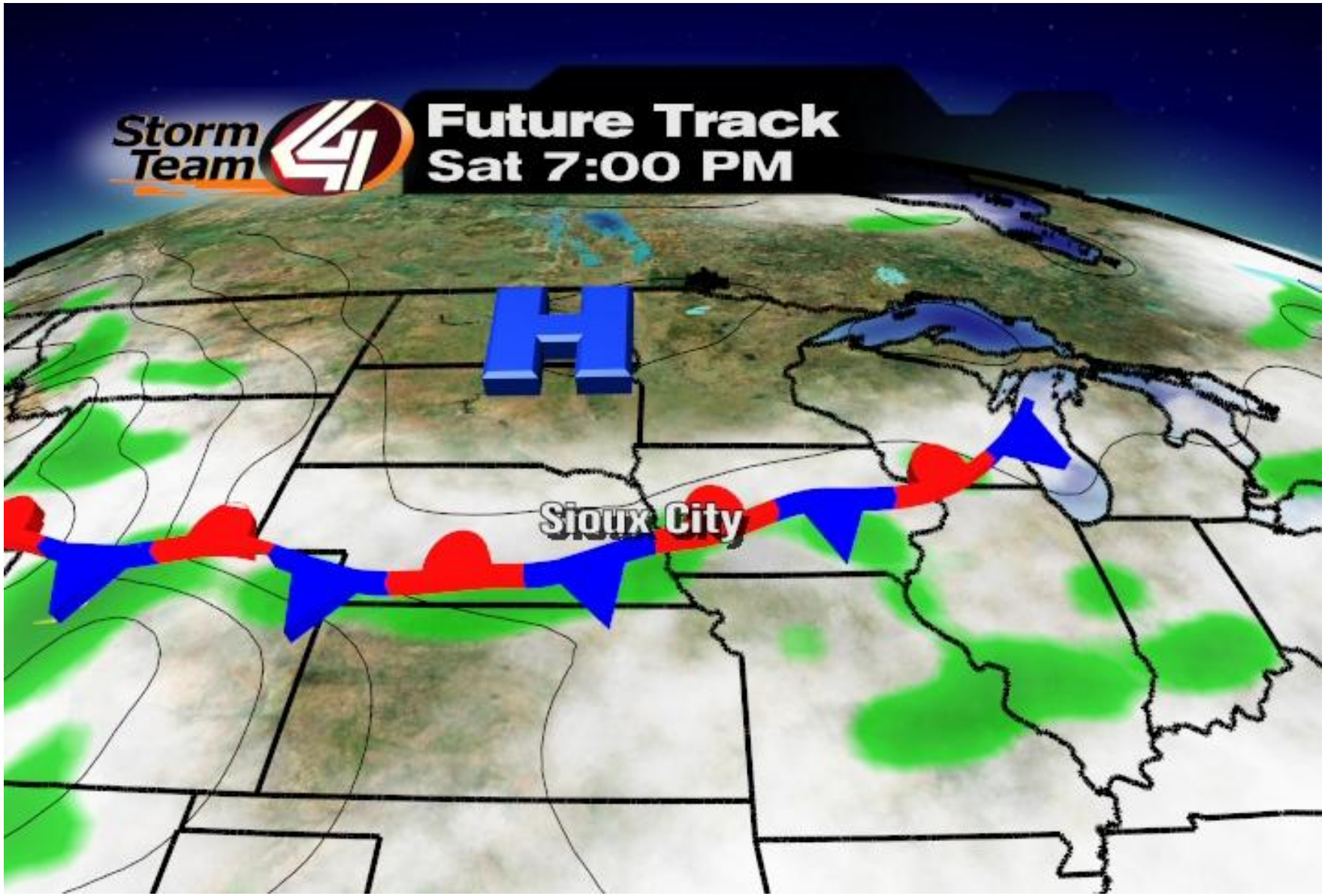
Warm air


REALTIME FORECAST
Sun 6:00 PM
Knoxville
Memphis
Chattanooga
Huntsville
Tupelo
Atlanta
Birmingham
Montgomery
STORM FORCE
WAAY
31
abc

Stationary Front

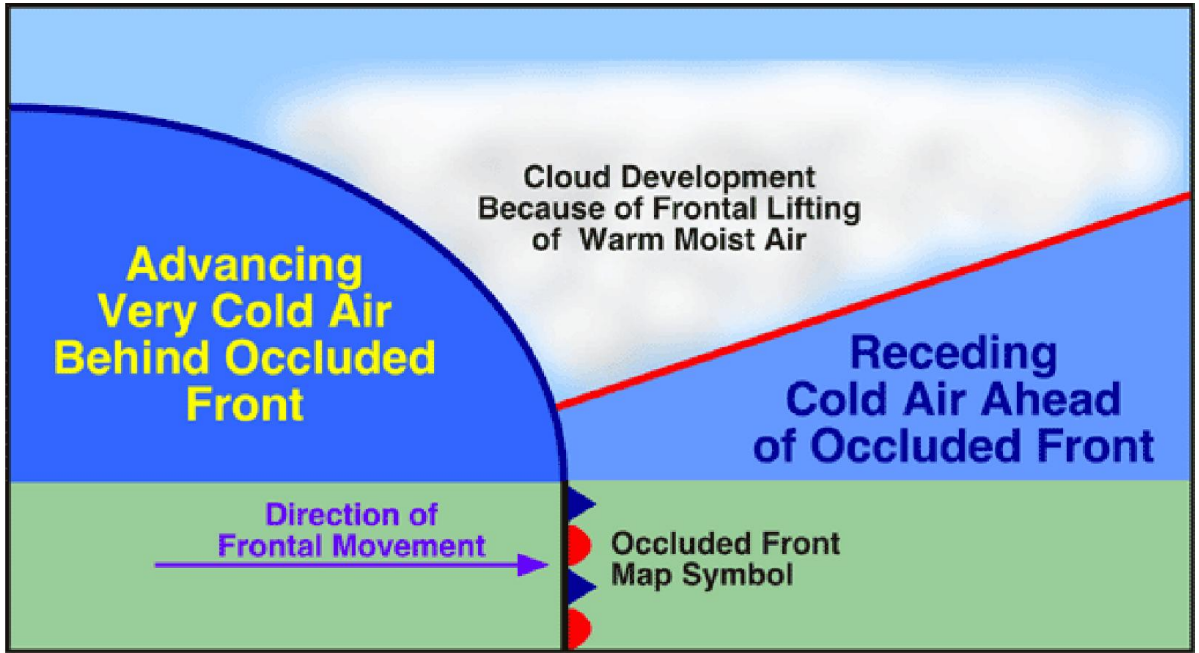
- **If fronts are not moving towards each other, but rather moving parallel a stationary front occurs.**
- Mild precipitation can occur on a stationary front
- Red semi-circles on one side, blue triangles on other

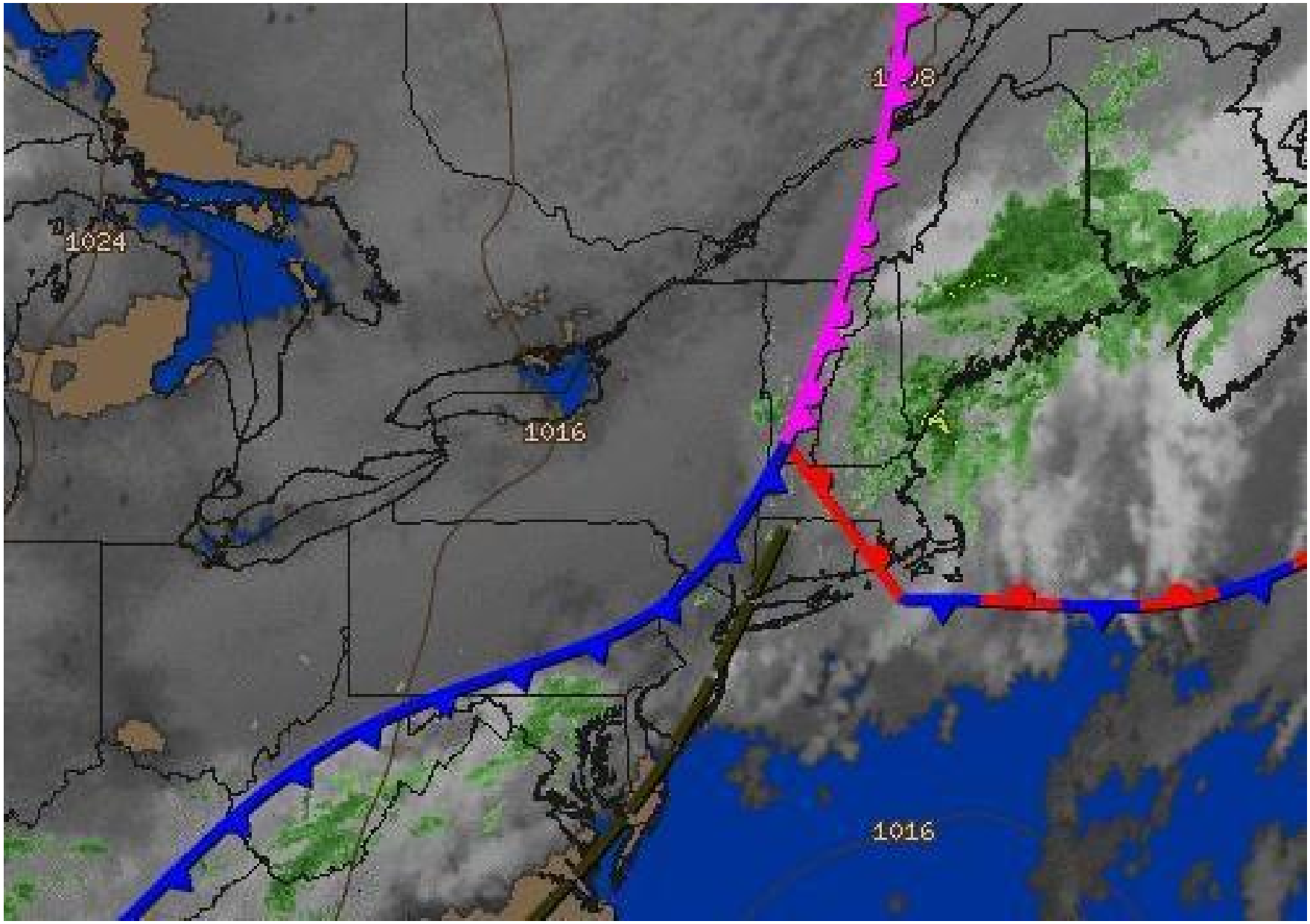



Storm Team 4
Future Track
Sat 7:00 PM
H
Sioux City

Occluded Front

- Cold fronts move faster than warm fronts
- **When an active cold front overtakes a warm front, an occluded front forms**
- This will force the warm front up into the air, which will lead to heavy rain
- Usually marked by purple semi-circle and triangles in same direction

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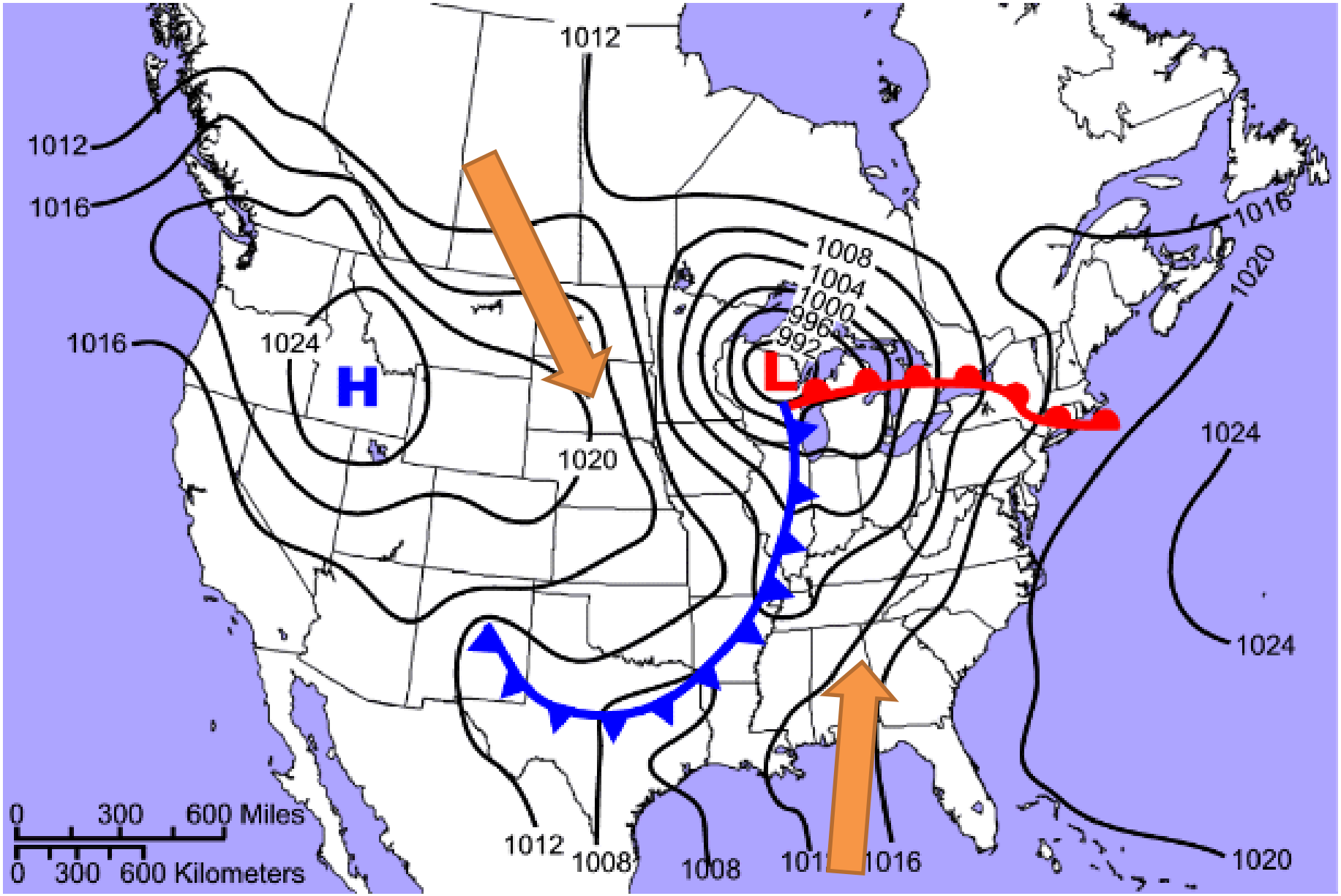

What air masses can be found moving in at each orange arrow?
What is the weather like at the H and L?