

Chap 12 Review: Polar Front Theory

- During and after which war was polar front theory first developed? Where did these people work?
- Do midlatitude storms typically form north of, on, or south of fronts? Why?
- Which season has the strongest north-south temperature contrasts in mid-latitudes and hence the strongest mid-latitude storms?
- What regions in the US are the most common places where storms develop? What are the 2 reasons why they develop there? (1 deals with heat, 1 with spin.)
- What are 3 ways in which a storm gains energy? (2 deal with rising air, 1 with a horizontal push.)

Evolution of a Storm

- Answer: Vertically, a storm gains energy by buoyancy (warm air rising, cold air sinking) and release of latent heat during precipitation. Horizontally, a storm gains energy as the pressure gradient force does work on the air, pushing it toward low pressure.
- When a storm becomes occluded, at what stage is it in its life cycle?
- Does a storm have convergence at upper or lower levels? Does it have divergence at upper or lower levels?
- When the surface pressure is decreasing, is there more convergence or divergence?

3-Dimensional Structure of a Storm

- When referring to fronts, what is the triple point?
- Where in the vicinity of the triple point is a new storm most likely to start?
- If you following the position of the center of a low upward, it tilts toward the northwest, while the center of a high tilts toward the southwest with increasing height. Why?
- What is meant by a "short-wave" disturbance in the upper atmosphere? Why do forecasters care about short waves?
- What are the main "conveyor belts" around a cold and warm front?

Intense Mid-latitude Storms

- Mature mid-latitude storms are often described as having a comma shape. What does that mean?
- When referring to fronts, what is the triple point?
- What is a nor'easter?
- Name two famous storms that were nor'easters.
- What is a polar low? Where does it form? How is it similar to a hurricane?
- How are a hurricane and a polar low different? (Be specific as to where they form, time of year, and type of precipitation.)