

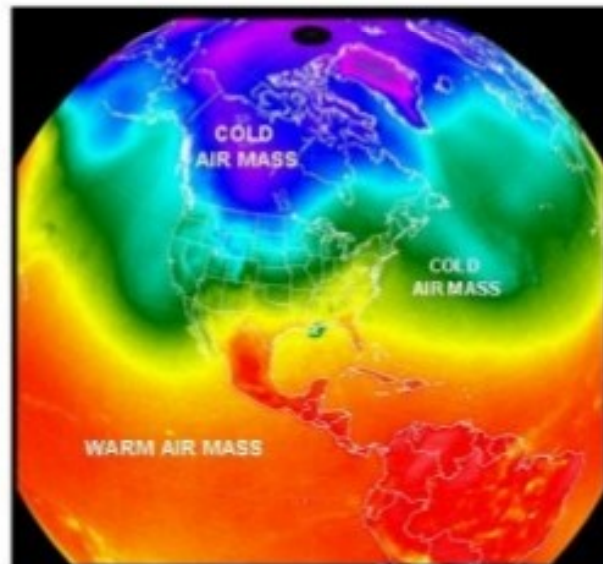
AIR MASS

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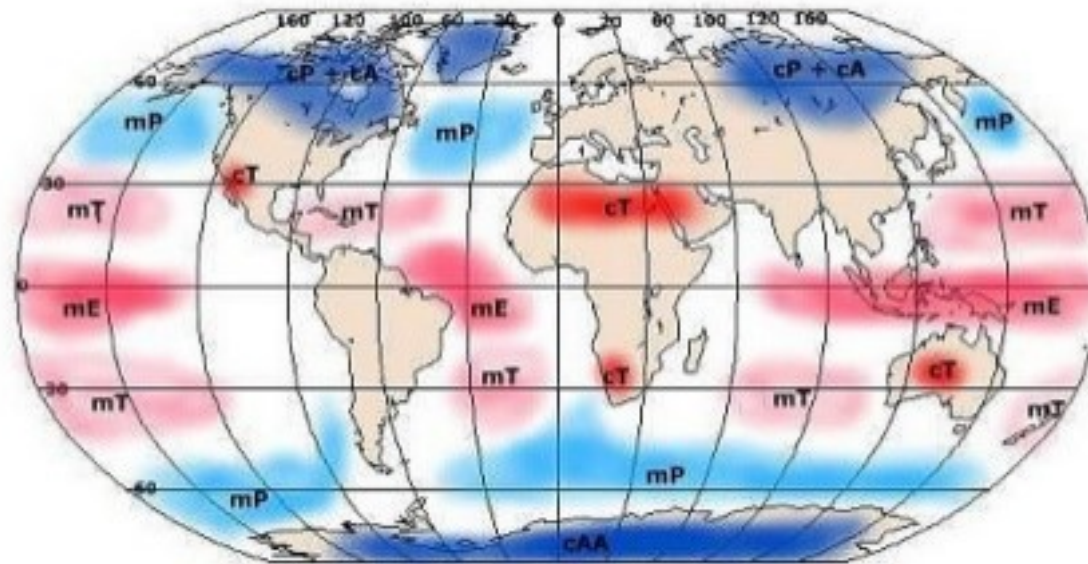
What Is An Air Mass?

- **A large parcel of air with characteristics distinguishing it from surrounding air**
 - 1000 mi (1600 km) across, several miles deep
 - Conditions of temp., humidity, stability consistent horizontally at any altitude
 - Moves as a coherent whole, not easily torn apart by local turbulence
- **Source region:** Where an air mass originates



Source Regions

- Extensive, physically uniform surface area
- High or low latitude
 - Not found in the midlatitudes (too much atmospheric activity)
- High pressure zones are common source regions (because air sinks, stays close to the ground, where it picks up surface characteristics)



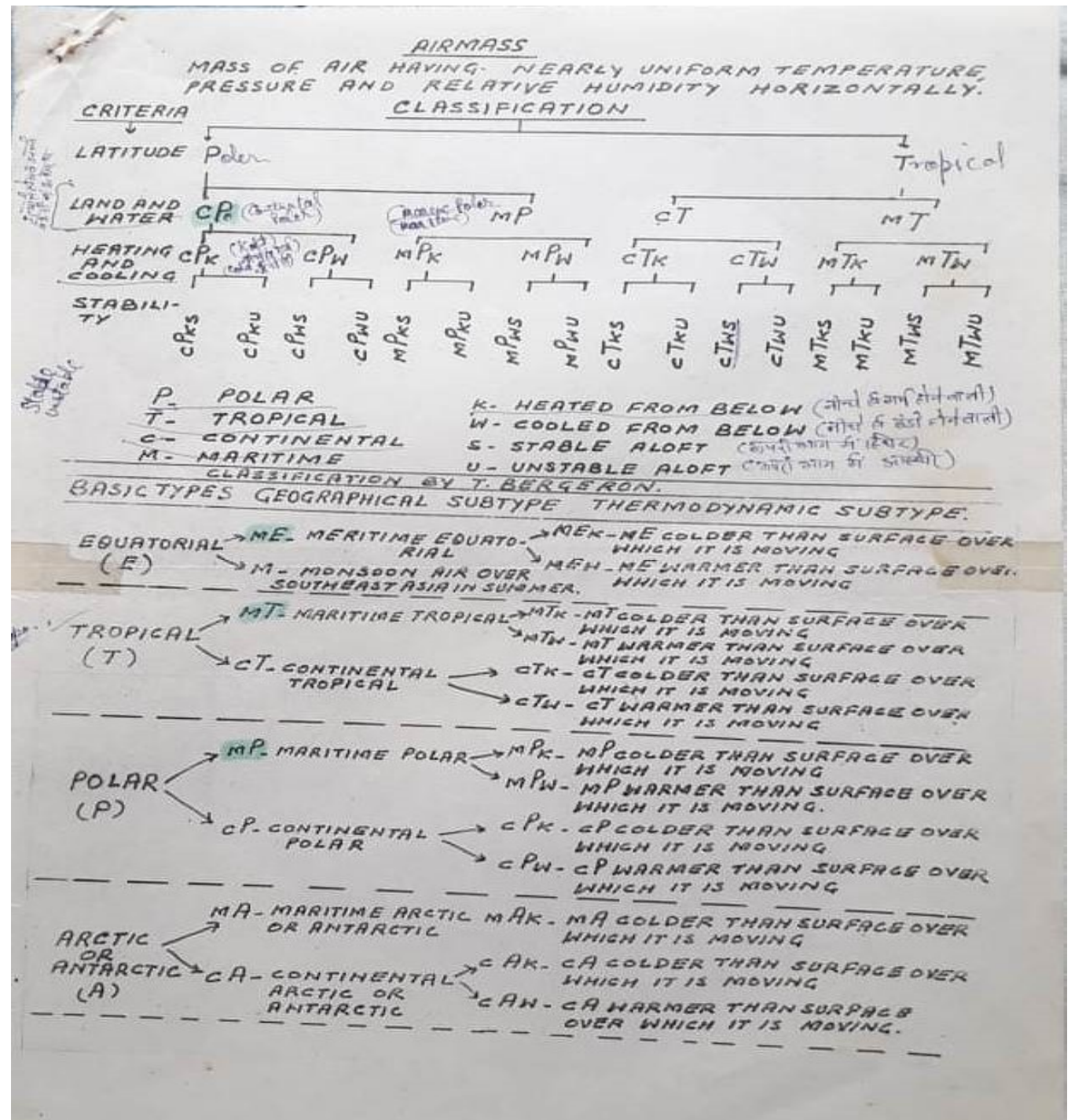
Air Mass Movement & Modification

- Once an air mass moves, it influences the regions it enters
- It is also influenced by those regions, especially in its lower section, closest to the ground



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Air Mass Classification



Air Masses Summary

- An air mass is a large body of air, 1000 miles (1600 km) thick.
- Characterized by homogenous physical properties (in particular temperature and moisture content) at any particular altitude.
- A region under the influence of an air mass will probably experience generally constant weather conditions.
- This is often referred to as air mass weather.

Air Mass Summary

- Areas in which air masses originate are called source regions.
- An ideal source region meets two criteria:
 - It must be an extensive and physically uniform area.
 - The area is characterized by a general stagnation of atmospheric circulation so that air will stay over the region long enough to come to some measure of equilibrium with the surface.

Air Mass Summary

- Once an air mass moves from its source region, it not only modifies the weather of the area that it is traversing, it is also gradually modified by the surface over which it is moving.
- Changes to stability of an air mass can result from temperature differences between an air mass and the surface and/or vertical movements induced by cyclones, anticyclones, or topography.

Air Mass Summary

- The day-to-day weather we experience depends on the temperature, stability, and moisture content of the air mass we are experiencing.
- *continental Polar (cP) and continental Arctic (cA)* air masses are cold and dry.
- *cP* air masses, although not generally associated with heavy precipitation, when they cross the Great Lakes during late autumn and winter sometimes being *lake effect* snows to the leeward shores.

Air Mass Summary

- *maritime Polar* air masses (mP) form over oceans at high latitudes and are cool to cold and humid.
- Stormy winter weather associated with the invasion of mP air from the Atlantic into the Appalachians and north of Cape Hatteras is known as a Nor'Easter.
- *maritime Tropical* (mT) air masses affecting North America most often originate over the warm water of the Gulf of Mexico, the Caribbean Sea, or the adjacent western Atlantic Ocean.