

Name: _____ Unit 3: Weather, Climate & The Atmosphere

NOTES: 3.05

FOCUS: Air Masses & Fronts

ESSENTIAL QUESTION: Can you explain what an air mass is? Can you explain how air masses cause storms?

What do you already know?

- Conditions in the troposphere change constantly and are rarely the same from day to day or location to location; this is called weather.

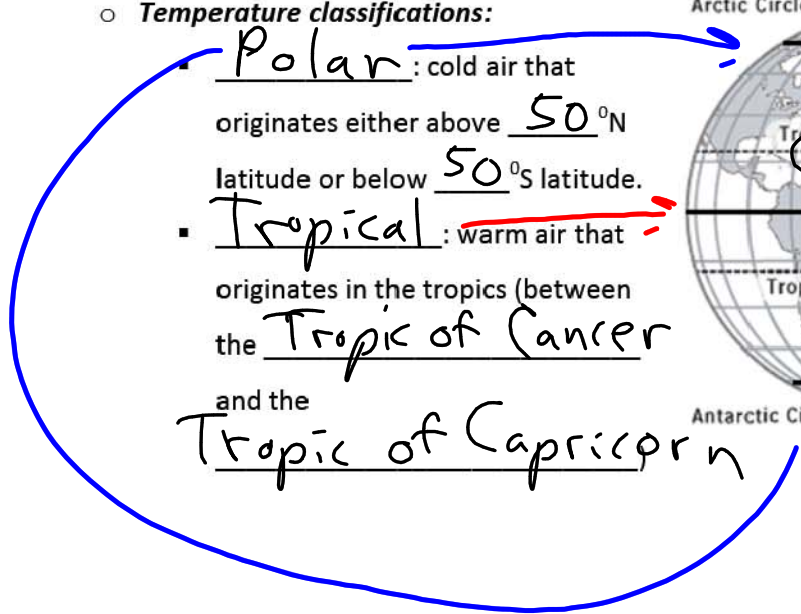
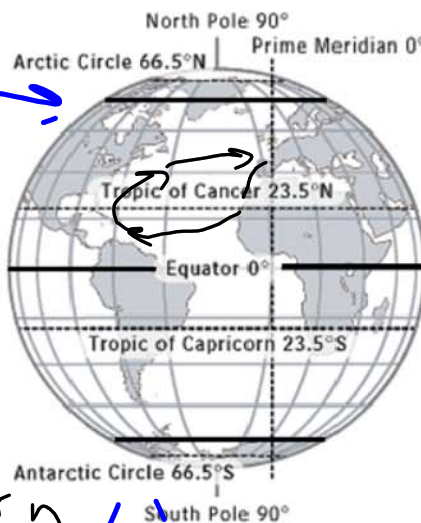
Air Masses

- An air mass is a huge body of air that has similar temperature, humidity, and air pressure throughout.
- The conditions within an air mass are determined by where it first formed.
- Meteorologists classify air masses according to temperature and humidity (or moisture).

○ Temperature classifications:



• Polar: cold air that originates either above 50°N latitude or below 50°S latitude.

• Tropical: warm air that originates in the tropics (between the Tropic of Cancer and the Tropic of Capricorn)



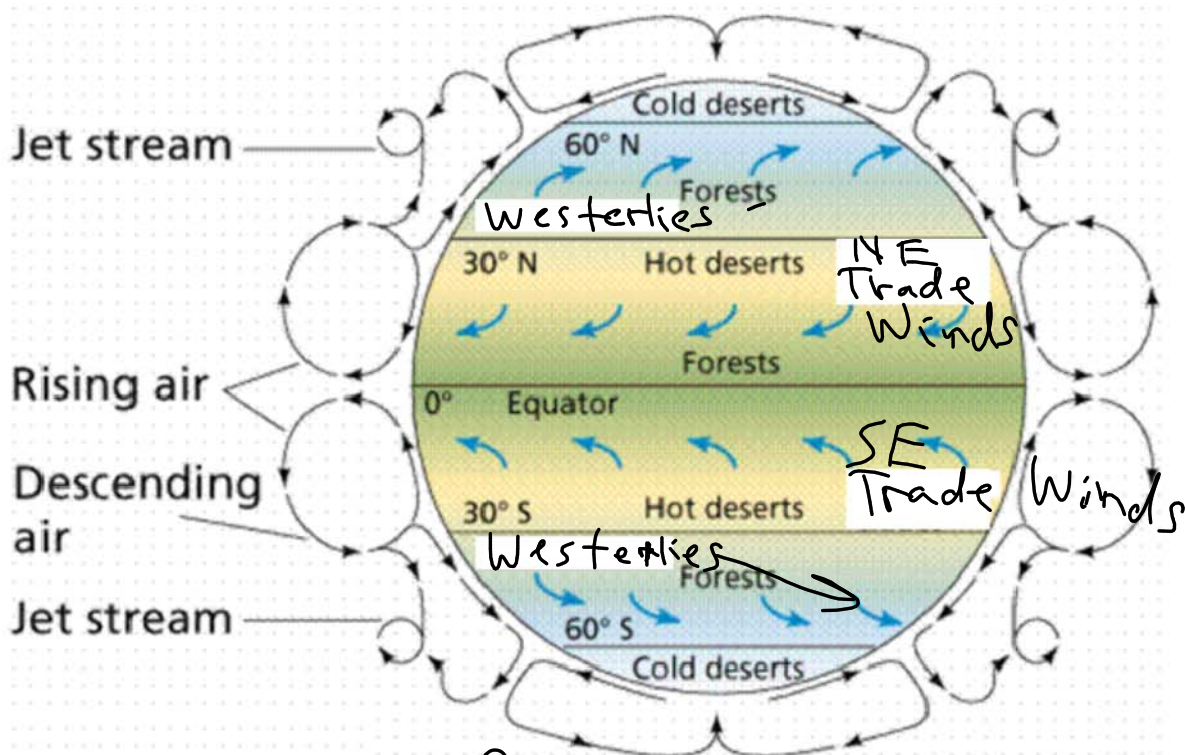
- **Humidity classifications:**
- Maritime: moist air that originates over the ocean where evaporation feeds the humidity of the air mass
 - Related to the words Marina and marine meaning "relating to the sea". (oceans)
 - Mare- is Latin for Sea.
 - Continental: dry air that originates over land

Four Types of Air Masses

		Humidity of the Air	
		Maritime	Continental
Temperature of the Air	Tropical 	warm & humid	warm & dry
	Polar 	cold & humid	cold & dry

Effects on Weather & Climate

- In the continental United States, air masses (and the weather conditions they carry) are moved by the prevailing westerlies and the jet stream.
 - The *prevailing westerlies* are the established winds that blow from west to east in the Middle latitudes (30° to 60°, both North and South).

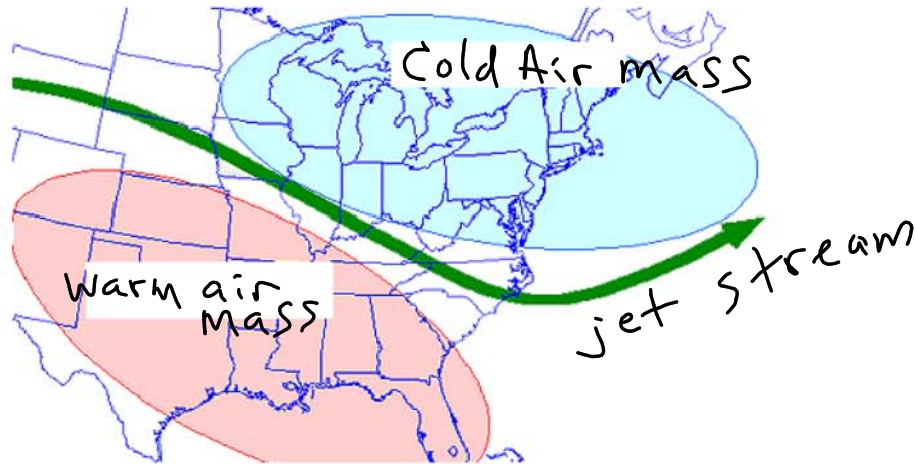


- The *jet stream* is a fast moving narrow current of air that forms in the upper troposphere
 - Produced by Earth's rotation and the uneven heating of Earth's surface.

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- Separates northern cold air masses from southern warm air masses.



- U.S climate zones are also influenced by air masses:
 - Southeast (Carolinas, Georgia, Florida, Louisiana, Mississippi, Alabama): hot, humid climate produced by air masses formed over the Gulf of Mexico
 - Southwest (Arizona, New Mexico, Nevada, Texas): hot, dry climate produced by air masses formed over Mexico
 - Northern Plains (Montana, North Dakota, South Dakota, Nebraska): cold, dry climate produced by air masses formed over Canada
 - Northwest (Washington, Oregon): cold, wet climate produced by air masses formed over the Pacific Ocean