

Topic/Objective: Water Cycle	Name: Hannah Daley
	Class/Period: AOSC200
	Date: 9/26/19

Essential Question: What is Saturation? What is humidity? What is Latent Heat?
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Questions: Summarize the water cycle	Notes: Evaporation (forming water vapor or moist air) -> Condensation (hot, moist air is lifted and cold, which causes it to condense) ->Precipitation (water is rained out) ->evaporation
What is latent heat? YOU'VE GOT TO KNOW THIS!	Latent heat =the heat required to change a phase a substance. If water is going from a vapour to liquid <u>latent heat is released into the environment</u> . If water is going from a liquid to a vapour (evaporation), then <u>latent heat is taken from the environment</u> thus cooling the environment -See earlier notes
What is saturation?	Water going from liquid to vapour (evaporation) Water going from vapour to liquid (condensation) evaporation = condensation, this is called saturation evaporation > condensation, this is called under-saturation evaporation < condensation, this is called super-saturation
How do you get water to condense	There are two ways to get water to condense and you should <u>know both!</u> 1. Increase the amount of water in the air (aka increase water vapor pressure) a. e increases and e_s stays the same, which increases RH 2. Decrease the temperature (meaning bring environmental Temp closer to the Dewpoint temp) a. e_s decreases and e stays the same, which increases RH
...But what is water vapor pressure?	<ul style="list-style-type: none"> • Vapor Pressure=The pressure (weight we feel in atm) due to the presence of water in the gas phase • Actual vapor pressure (e)=the atmospheric pressure due to water Saturation • vapor pressure (e_s)=the atmospheric pressure <u>if the air was saturated</u> • So when $e=e_s$ than the atmosphere is saturated! Another way of saying this is that the atmosphere was reached 100% relative humidity (RH) or that condensation has occurred • $RH = e/e_s \times 100$ (see the section up on how e and e_s is impacted)
What are different terms we use to describe humidity? How does humidity relate to temperature	1. Absolute humidity: the mass of water vapor per volume 2. Specific humidity: the mass of water vapor per mass of dry air 3. Relative humidity: percent of water vapor present in air compared to the maximum at saturation

	Temperature and relative humidity are “anti-correlated”. So the coldest time of the day (just after sunrise) has the highest probability of high RH and the hottest time of the day (afternoon) has the highest probability of low RH (This comes back to the second way we get water to condense)

Summary

This is a review of the first water cycle slides. Students should feel very comfortable with Latent Heat vs Specific Heat. Saturation is when evaporation equals condensation. At the saturation point, relative humidity (RH) equals 100% and condensation occurs. $RH = \frac{\text{actual vapor pressure (e)}}{\text{the pressure of the air was saturated (e}_s)}$. To saturate air we can either increase e by adding moisture to the air or decrease e_s by decreasing the temperature closer to the Dew Point.