

Topic/Objective: Lecture 2 Hurricane Dorian Discussion Weather vs Climate	Name: Hannah Daley
	Class/Period: AOSC200
	Date: 8/29/19

Essential Question: What is the difference between climate (long-term) and weather (short-term)? Does climate change matter?
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Questions: What can we measure to determine weather?	Notes: Precipitation, Temperature, Wind speed, Wind direction, etc.
What is climate?	<ul style="list-style-type: none"> Climate is the holistic (atmosphere, hydrosphere(water), cryosphere(ice)) <u>average weather/conditions</u> over several decades (typically thirty years). <ul style="list-style-type: none"> Examples of average conditions: temp, snowfall, fog, wind speed or direction, ocean height Climate change: Has the averaged weather conditions changed?
What is science? What is the scientific method?	<ul style="list-style-type: none"> Science=trying to learn why something happens Ask a question-> create a hypothesis (possible answer to the question)-> build an experiment->analyze your data <u>objectively</u>-> conclude
How is the climate changing when looking at the temperature record?	<ul style="list-style-type: none"> Again this is LONG TERM trends Overall, there has been roughly a 1 °C temperature rise since 1970 or 1850. (This would be a great exam question!)
Does 1 °C temperature change even matter? Yes! What about a 1 °C or 5 °C temperature drop?	<ul style="list-style-type: none"> Small changes have a large impact! Little Ice Age (~1400-1800 AD) experienced a 1°C temperature drop (~18000 years ago) An ice age occurred from a 5°C temperature drop
What is temperature and how is it measured?	<ul style="list-style-type: none"> Temperature=average kinetic energy (average motion) Measure temperature with a Thermometer As Temperature increases, the molecules get energized and move faster. This increases pressure and increases volume (directly related) As Temperature increases density decreases
What are tricks to understanding the ideal gas law?	$PV=RT$ P=pressure V=volume R=ideal gas constant T=temperature Trick: if two variables are on opposite sides of the equal sign than they are <u>directly related</u> , meaning as one increases the other increases. If two variables are on the same side of the equation that they are <u>inversely related</u> , meaning as one increases the other decreases.

	<p>This trick also works for density</p> $P = dRT$ <p>d = density (mass/volume)</p>
What is pressure?	<ul style="list-style-type: none"> • Pressure = Force/Area • We feel pressure all over our body from the weight of the atmosphere on us • We really notice a difference at the bottom of the pool. You feel more pressure at the bottom of a pool than the top. The same thing can be applied to the atmosphere • The atmosphere decreases with pressure logarithmically with height.

Summary

Tim spent the first 45 minutes of class discussing current weather events (Hurricane Dorian) and its impacts. You should feel comfortable discussing the weather and interpreting maps by the end of the semester. Tim proceeded to discuss what climate is and how it has changed over the last few decades. Although you will not be asked to memorize equations, you should be comfortable knowing the trends between temp, pressure, volume, and density.