

# Earth Science Unit Guide

## Unit 3: Climate

NGSS Standards:	CLASSLRs:
<p>▲ HS-ESS2-2. Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.</p> <p>▲ HS-ESS2-4. Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate.</p> <p>▲ Life has changed Earth's atmosphere, and changes in the atmosphere affect conditions for life.</p> <p>▲ HS-ESS3-5. Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.</p> <p>▲ HS-ESS3-6. Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.</p>	<p>▲ <b>Character</b> by taking ownership of your learning</p> <p>▲ <b>Leadership</b> by modeling positive behavior</p> <p>▲ <b>Attitude</b> by displaying motivation for your learning</p> <p>▲ <b>Scholarship</b> by using technology to enhance your learning</p> <p>▲ <b>Service</b> by contributing to the well-being of your community</p>

**On test day you should be able to answer all of the following questions:**

1. Explain and or draw what happens to incoming solar radiation in terms of absorption, reflection and scattering. (Percentages of each and explain in as much detail as you can)
2. What is the thermal structure and chemical composition of the atmosphere?
3. Where in the atmosphere is the ozone layer, what is its role in absorbing ultraviolet radiation, and how does it change due to natural and human activities?
4. What is the relationship between the rotation of Earth and the circular motions of air in pressure centers?
5. How do wind and pressure centers affect climate?
6. What are the El Nino and La Nina cycles?
7. What gasses cause the greenhouse effect and why is it significant?
8. Explain how an increase in greenhouse gases can cause a rise in global temperatures that melts glacial ice, and what processes lead to a further reducing of the amount of ice.
9. What are the 6 factors that affect climate and explain how 2 of them affect the climate of an area.
10. Explain what is happening to temperatures globally. What is happening, why is it happening, how do we know it's happening? (Give a thorough explanation. The more accurate information the more points)

**Investigation and Experimentation skills and concepts**

1. Be able to use appropriate tools and technology to collect data, analyze relationships, and display data.
2. Know that analyzing situations and solving problems require combining and applying concepts from more than one area of science and more than one experiment.

Vocabulary/Concepts		
Weather	Ozone layer	Coriolis Effect
Climate	Greenhouse Effect	Solar radiation
4 layers of the atmosphere	Global Warming	Feedbacks
Convection	El Nino/La Nina	Air pressure
Koppen Climate Classification System	Precipitation	High & Low pressure systems
Ocean Acidification		