

Unit 1: Weather Patterns and Human Impact

6th Grade Honors Science

15 Class Meetings

Revised October 2025

Essential Questions

- What factors influence weather conditions?
- How do humans monitor, track, and predict weather?
- How does human activity contribute to climate change?

Enduring Understandings with Unit Goals

EU 1: Within a natural or designed system, the transfer of energy drives the motion and/or cycling of matter.

- Explain the importance of water and its phases of matter.
- Examine how pressure systems affect weather patterns.

EU 2: Use models to represent systems and their interactions within systems.

- Examine how models and instruments aid in predicting weather forecast and outcomes.
- Explain how natural phenomena allow for reliable predictions, while others occur suddenly.
- Explain how the atmosphere impacts weather.

EU 3: Predict patterns of interactions among organisms across multiple ecosystems.

- Explain global warming and how humans' impact changes within their environments.
- Investigate how physical or biological components of an ecosystem affect populations.
- Analyze design solution for maintaining biodiversity and ecosystem services.

Standards

Next Generation:

- **MS-LS2-1:** Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- **MS-LS2-3:** Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystems.
- **MS-LS2-4:** Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
- **MS-LS2-2:** Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
- **MS-LS2-5:** Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
- **MS-ESS3-2:** Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
- **6-ESS3-4:** Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
- **6-ESS3-5:** Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

Common Core State Standards:

- **RI 6.1:** Cite textual evidence to support analysis of what the text says explicitly as well as inferences

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drawn from the text.

- **RI 6.3:** Analyze in detail how key individuals, events, or ideas are introduced, illustrated, and elaborated in a text.
- **RI 6.8:** Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.
- **W 6.1:** Write arguments to support claims with clear reasons and relevant evidence.
- **W 6.2:** Write informative/explanatory texts to examine and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
- **RST.6-8.:** Cite specific textual evidence to support analysis of science and technical texts.
- **RST.6-8.9:** Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
- **6.NS.C.5:** Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

ISAAC Vision of the Graduate Competencies

Competency 1: Write effectively for a variety of purposes.

Competency 2: Speak to diverse audiences in an accountable manner.

Competency 3: Develop the behaviors needed to interact and contribute with others on a team.

Competency 4: Analyze and solve problems independently and collaboratively.

Competency 5: Be responsible, creative, and empathetic members of the community.

Unit Content Overview

1. The Atmosphere

- Explain the flow of energy.
- Define climate and its role within weather.
- Compare and contrast heating and cooling.

2. Weather Patterns

- Explore states of matter with water.
- Explore how weather is tracked, measured, and predicted.
- Explain the use of natural energy's impact on Earth's climate.
- Analyze temperature change and assess its relationship to fossil fuels.
- Compare and contrast variances in climate, weather, and temperature over Earth's history.

3. Weather Forecasting

- Show how air masses move.
- Diagram air pressure and the impact on weather.
- Interpret weather fronts.
- Examine weather mapping.

Key Terms and Vocabulary: weather, atmosphere, location, unstable, climate, global warming, exosphere, thermosphere, mesosphere, stratosphere, troposphere, humidity, ozone layer, greenhouse effect, fronts,

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barometer, thermometer, anemometer, hygrometer, weather balloon, rain gauge, low pressure, high pressure, stationary, climate zone, tropical, dry, temperate, continental, polar, extreme, average, cumulus, stratus, nimbus, climate change

Interdisciplinary Connection:

Language Arts, Math, Humanities

Daily Learning Objectives with *TWPS*

Students will be able to...

- Determine what weather is and types of weather.
 - *What words would you use to define weather?*
- Investigate how weather is measured and predicted.
 - *What are the ways that weather can be reported?*
- Describe the water cycle.
 - *How does the water cycle impact weather?*
- Identify types of clouds and describe how they form and how they impact weather.
- Examine how weather fronts impact daily weather patterns.
 - *What causes various types of weather?*
- Investigate how the atmosphere impacts weather types. **
 - *What are the main gases in the atmosphere and how do they influence weather patterns?*
 - *How do scientists study the atmosphere, and what tools do they use to collect data?*
- Investigate climate zones and their impact on weather patterns. ***
 - *What is the difference between weather and climate and how are they related?*
 - *How do climate types differ around the world and how do they impact the people and animals that live there?*
 - *What factors influence climate zones?*
- Determine types of extreme weather and how they impact communities. **
 - *How do extreme weather events impact communities?*
 - *How have the ways that meteorologists track and predict extreme weather events changed?*
- Investigate the impact that humans have on climate change. ***
 - *How do humans contribute to changes in the atmosphere?*
 - *How have human activities influenced weather patterns?*

What impacts do climate change have on ecosystems?

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Instructional/ ELL Strategies/Differentiated Instruction

- Power Point Lecture with notetaking
- Guided notetaking
- Warm up activities
- Flexible grouping
- Independent reading
- Lab activities
- Exit slips
- Graphic Organizers
- Creating authentic connections for students
- Vocabulary word bank
- Rephrasing and restatement of information and concepts
- Tiered instruction
- Alternative test settings
- Reading and accountable talk discussions of texts
- Student-led instruction
- Homework assignments
- Hands-on activities
- SIOP strategies- Teachers implement SIOP strategies to introduce academic vocabulary and use multiple modes of representation including gestural, oral, pictorial, graphic and textural.

Assessments

FORMATIVE ASSESSMENTS:

- Do It Now Activities
- Guided notes
- Homework
- Daily Think-Write-Pair-Share (TWPS) Activities
- Accountable Talk Discussions
- Oral questioning
- Exit slips
- Warm Up activities
- Close reading and interpretation of text
- Performance Task – “Countries of the World” Brochure
 - Teacher Scoring Rubric

SUMMATIVE ASSESSMENTS:

- Quiz on EU 1
- Quiz on EU 2
- Performance Task – Travel Brochure

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Unit Task

Unit Task Name: Unit Task Name: “Countries of the World” Brochure

Description: Students will design a well-crafted, evidence-based travel brochure and persuasive paragraph that contains information about the climate, weather patterns, and impacts on environment for a specific country. Students will describe the location, weather patterns, and climate types of the chosen country (EU1). The brochure will present examples of human-environmental interaction and impacts on the weather and climate (EU3). Students will present their travel brochure with a persuasive speech.

Evaluation: Teacher Scoring Rubric

Unit Resources

- Non-Fiction Text
- Internet databases
- Large format poster printer
- Google Slides
- Google Classroom
- Interactive Notebook
- NOAA website
- Lab materials
- Non-fiction articles (Honors – higher level texts)
- Newsela Articles (Honors – higher level texts)
- Pear Assessment