6.3 Weather, Climate, and Water Cycling

Content Area: **Science**
Course(s): **Science 6**
Time Period: **Marking Period 2**
Length: **40 days**
Status: **Published**

Established Goals/Standards

SCI.MS.ESS2.C	The Roles of Water in Earth's Surface Processes
SCI.MS-ESS2-5	Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.
SCI.MS.ESS2.C	The Roles of Water in Earth's Surface Processes
SCI.MS.ESS2.D	Weather and Climate
SCI.MS-ESS2-6	Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.

Technology Standards

TECH.8.1.8.A.3	Use and/or develop a simulation that provides an environment to solve a real world problem or theory.
TECH.8.1.8.A.4	Graph and calculate data within a spreadsheet and present a summary of the results.
TECH.8.1.8.B.CS2	Create original works as a means of personal or group expression.
TECH.8.1.8.C.CS1	Interact, collaborate, and publish with peers, experts, or others by employing a variety of digital environments and media.

NJ 21st Century Life and Careers/NJ Career Ready Practices

CAEP.9.2.8.B.1	Research careers within the 16 Career Clusters ® and determine attributes of career success.

Interdisciplinary Connections

ELA/Literacy -

RST.6-8.1	Cite specific textual evidence to support analysis of science and technical texts. (MS-ESS2-5)
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. (MS-ESS2-5)
WHST.6-8.8	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation. *(MS-ESS2-5)*

Mathematics -

MP.2	Reason abstractly and quantitatively. (MS-ESS2-5)
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. (MS-ESS2-5)

Essential Questions

- How do changes in one part of an Earth System affect other parts of the system?
- What predictable, observable patterns occur as a result of the interaction between Earth and the Sun?
- Why does a lot of hail, rain, or snow fall at some times and not others?

Enduring Understanding

- The Earth's atmosphere has a different physical and chemical composition at different elevations.
- The Earth's tilt, rotation, and revolution around the Sun cause changes in the height and duration of the Sun in the sky. These factors combine to explain the changes in the length of the day and seasons.
- Water cycles through the Earth systems, moving water and energy.
- Weather is a function of humidity, air pressure, and temperature.

Content

- Atmospheric levels including composition and physical traits.
- Formation of High and Low pressure areas and how they interact.
- Global wind formation because of uneven heating of the Earth's surface.
- How water moves energy as well as water through Earth's systems.
- Jetstream and its impact on weather.
- Reading weather maps and forecasting weather.
- Tornado Alley: the reason for its location.
- VORTEX 2: research of tornadoes and the winds at the ground level.

Assessments

Summative assessment:

- Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.
- Model the ways water changes its state as it moves through the multiple pathways of the hydrologic cycle.

  Collect data to serve as the basis for evidence for how the motions and complex interactions of air masses result in changes in weather conditions.

Formative Assessments

- Participation/Observations
- Questioning
- Discussion Circles
- Science Notebook
- Exit Slips
- Peer/Self Assessment
- Rubrics
- Teacher-created project-based assessment
- Turn & Talk

Alternate Assessments

- Teacher-created project-based assessment
- Alternate running records
- Discussion Circles
- Turn and Talks

Benchmark Assessments

- Teacher-created assessment

Accommodations and Modifications

Accommodations and Modifications according to student IEP, 504, I&RS goals, and/or gifted status.

Resources

- OpenSciEd
- Rutgers Project CONVERGE global warming research
- TuvaLabs