

# Pacing Guide\_ Self Contained Science -Year 2-Earth Science

Content Area: **Special Education**  
Course(s):  
Time Period: **Full Year**  
Length: **2 Semesters**  
Status: **Published**

## **General Overview, Course Description or Course Philosophy**

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*Science and engineering—significant parts of human culture that represent some of the pinnacles of human achievement—are not only major intellectual enterprises but also can improve people’s lives in fundamental ways. Although the intrinsic beauty of science and a fascination with how the world works have driven exploration and discovery for centuries, many of the challenges that face humanity now and in the future—related, for example, to the environment, energy, and health—require social, political, and economic solutions that must be informed deeply by knowledge of the underlying science and engineering.*

## **OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS**

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Earth Science What Makes the Weather Change?

Learning Set 1 What Causes a Storm? What is the universe, and what is Earth’s place in it? How and why is Earth constantly changing? How do the properties and movements of water shape Earth’s surface and affect its systems? What regulates weather and climate? How can one explain the structure, properties, and interactions of matter? How do particles combine to form the variety of matter one observes? What is energy? What is meant by conservation of energy? How is energy transferred between objects or systems?

Learning Set 2 Why Is Weather Different from Place to Place? What is the universe, and what is Earth’s place in it? What is the universe, and what goes on in stars? How and why is Earth constantly changing? How do the properties and movements of water shape Earth’s surface and affect its systems? What regulates weather and climate?

## **CONTENT AREA STANDARDS**

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SCI.MS-PS1-4	Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.
SCI.MS-PS3-5	Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.
SCI.MS-ESS1-1	Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.
SCI.MS-ESS2-4	Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.
SCI.MS-ESS2-5	Collect data to provide evidence for how the motions and complex interactions of air

SCI.MS-ESS2-6

masses result in changes in weather conditions.

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.

## **RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion Standards are Required)**

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MA.7.RP.A.2	Recognize and represent proportional relationships between quantities.
LA.RST.6-8.1	Cite specific textual evidence to support analysis of science and technical texts.
LA.RST.6-8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
LA.RST.6-8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
LA.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.
LA.WHST.6-8.1	Write arguments focused on discipline-specific content.
LA.WHST.6-8.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.
LA.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.
SCI.MS.PS3.D	Energy in Chemical Processes and Everyday Life  The chemical reaction by which plants produce complex food molecules (sugars) requires an energy input (i.e., from sunlight) to occur. In this reaction, carbon dioxide and water combine to form carbon-based organic molecules and release oxygen.
TECH.9.4.8.CI.1	Assess data gathered on varying perspectives on causes of climate change (e.g., cross-cultural, gender-specific, generational), and determine how the data can best be used to design multiple potential solutions (e.g., RI.7.9, 6.SP.B.5, 7.1.NH.IPERS.6, 8.2.8.ETW.4).
TECH.9.4.8.CI.2	Repurpose an existing resource in an innovative way (e.g., 8.2.8.NT.3).
TECH.9.4.8.CT.1	Evaluate diverse solutions proposed by a variety of individuals, organizations, and/or agencies to a local or global problem, such as climate change, and use critical thinking skills to predict which one(s) are likely to be effective (e.g., MS-ETS1-2).
TECH.9.4.8.CT.3	Compare past problem-solving solutions to local, national, or global issues and analyze the factors that led to a positive or negative outcome.

## **EVIDENCE OF LEARNING**

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### **Formative Assessments**

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MS - PS1-4:

Earth Science 2 – What Makes the Weather Change? Activity 2.2: A Little Heat from Me to You, Reading

2.2: Why Does Conduction Matter?, Activity 3.1: How Do Differences in Temperature Affect Air Masses?, Activity 3.2: What Happens When Air Is Heated or Cooled?

MS - PS3-5:

Earth Science 2 – What Makes the Weather Change? Activity 3.3: Why Heat Rises, Reading 3.3: Why Learn about Convection?

MS - ESS1-1:

Earth Science 2 – What Makes the Weather Change? Activity 7.3: Does the Earth's Shape Affect Temperature?, Activity 7.4: Does the Angle That Light Hits the Earth Affect Intensity?, Activity 7.5: Can We Explain the Pattern in the Data?, Reading 8.2: Day and Night, Activity 8.3: Does a Tilted Earth Explain the Seasons?, Reading 8.3: Seasons of the Year, Activity 8.4: Why Is the Temperature Not the Same Everywhere?

MS - ESS2-4:

Earth Science 2 – What Makes the Weather Change? Activity 4.3: Is a Storm Cloud Different from Other Clouds?

MS - ESS2-5:

Earth Science 2 – What Makes the Weather Change? Activity 1.2: Setting Up the Driving Question Board (DQB), Reading 1.2: What Can Clouds Tell Us about Weather?, Activity 2.1: It Is Heating Up, Activity 4.1: Constructing a Barometer, Activity 4.2: Does How Large the Difference in Temperature between Air Masses Affect How the Air Moves?, Activity 5.1: What Can Weather Maps Tell Us?, Reading 5.1: How Do Scientists Get the Data?, Activity 5.2: Creating an Isobar Map, Activity 6.1: Can We Identify Patterns in Data?, Activity 6.2: Can the Storm Model Explain the Data?, Reading 6.2: Is It Going to Snow or Rain or...?

MS - ESS2-6:

Earth Science 2 – What Makes the Weather Change? Activity 1.1: Identifying Weather Conditions around the World, Activity 7.1: How Can We Compare Cities on Earth?, Activity 7.2: Do the Number of Daylight Hours Vary in Different Locations on Earth?, Homework 7.5: Does the Data Match the Explanation?, Activity 8.1: Does the City Data Match the Visualizations?, Activity 8.2: How Does the Earth Move?

## **Summative Assessments**

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- Benchmark Assessments
  - Multiple Choice Assessment administered at the end of each marking period.

### Alternative Assessments

- Oral Presentations
- Questions for Comprehension

- Performance Tasks
- Scientific Journals/Notebooks
- Self-Assessment
- WebQuests

## **RESOURCES (Instructional, Supplemental, Intervention Materials)**

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IQWST Unit Materials for Earth Science 3, Learning Sets 1 - 2

*A Framework For K-12 Science Education*

Online Resources provided by IQWST not included in the program (to be used as support/reinforcement/enrichment): [https://docs.google.com/spreadsheets/d/1VpyFCL4\\_50\\_-1w2NhcGpdNNZ2jj6aJJegcIUNCy\\_uzQ/pubhtml](https://docs.google.com/spreadsheets/d/1VpyFCL4_50_-1w2NhcGpdNNZ2jj6aJJegcIUNCy_uzQ/pubhtml)

## **INTERDISCIPLINARY CONNECTIONS**

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Collaboration with Math and Language Arts teachers is an essential part of the IQWST curriculum.

Information Writing

Current Events

Topography

Data collection/analysis

Computations

Statistics

Engineering

## **ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS**

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See link to Accommodations & Modifications document in course folder.

IQWST provides audio recording for all readings in student workbook-available through teacher portal online

Reading differentiation strategies are embedded in the IQWST program and all students prepare for reading through a 'Getting Reading' section which begins each reading.

The sections are designed to engage students, generate interest, activate prior knowledge and provide a purpose for reading. Teachers use advance organizers for desired readings and to encourage students to plan and annotate the passages.

A word wall is developed through vocabulary acquisition in the program. Students develop the word wall as words are learned in context and through experience in class. This helps to build meaning and understanding which support students when reading text.

Students are encouraged to ask questions and post them to the Driving Question Board. This DQB helps students develop a greater level of understanding and encourages students to work together to solve problems in and outside of class.

Support will be provided to students when writing in the student manual and use of the computer, printing, and pasting into the manual is acceptable if there is a present need.