# EPSD Curriculum and ▲◗● HMH SCIENCE DIMENSIONS 2018 Alignment TEMPLATE

## GRADE 3

**EPSD Unit 1: Weather and Climate**
**First Marking Period**

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| **Overview:** In this unit of study, students organize and use data to describe typical weather conditions expected during a particular season. By applying their understanding of weather-related hazards, students are able to make a claim about the merit of a design solution that reduces the impacts of such hazards. The crosscutting concepts of patterns, cause and effect, and the influence of engineering, technology, and science on society and the natural world are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in asking questions and defining problems, analyzing and interpreting data, engaging in argument from evidence, and obtaining, evaluating, and communicating information. Students are also expected to use these practices to demonstrate understanding of the core ideas. This unit is based on 3-ESS2-1, 3-ESS2- 2, 3-ESS3-1, and 3-5-ETS1-1. | **HMH Science Dimensions Program Resources** |

| HMH Science Dimensions Program Resources |
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| **Unit 7: Weather and Patterns**<br>**Unit Video** (lightning striking from the clouds); **Unit Overview** p. 399; **Vocabulary** p. 401; **Making Connections** p. 401J; **Unit Project** p. 401K; **Unit Performance Task** pp. 488-489; **Unit Review** pp. 490-492 |
| **Standard for all Units:** Interactive Glossary (D); Leveled Readers (D); Beginning-of-Year Test (D/P); Unit Pretest (D/P); Lesson Quizzes (D/P); Unit Test (D/P)<br><br>**Note:** Refer to the Curriculum Alignment Common Language (CACL) Guide to decipher acronyms. |

| **Standards:** (3-ESS3-1) Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. (3-ESS2-2) Obtain and combine information to | **Instructional Days:** 15-20 |
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| Lesson 1: How is Weather Measured? pp. 402-421 | Lesson 2: How Can We Predict the Weather pp. 422-443 | Lesson 3: What Are Some Severe Weather Impacts? pp. 444-465 | Lesson 4: What Are Some Types of Climates? pp. 466-487 |
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| D/P- CYEI (digital picture) A student exploring a room to discover objects. p. 403<br><br>P- ENB (prompt) Think about the kind of clothes Angela will need | D/P- CYEI (digital picture) Maritza is going outside to play with her friends. Students click on spots to learn more about what's happening in the image. p. 423 | D/P- CYEI (video) A machine that makes air swirl over the roof of a model house. p. 445<br><br>P- ENB (prompt) What do you think the machine in the | D/P- CYEI (video) Blue penguins p. 467<br><br>P- ENB (prompt) Where would be a good location for scientists to start a preserve to relocate |

describe climates in different regions of the world. (3-ESS3-1) Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard. (3-5-ETS1-1) Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time or cost.

**Objective 1:** Students will be able to evaluate ways meteorologists measure weather elements by designing and using their own weather instrument. They will collect data to see changes and patterns in weather.

**Objective 2:** Students will demonstrate understanding about weather forecasting and map reading (e.g., drawing conclusions about effects of weather, comparing and contrasting different weather forecasts, using maps to analyze different weather conditions, completing an online weather script, and writing a first-person report from the center of a storm).

**Objective 3:** Students will be able to demonstrate the difference between weather and climate.

for the weather that's coming, what should she pack? p. 403
D/P- Different Weather (Students watch video to discover about weather.) pp. 404-405
D/P- LS Students recall a type of weather they have been in and explain what type of weather it was and what it was like. p. 405
D/P- Measuring Weather (Students take a close look at different tools used to measure weather.) p. 406
P- AWYK HO Activity Wind Pictures (Students research the Beaufort Wind scale to find out how many levels of

P- ENB (prompt) It is January in the picture, but Maritza is going outside in shorts and a T-shirt. Why did she make this choice? p. 423
D/P- Things Change (Students explore weather changes.) p. 424
P- ENB (prompt) Students record the temperature data of Chicago and examine the temperature for each month. Students identify what patterns they notice and predict what the average temperature will be in Chicago in June. p. 424
D/P- LS Data Tables (Students look at data on the previous page and describe two weather conditions that change over

picture is for? Why is it swirling air over the top of the model house? p. 445
P- AWYK HO Activity The Answer Is Blowing in the Wind (Students blow gently and then with more strength on a sheet of paper and textbook. Students discuss and record observations.) p. 446
P- LS Students think about the severe weather in the photos on p. 447 and identify the types of severe weather they have where they live. p. 447
D- Severe Weather (Students look closely at digital pictures to discover more

the blue penguins? p. 467
P- ENB (prompt) Think about how these two types of penguins are different. How do their environments differ? List ways each penguin is suited to its climate. p. 469
D/P- LS Refer to Text (Emperor penguins live in Antarctica. Could the blue penguins be relocated to Antarctica, too? Students use evidence from the text to explain the reasoning for their answer.) p. 469
P- ENB (prompt) Students examine the map of the climate zones for patterns and identify what they notice about where each zone is on the

**Objective 4:** Students will describe the difference between weather and climate. Then they will identify and describe the climate region for their region in order to graph and interpret a comparison chart.

**Objective 5:** Students will research an assigned weather hazard and develop a solution based on their research.

**Topics:** Weather and Climate Twenty-First Century Themes and Skills include: Environmental Literacy • The Four C's • Global Awareness

**Essential Questions**: Can we predict the kind of weather that we will see in the spring, summer, autumn, or winter? How can climates in different regions of the world be described?

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wind it describes.) p. 407

P- ENP (prompt) Students list the weather tools on p. 407 and tell how each tool gives you more information about the weather than when you just step outside to observe it. p. 407

D/P- Weather Watching (Using weather pictures, students take a closer look at the weather conditions for five days.) p. 408

D/P- DTM Analyzing Data (Students analyze data from the Weather Watching activity) p. 409

P- LS Students research what a barometer measures and what the measurement can tell you about the weather. p. 409

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time and give an example of how the conditions might change over several months. In the digital eBook students use data to make two bar graphs) p. 425

D/P- DTM Using a Map for Math (Students use data from the table of Chicago's weather to identify all statements that are true) p. 425

D/P- AWYK HO Activity Averages in Your Town (Students research the average temperature and total precipitation for their city or town and make a data table with the information and a bar graph to compare the average temperature and

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about types of severe weather and the damage each can cause)

P- ENB (prompt) Students look at the images on previous pages and group types of severe weather that cause similar types of damage. Students determine whether they can tell which type of severe weather has occurred based on the evidence from the effects of the weather p. 448

D- How Do Meteorologist Study Weather Data? (Students watch video to study more about how meteorologists study weather data and look for patterns to help

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map; students identify how they can use the information about the climate patterns to help locate a new location for the penguins. p. 473

D/P- In the Zone (Students explore online to discover more about cities in different climate zones.) p. 474

D/P- AWYK Explain the Zones (Students use a ball to model the Earth and predict how the temperature will change in each location—North Pole, equator, and South Pole.) p. 475

D/P- LS Details and Evidence (Students identify which climate zones the emperor penguin and the blue penguin live and provide evidence to

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| | D/P- HO Activity Analyzing Weather Data pp. 410-412 P- CER Each team of students present and share their reasons or evidence for the specific weather forecast the team made from the HO Activity. p. 412 D/P- ENGIT Other Weather Tools (Students take a closer look at how scientists use satellites to help them study and predict weather.) p. 413 D/P- Reading Temperature Maps pp. 414-415 D/P- DTM Reading Temperature Maps (Students identify the difference in temperatures between the hottest city and coldest city) p. 414 | total precipitation) p. 427 D/P- Chicago's Four Seasons (Students study digital picture to study more about weather in Chicago) pp. 428-429 D/P- Average Temperatures (Students use the average temperatures in the data table to answer questions) pp. 430-431 P- ENB (prompt) Students record data for the current season and research the data for their area in the same season. Students then compare and contrast the weather data for the two different locations during the same season p. 431 D/P- LS Compare and Contrast | them make predictions about the weather.) p. 450 P- ENB (prompt) (Students identify types of weather that are more likely to occur in their area and are asked to make a list of the weather types. Students will use their list later in the lesson, so they should leave room for notes.) p. 450 D/P- AWYK HO Smashing Floods (Students collaborate with a partner to engineer flood protection) p. 454-456 P- CER Students work with a partner to critique each other's claims and evidence. p. 456 | support their reasoning.) p. 475 D/P- HO Activity Looking for a New Home (Students collaborate with their team to determine a new location for blue penguins.) pp. 476-478 P- CER Have pairs work with other pairs to critique each other's claims and evidence from the HO Activity. p. 478 D/P- ENGIT Something Different: Artificial Climate (Students read text or eBook and respond to question on page 479.) p. 479 D/P- DTM Display the Difference (Students draw a scaled picture graph to represent a data set.) p. 481 |

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| P- ENB (prompt) Students choose one of the cities from the maps on the previous page and record the weather data. Students pretend that Angela, from the beginning of the lesson, is going to that city and use evidence to describe what she should pack. p. 415 P- AWYK HO Activity Color Your Location p. 416

D/P- TIF (enrich) Seasonal Patterns pp. 417-418 D- How Windy Is It? D- Put It All Together

D/P- Lesson Check pp. 419-420 D/P- Lesson Roundup p. 421 D- Lesson Quiz | (Students determine which weather conditions showed some type of pattern over the seasons and infer whether those patterns can help predict future weather). p. 431 D/P- HO Activity Weather here and There (Students collaborate to research and analyze weather data for a particular location.) pp. 432-435 P- CER Students work with a partner to critique each other's claims and evidence in step 9. p. 435 D/P- Finding Patterns: Temperature Patterns (Students use the patterns observed in the given data to determine the | P- ENGIT Severe Weather Solutions (Students infer and discuss ways in which engineers solve the issue of icy roads during ice storms.) p. 458 P- LS Students imagine their school is in an area where blizzards are common and identify two structures in their neighborhood that might take damage from the ice and snow. Then students tell how they would redesign the structures to handle ice and snow. p. 458 D/P- Being Ready for Severe Weather (Student watch video to discover more about solutions for severe whether hazards.) p. 459 | P- ENB (prompt) Consider how a volcanic earthquake might change the climate zones over two years. Which zones would get bigger? Which would become smaller? p. 481

D/P- TIF (enrich) Explain the Difference: Not a Match pp. 482-484 D- Migrating Monarchs D- Other Factors

D/P- Lesson Check pp. 485-486 D/P- Lesson Roundup p. 487 D- Lesson Quiz

P- DI (ELL/RTI) p. 401I P-Extension p. 401I P- COLLAB p. 401J P- Making Connections p. 401J

D- Science Safety HB |

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| | P- DI (ELL/RTI) p. 401I<br>P-Extension p. 401I<br>P- COLLAB p. 401J<br>P- Making Connections p. 401J<br><br>D- Science Safety HB<br>D- CCC-HB<br>D- ELA-HB<br>D- M- HB<br>D- SEP - HB<br>D- ScienceSarurs Reference HB<br><br>D- YSI Simulation Run a Weather Station | missing data.) p. 436<br>P- ENB (prompt) (Students examine the data from the table showing temperatures in Riverside, California, and Anchorage, Alaska and identify patterns noticed between the two years.) p. 436<br>P- LS (Students explain why it is important to collect data about the weather and identify how we use these data in our everyday lives) p. 437<br><br>D/P- TIF (enrich) People in Science: Pam Heinselman and Lidia Cucurull, Meterologists pp. 439-440<br>D- Weather Outside of the United States | P- ENB (prompt) Students look back at the severe types of weather in their area. Students identify what sort of engineered features are used to keep the people and property in their area safe. p. 459<br>P- LS Students identify which solution they think is best at protecting people from the hazards of severe storms. Students explain their choice and discuss the benefits and drawbacks of the solution and its design. p. 460<br><br>D/P- TIF (enrich) People in Science & Engineering: Hurricane Hunters pp. 461-462 | D- CCC-HB<br>D- ELA-HB<br>D- SEP-HB<br>D- ScienceSarurs Reference HB |

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| | | D- National Weather Patterns<br><br>D/P- Lesson Check pp. 441-442<br>D/P- Lesson Roundup p. 443<br>D- Lesson Quiz<br><br>P- DI (ELL/RTI) p. 401I<br>P-Extension p. 401I<br>P- COLLAB p. 401J<br>P- Making Connections p. 401J<br><br>D- Science Safety HB<br>D- CCC-HB<br>D- ELA-HB<br>D- ScienceSarurs Reference HB | D- Reporting Severe Weather<br>D- Historical Weather Patterns<br><br>D/P- Lesson Check pp. 463-464<br>D/P- Lesson Roundup p. 465<br>D- Lesson Quiz<br><br>P- DI (ELL/RTI) p. 401I<br>P-Extension p. 401I<br>P- COLLAB p. 401J<br>P- Making Connections p. 401J<br><br>D- Science Safety HB<br>D- CCC-HB<br>D- ELA-HB<br>D- SEP-HB<br>D- ScienceSarurs Reference HB<br><br>D- YSI Simulation Run a Weather Station | |

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| Acronym | Word/Phrase | Description |
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| **Curriculum Alignment Common Language (CACL) Guide K-5** | | |
| **AWYK** | Apply What You Know | Hands on opportunities for students to apply learning. |
| **CER** | Claims Evidence Reasoning | Students make a claim and gather evidence along the way (during EXPLORATORY activities) to support claim. |
| **CYEI** | Can You Explain It | Lesson phenomenon used to ENGAGE students in learning at the beginning of the lesson. |
| **CYSI** | Can You Solve It | Lesson phenomenon used to ENGAGE students in learning at the beginning of the lesson. |
| **D** | Digital | Program resources and features in interactive digital form. |
| **DI (ELL/RTI)** **Extension** **COLLAB** **Connections to Science** | Differentiated Instruction (English Language Learner/Response to Intervention) Collaboration Connections to Science | A page that lists all learning activities used to differentiate learning, engage students in collaborative activities and connect learning to other subjects. |
| **DTM** | Do the Math | Integrated subject learning. |

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| **ENB** | Evidence Notebook (prompt) | Student notebook or journal used to gather evidence during EXPLORATORY learning activities to support their claims. |
| **ENGIT** | Engineer It | Integrated subject learning. |
| **HB** <br><br> **CCC-HB** <br><br> **ELA-HB** <br><br> **M-HB** <br><br> **SEP-HB** | Handbooks <br><br> Crosscutting Concepts <br><br> English Language Arts <br><br> Math <br><br> Science and Engineering Practices | Students who need extra support in grasping concepts or to refresh student knowledge of skills. |
| **HO** | Hands-On (Activity) | Student collaboration activities. |
| **LS** | Language Smarts | Integrated subject learning. |
| **P** | Print | Program resources and features in print form. |
| **TIF** | Take It Further (enrich) | Enrichment activities for students in print or digital. |
| **YSI** | You Solve It (Simulation) | Open-ended simulation-based learning with multiple answer options. |