**\*\*Park Name**

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| --- |
| [Devils Postpile National Monument](http://www.nps.gov/depo/) |

**\*\*Lesson Plan Title (255 characters maximum)**

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| --- |
| Exploring Climate Science: Weather and Climate |

**\*\*Essential Question and Quick Lesson Description**

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| In “Exploring Climate Science (Weather and Climate),” students will use tools to collect weather data and discuss the differences between weather and climate. Students will be able to:   1. Compare and contrast weather and climate, providing at least three differences between the two. 2. Use an anemometer and thermometer to collect local weather data |

**\*\*Lesson Grade Level: (Check One of the following)**

\_\_\_ Lower Elementary: Pre-Kindergarten through 2nd Grade

\_X\_ Upper Elementary: 3rd Grade Through Sixth Grade

\_\_\_ Middle School: Sixth Grade Through Eighth Grade

\_\_\_ High School: Ninth Grade through Twelfth Grade

\_\_\_ College Undergraduate Level

\_\_\_ Graduate Level (Masters, PhD)

\_\_\_ Adult Education

**\*\*Lesson Subject: (Check As Many as Apply)**

\_\_ Social Studies

\_\_\_ Math

\_x\_ Science

\_\_\_ Literacy and Language Arts

\_\_\_ Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Feature Image for Lesson**

**This will be shown next to your lesson on the Education Portal. Provide filename and location below.**

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**Alt Text for Feature Image**

**If the image does not display, what description do you want to appear in its place?**

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| Storm clouds gather at Devils Postpile National Monument |

**\*\*Common Core Standards:**

**Want more information about Common Core? Go to [http://www.corestandards.org/](http:///h)**

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| Grade Level: 3-5 Subject Area: Science  RI.5.7: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.  RI.5.9: Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.  W.5.8:Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. |

**\*\*State Standards:**

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**Additional Standards(s) (255 characters maximum): Does this lesson meet additional standards?**

**e.g. Next Generation Science Standards, National Council for Social Studies Standards, Advanced Placement (AP) Courses, International Baccalaureate (IB) Courses, Next Generation Science Standards**

|  |
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| Next Generation Science Standards: 5-ESS3-1,5-ESS2-1 |

**Thinking Skills (Check As Many as Apply)**

The thinking skills listed below are based on Bloom’s Taxonomy. Consider your lesson procedure and activities. Then check off the thinking skills that students will experience through your lesson.

X **Knowledge** – Recalling or recognizing information ideas, and principles

X **Comprehension** – Understand the main idea of material heard, viewed, or read. Interpret or summarize the ideas in own words.

\_X\_\_ **Application** – Apply an abstract idea in a concrete situation to solve a problem or relate it to a prior experience.

\_\_\_ **Analysis** – Break down a concept or idea into parts and show the relationships among the parts.

\_\_\_ **Creation** – Bring together parts (elements, compounds) of knowledge to form a whole and build relationships for NEW situations.

\_\_\_ **Evaluation** – Make informed judgments about the value of ideas or materials. Use standards and criteria to support opinions and views.

**Complete Lesson File**

**Is there a downloadable file (or PDF) for this lesson plan? If yes, provide filename and location:**

**Be sure your PDF or other file meets universal accessibility requirements, most PDFs do not.**

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**Lesson Duration**

**Time to complete this lesson plan in minutes (25 characters maximum)**

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| 60 minutes |

**\*\*Background Information for Teacher**

**What important content, contextual, or practical information and background knowledge does the teacher need to successfully implement this lesson?**

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| Water is essential for life on Earth. Relative water availability is a major factor in designating habitats for different living organisms. In the United States, things like agriculture and water rights are hot topics. Current models predict that average global temperatures are going to continue to rise even if regional climate changes remain complex and varied. These changes will have an impact on all of Earth's systems.  Studies have shown that climate change is driven not only by natural effects but also by human activities. Knowledge of the factors that affect climate, coupled with responsible management of natural resources, are required for sustaining these Earth systems. Long-term change can be anticipated using science-based predictive models, making science and engineering essential to understanding global climate change and its possible impacts.  National Parks can serve as benchmarks for climate science trends and effects over time because they are protected areas void of human influence. Understanding current climate trends will help set students up to be successful in interpreting and engaging in discussions about climate change, which will lead to informed decision making. |

**\*\*Important Vocabulary and Terms with Definitions:**

**What terms and academic language will students have to know to participate in the lesson? Lessons typically include 5 to 15 terms and definitions.**

|  |
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| 1. Adaptation – the ability of a species to survive in a particular ecological niche, especially because of alterations of form or behavior brought about through natural selection. 2. Habitat—an ecological area that is inhabited by a particular species. 3. Climate – the average course or condition of the weather at a place usually over a period of years as exhibited by temperature, wind velocity, and precipitation. 4. Weather – the state of the atmosphere with respect to heat or cold, wetness or dryness, calm or storm, clearness or cloudiness. |

**\*\*Lesson Preparation: What preparation does the teacher need to do before the lesson? What supplies or materials should be gathered?**

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| Teachers will need access to a computer with internet and a projector for displaying the video.Prepare the video [Earth: Climate and Weather](http://video.nationalgeographic.com/video/science/earth-sci/climateweather-sci/): <http://video.nationalgeographic.com/video/science/earth-sci/climateweather-sci/>Print copies of worksheets 2.1, 2.2, and 2.3 for students. (See Materials Section) |

**\*\*Lesson Hook or Preview: What activity, video, song, or other experience could get the students excited about the lesson and thinking about the topic? Is there a way to make the lesson important to their lives or link the lesson content to what they already know?**

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| Display video Earth: Climate and Weather. Have students fill out worksheet 2.1 while watching the video. |

**\*\*Procedure: List the instructions the teacher should follow as Step One, Step Two, Step Three, etc.**

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| STEP 1   1. Take students outside to an open area and demonstrate how to use the anemometers and thermometers. Split students into small groups to take a reading recording their data on worksheet 2.2.   Step 2   1. Bring the group back together for a discussion about local weather. Stress how the weather today could look very different from the weather tomorrow. 2. Discuss how the data they collected today was for the local weather. Climate would be the readings taken over a much longer period of time (decades etc). Facilitate brainstorm on how climate change can influence climate. 3. Explain how climate is connected to ecosystems—a hot climate is a dessert while a cold snowy climate would be the arctic. Animals and plants have specific climates that they live in. 4. Facilitate worksheet 2.3 having students describe the climate in different pictures and match the animals to the ecosystem. |

**\*\*Assessment: How can teachers tell that each individual student has met the objective? How will teachers see if each student knows the answer to the essential questions or has mastered the skills? Below, include below a brief description of how to use the assessment. Later in this template you are provided with the opportunity to upload a digital copy of the assessment for teachers to print and use.**

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| --- |
| Have students write at least three sentences about the day's weather versus the local climate. |

**Lesson Materials: Any worksheets, photos, primary source, scientific data, maps, graphic organizers, or PowerPoint ‘s should be described and attached using the template below. Please create additional materials boxes if necessary.**

**Material #1**

**Title (255 characters maximum):**

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| --- |
| Worksheet 2.1: Weather Vs. Climate Venn Diagram |

**Summary (how does the material function in the lesson?):**

|  |
| --- |
| Worksheet to accompany video: [Earth: Climate and Weather](http://video.nationalgeographic.com/video/science/earth-sci/climateweather-sci/) |

**Downloadable file of this material in original format if possible, such as Microsoft word or PowerPoint (Provide filename and location)**

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**Material #2**

**Title (255 characters maximum):**

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| Worksheet 2.2: Recording Weather Data |

**Summary (how does the material function in the lesson?):**

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| Students will record weather data on this worksheet. |

**Downloadable file of this material in original format if possible, such as Microsoft word or PowerPoint (Provide filename and location)**

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**Material #3**

**Title (255 characters maximum):**

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| Worksheet 2.3: Who Lives Here? |

**Summary (how does the material function in the lesson?):**

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| Students will match animals will their preferred climate types. |

**Downloadable file of this material in original format if possible, such as Microsoft word or PowerPoint (Provide filename and location)**

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**Assessment Materials**

**How can teachers tell that each individual student has met the objective? How will teachers see if each student knows the answer to the essential questions or has mastered the skills? Attach below the assessment and, if applicable, a rubric or answer key.**

**Assessment**

**Title (255 characters maximum):**

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**Summary (how does the material function in the lesson?):**

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**Downloadable file of this material in original format if possible, such as Microsoft word or PowerPoint (Provide filename and location)**

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**Assessment Rubric or Answer Key**

**Title (255 characters maximum):**

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| --- |
| N/A |

**Summary (how does the material function in the lesson?):**

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**Downloadable file of this material in original format if possible, such as Microsoft word or PowerPoint (Provide filename and location)**

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**Supports for Struggling Learners**

**If a learner is struggling to understand the objective, essential question, or skills presented in the lesson, what can be done to help this learner? Is there a lower reading level version of text? Is there a more image heavy or simplified version of content? Can supportive devices be provided such as calculators?**

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| N/A |

**Extensions for Excelling Learners**

**If a learner is really excelling at the objective and skills presented in the lesson, what can be done to continue to challenge this learner? Can the student create a product or learn more in depth about the content?**

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| Continue to have students collect local weather data each day. Use this data in a variety of ways: use data to practice graphing skills, compare weather data to past weather data to evaluate climate changes, compare weather data to past weather data to come to a consensus about the local climate, etc. |

**Additional Resources**

**Please list websites, references, or other materials for further research by interested students that is not already provided within the lesson.**

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**Related Lessons or Educational Materials**

**Is this lesson connected to other lessons within a unit? Is this lesson related to a field trip guide or activity? If so, list the website address or titled of these other materials below.**

|  |
| --- |
| Day 1- [Earth as a System](http://www.nps.gov/depo/forteachers/classrooms/earth-as-a-system.htm)  Day 2- [Weather vs Climate](http://www.nps.gov/depo/forteachers/classrooms/weather-vs-climate.htm)  Day 3- [Watershed](http://www.nps.gov/depo/forteachers/classrooms/watersheds.htm)  Day 4- [Climate Science Data and Tools](http://www.nps.gov/depo/forteachers/classrooms/climate-science-data-and-tools.htm)  Day 5- [Field Trip](http://www.nps.gov/depo/forteachers/classrooms/field-trip.htm)  Day 6- [NPS Connections](http://www.nps.gov/depo/forteachers/classrooms/nps-connect.htm)  Day 7- [Project Preparation](http://www.nps.gov/depo/forteachers/classrooms/project-preparation.htm)  Day 8- [Evaluations](http://www.nps.gov/depo/forteachers/classrooms/presentations.htm) |