**Phenomenal Science Unit 3.2 Wild Wacky Weather**

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| **Unit 3.2: Wild Wacky Weather****Unit GOALS** |
| **Established Goals:** | **Transfer:** |
| **DCI:**ESS3.B Natural Hazards* [A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (3-ESS3-1) *(Note: This Disciplinary Core Idea is also addressed by 4-ESS3-2.)*](http://www.nap.edu/openbook.php?record_id=13165&page=192)

 ESS2.D Weather and Climate * [Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. (3-ESS2-1)](http://www.nap.edu/openbook.php?record_id=13165&page=186)
* [Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years. (3-ESS2-2)](http://www.nap.edu/openbook.php?record_id=13165&page=186)

  | **Performance Expectations:** Students who demonstrate understanding can . . .3-ESS2-1. 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 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. |
| **SEP:** (List all - bold “foregrounded”)1.   Asking questions  and defining problems2.  Developing and using models3. Planning and carrying out investigations**4.  Analyzing and interpreting data**5.  Using mathematics and computational thinking6. Constructing explanations (for science) and designing solutions (for engineering)**7.  Engaging in argument from evidence****8. Obtaining, evaluating, and communicating information** | **CCC:** (List all - bold “foregrounded”)1. **Patterns**
2. **Cause and effect**
3. Scale, proportion, and quantity
4. Systems and system models
5. Energy and matter
6. Structure and function
7. Stability and change
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| **Possible Naive Conceptions:** | **Meaning:** |
| **precipitation-** Students may believe it is only rainfall. They need to understand there are more forms of precipitation than  rain such as hail, snow, and ice. **location-** Students may believe that relative locations share a common weather pattern, unconnected to the climate.  “Weather” and “climate” are not synonyms or interchangeable, but their meanings depend on each other. Reference:  <https://docs.google.com/document/d/1PQiKm8Zmgq5iQ9sR_EMrO1sM8xqLchQMZt7Ho3NbpXI/edit> <http://newyorkscienceteacher.com/sci/pages/miscon/subject-index.php>  | **Essential Question(s):** Students will consider . . .How do weather and climate impact the different regions of the Earth? | **Understandings:** Students will understand that . . .climate and weather which impact human interactions vary within regions of the Earth.  |
| **Expected Prior Knowledge:** | **Acquisitions: (IC Level Performance Expectations)** |
| **Prior Knowledge:**bar graph, breezy, calm, clear, cloudy, partly cloudy, cold, cool, daily weather pattern, ​foggy, hail, hot, humidity, lightning, precipitation, rain, snow, sunny, temperature, thunderstorm, warm, weather conditions, windy(K.ESS3.B)(K.ETS1.A)(K.ESS2.D) Marzano Science Word List <http://www.sealyisd.com/common/pages/DisplayFile.aspx?itemId=2339209>   | **Students will know . . . (Key Concepts)** Students will be able to explain through written and oral communication and create models of human decisions based on a region's climate and weather.   Students will be able to relate regional impacts through discussion and presentation of data to generate conclusion.   Students will be able to evaluate reasonable evidence of a human interaction based on a region's climate and weather patterning.  |
| **Focus Questions:** | **Conceptual Flow/Teacher Background** |
| What is typical weather for our region? What causes the weather pattern that allows fruit to grow well in Michigan? How do weather hazards influence the daily lives of humans?  | Weather is a constant change of daily conditions, but can be predicted within a region based on temperatures and wind speed; thus it tends to form a seasonal pattern within a region. The patterns tend to develop with the exceptions of random happenings -- i.e.  severe weather hazards and catastrophic events such as severe thunderstorms (Can connect to static electricity in Unit 1 Let’s Move It), accumulating snowstorms, tornadoes, hurricanes, and regional flooding. These odd occurrences do not impact the climate over a long period of time. However, to reduce the financial impact related to these hazards, humans constantly improve construction. This impact occurs due to annual weather patterns and their phenomena, and not within the climate itself.  Weather can vary within a region. Climate is an average of daily temperatures, precipitation, and location within a region. Weather and climate are not the same, but do have a relationship that affects a region.See also: https://www3.epa.gov/climatechange/kids/documents/weather-climate.pdf Framework: ESS3.B: How do natural hazards affect individuals and societies?<https://drive.google.com/folderview?id=0B6xDOfkngjTWRC1tanJDd29kbXM&usp=sharing&tid=0B6xDOfkngjTWQVdFSWpjbEdESEk#list>ESS2.D: What regulates weather & climate?<https://drive.google.com/folderview?id=0B6xDOfkngjTWZ3VONWJTNUQweXM&usp=sharing&tid=0B6xDOfkngjTWQVdFSWpjbEdESEk#list> |