Connecting to the *Next Generation Science Standards* (NGSS Lead States 2013) as they relate to the “Measuring Albedo” lesson

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| **Standard**  MS-ESS2 Earth’s Systems  The chart below makes one set of connections between the instruction outlined in this article and the *NGSS* as it relates to the “Measuring Albedo” lesson. Other valid connections are likely; however, space restrictions prevent us from listing all possibilities.  **Performance Expectation**  MS-ESS2-1. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. | |
| **Dimensions** | **Classroom Connections** |
| **Science and Engineering Practices**  Planning and Carrying Out Investigations:  Collect data to produce data to serve as the basis for evidence to answer scientific questions or test design solutions under a range of conditions. | Students use the “Albedo: A Reflectance App” to measure the albedo of different colored surfaces to create a rule that describes the relationship between the color of a surface and it’s albedo. |
| **Disciplinary Core Ideas**  ESS2.D: Weather and Climate:  Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude, and local and regional geography, all of which can affect oceanic and atmospheric flow patterns. | Students learn that energy from the Sun is reflected or absorbed by the Earth’s surface. Lighter colored surfaces (sea ice) reflect more of the Sun’s energy than darker colored surfaces (ocean) like the ocean. Energy that is not reflected by a surface is absorbed, which explains why the ice cube on the darker colored surface melts more quickly than the ice cube on the lighter colored surface. |
| **Crosscutting Concepts**  Energy and Matter:  Within a natural or designed system, the transfer of energy drives the motion and/or cycling of matter. | Students learn that the Sun’s energy is reflected or absorbed by the Earth’s surface. |
| **Connections to Nature of Science**  Scientific Knowledge is Based on Empirical Evidence:  Science knowledge is based upon logical and conceptual connections between evidence and explanations. | Students gather evidence and new understandings through lesson engagements to explain how a decline in sea ice will affect the Arctic’s albedo and lead to more melting of sea ice. |

**Connections to the *Common Core State Standards* (NGAC and CCSSO 2010)**

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| **ELA**   * [CCSS.ELA-LITERACY.WHST.6-8.1.B:](http://www.corestandards.org/ELA-Literacy/WHST/6-8/1/b/) Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources. |
| **Mathematics**   * [CCSS.MATH.CONTENT.8.F.B.5:](http://www.corestandards.org/Math/Content/8/F/B/5/) Describe qualitatively the functional relationship between two quantities by analyzing a graph. |