Title: Spheres of the Earth Model

Interdisciplinary Lesson
Theme: Earth Spheres
Topic: Spheres of the Earth
Suggested Grade Level: 3-5
Indoors or Outdoors: Outdoors

Objective: Students personalize their knowledge of the spheres of the Earth as they construct a model from data collected through outdoor observation

Time: 30-40 minutes

Materials Needed: Paper, clipboards, pencil, crayons or color pencils, journal page with list of observations from the *Observing Four Spheres* activity

Directions:

1. Circle your students up outdoors in a grassy area or on benches in an outdoor classroom.
2. Review the four spheres (atmosphere, biosphere, hydrosphere, and lithosphere). Ask students to read aloud their observations from *Observing Four Spheres* they have documented in their journals.
3. Inform students that they will use their observation data of the components of the four spheres to create a model in the form of a poster. The model is to include a drawing of the components and labels that identify the spheres and how they interact on the school grounds. Arrows may be included to depict interactions between components that students draw in their model.
4. The model may be constructed to depict one of the locations the observations were collected, or as a comprehensive view of the school grounds. If possible, allow students who choose to depict one location that was observed during *Observing Four Spheres* to move to that location and create their model there.
5. Provide students paper, clipboards, and crayons or color pencils to create their models. Emphasize to them to use their observation data as well as visuals and sounds they notice as they complete this lesson outdoors.
6. Display completed models in your classroom or in a hallway. *Optional*- Ask students to present their posters to the class.

Discussion Questions:

1. How are the spheres related? Identify how components of different spheres may interact on the school grounds.
2. Do you think one sphere is more important than another? Why or Why not?
3. Would changes in one of the spheres lead to changes in another sphere? Explain.

Science and Engineering Practices:
2. Developing and using models; 8. Obtaining, evaluating, and communicating information.

Crosscutting Concepts:
1. Patterns; 4. Systems and system models.

Disciplinary Core Ideas:
Earth and Space Sciences: ESS 2: Earth's systems.

Background Information:
Atmo-: air **Bio-:** life **Hydro-:** water **Litho-:** stone **-sphere:** relating to the earth, globe, planet

- **Atmosphere:** air, gasses (oxygen, nitrogen, carbon dioxide, water vapor)
- **Biosphere:** life (plants, animals, all organic matter including decomposing plants and animals)
- **Hydrosphere:** water (oceans, seas, ice caps, ground water, surface water, water vapor, etc.)
- **Lithosphere:** crust of the earth made up of the continental and oceanic plates (land, mountains, valleys, volcanoes, earthquakes, soil, rocks, etc.)

Extension:
Upon completion of the models, instruct students to write a short paragraph that describes the spheres and interactions that are depicted in their model. The paragraphs can be read aloud and/or taped to the models and displayed in the classroom or a hallway.

Additional Resources:
- NOAA-Earth's Spheres https://gml.noaa.gov/outreach/info_activities/pdfs/TBI_earth_spheres.pdf
- *The Four Spheres of Earth* by Paul Larson

Correlates with:
Greeting - Spheres of the Earth Greeting (p. 35)
Activity - Observing Four Spheres (p. 61)