Air and weather “Suitcase Science” Lesson

What are suitcase lessons?

Marta Torres, Murray Levine, and Melissa Feldberg as part of a NSF GeoEducation grant (GEO-0224566) have created an oceanography lesson designed to reinforce important science concepts from the FOSS Air and Weather kit. The lessons are age appropriate and feature lots of hands-on activities, inquiry, the process of scientific research, and the excitement of discovery.

"Suitcase Lessons” are portable modules with complete directions and materials so any willing member of the OSU Oceanography and Atmospheric Science faculty, graduate student, or an interested scientist can come to your classroom and successfully present the lessons. For the guest presenter, each kit includes: introductory materials that outline science concepts, detailed descriptions on how to use the materials, alignment to benchmarks, handouts, and a complete set of materials needed to present the lesson to a class of about 30 students.

How were these lessons developed?

The lessons were developed and piloted with input from three Corvallis 509J District teachers whose input was pivotal to the success of this effort. The teachers met several times with the scientist partners to brainstorm ideas for the lessons and to give feedback about possible lessons. They arranged for the scientist to teach the "suitcase lesson” to their class, and gave pre- and post-knowledge assessment surveys. After the lessons were presented, the teachers provided evaluations on the lessons' effectiveness and offered suggestions for improvement.

What are my responsibilities as a teacher?

- Teach the lessons in the Air and Weather kit.
- The suitcase lessons are designed to be presented near the end or after you’ve finished with the Air and Weather kit. Call to schedule the suitcase lessons at least one month ahead of time.
- Plan on having your students do the pre-lesson survey question, "How do you think the ocean might affect the weather?". Share these papers with the guest scientist.
- Plan on having your students complete a post-lesson assessment (provided by the scientist). Students may begin this assessment during the oceanographer’s lesson, but you’ll probably need to schedule additional class time to complete the assessment.
- Fill out an evaluation sheet about the presentation based on your students’ response to the lesson, your personal observations, and any other input you feel would be valuable.
What will my students learn in this suitcase lesson?

The main purpose of the lesson is to provide students with the basic knowledge needed to begin to answer these questions:

- Where does rain come from?
- What role does the ocean play in the water cycle?
- Why is the weather different in different places?

The suitcase lessons will:

- Review the concepts of temperature, clouds and weather patterns introduced in the Air and Weather kit
- Introduce the concepts of evaporation, convection, condensation and water transport in the atmosphere. Discuss the water cycle.
- Explain the effect of topography on weather patterns and relate this to the weather patterns in Oregon from the coast to the high desert.
- Learn to read maps of precipitation
- Explore the use of satellites to forecast the weather

Hands-on activities include:

- Observing and explaining evaporation from a hot plate
- Observe motion of a paper spiral to illustrate convection.
- Observe and record variations in temperature with distance from a hot plate
- Make a cloud in a bottle and explain what is needed to condense water in the atmosphere in the form of a cloud.
- Look up in the web for a satellite image and relate this to the concepts learned in class.