

New Program for 2008-2009!



earthAdventure

Explore the earth with us

Presents

U.S. Satellite Laboratory, Inc.
and their award-winning, NASA-sponsored



Project 3D-VIEW [Virtual Interactive Environmental Worlds]



National Aeronautics and Space Administration

(NASA Award NNG04GE41A)

Grade Level: 4-6

Program Cost: \$1600



Dear Educator,

Earth Adventure is pleased to partner with U.S. Satellite to introduce their NASA-sponsored, award-winning Project 3D-VIEW. Our partnership with this program is designed to: 1) assist your students in maximizing their Earth Balloon experience; and, 2) provide your school with a small sample of the Project 3D-VIEW program. (www.3dview.org). This 5-day Earth Adventure/3D VIEW program is a preview of the entire 3D-VIEW curriculum.

So that you can plan accordingly, the Earth Adventure/3D-VIEW program is designed as follows:

- Lesson 1: The Spheres of the Earth (1 or 2 class periods)
- Lesson 2: The Shape of the Land (1 class period)
- Lesson 3: **Onsite Earth Balloon Experience**
- Lesson 4: Earth's Material Cycles – “The Water Cycle” (2 class periods)

The selected lessons give students an introduction to Earth System science as well as to some of the excellent applications of 3D technology in the classroom.

Included in the Earth Adventure/3D-VIEW program:

- Lesson plans
- Study guide for classroom studies
- 3D glasses (60pr.)
- Online and classroom 3D materials
- Earth Balloon session

Please contact Earth Adventure to schedule the Earth Adventure/3D-VIEW program at your school. Inquiries and scheduling can be directed to Audrey Knutson at audrey@earthadventure.org or (763) 785-7876.

For 3D-VIEW curriculum-related questions please contact Meghan Marrero at mmarrero@us-satellite.net. For further information about the 3D-VIEW curriculum contact U.S. Satellite Laboratory at (800) 707-8519.

The 3D-VIEW program is for grades 4-6. If other grades will be included during this visit it is suggested that Earth Adventure's “*Hello – Meet the Earth*” program be used for the lower grades.

Project 3-D VIEW is an extensive, standards and classroom-based science curriculum comprised of FIVE stand-alone units. The program was designed for upper elementary and middle school grades and meets state and national standards by presenting science concepts in stereo 3D. 3D-VIEW also features achievement-based literacy and math components. Students work through lessons in the Lithosphere (land sphere), Hydrosphere (water sphere), Atmosphere (air sphere) and Biosphere (life sphere). Its capstone component involves students working through the Earth as a system, where materials cycle through these spheres, and students build their own websites based on how man affects the Earth system and build a sustainable school. The program consists of over 100 lessons and activities that use simple 3D technologies as a tool for improving science learning.



Project 3D VIEW (Virtual Interactive Environmental Worlds)

Overview of Earth Balloon/U.S. Satellite Lesson Sequence

I. Lesson I (2 class periods): Spheres of the Earth

Overview:

Earth is a complex system composed of four major spheres: Atmosphere, Biosphere, Hydrosphere, and Lithosphere. Students will identify and describe the components of each sphere, and then classify objects (i.e. rocks, lakes, plants) based on the sphere with which they are most closely associated. Students will look for evidence of interactions between Earth's spheres through images and (optional) 3D stereophotographs and animations.

Objectives:

Students will be able to:

- ✓ Define lithosphere, hydrosphere, atmosphere, and biosphere.
- ✓ Classify objects according to which sphere they associate.
- ✓ Illustrate interactions between Earth's spheres.

Student Activities:

Students will:

- Engage by discussing a quote by Neil Armstrong, former NASA astronaut, on his view of the Earth from space.
- Explore Earth's spheres by reading a passage and organizing information in a table.
- Explain by diagramming examples of components of each sphere.
- Elaborate by creating an illustration showing the interactions between the spheres
- Evaluate by classifying examples of Earth's spheres and the interactions between the spheres.

National Science Standards Grades 5-8

1. UNDERSTANDINGS ABOUT SCIENTIFIC INQUIRY

- Different kinds of questions suggest different kinds of scientific investigations. Some investigations involve observing and describing objects, organisms, or events; some involve collecting specimens; some involve experiments; some involve seeking more information; some involve discovery of new objects and phenomena; and some involve making models.

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Project 3D VIEW (Virtual Interactive Environmental Worlds)

- Technology used to gather data enhances accuracy and allows scientists to analyze and quantify results of investigations.
2. STRUCTURE OF THE EARTH SYSTEM
- The solid earth is layered with a lithosphere; hot, convecting mantle; and dense, metallic core.

II. Lesson II (1 class period): The Shape of the Land

Overview:

Earth has varied topography, both on land and on the seafloor. It is easy to understand topographic differences, as well as the interaction between the lithosphere and hydrosphere, using topographic maps. Using a special printable 3D map, students will learn the true meaning of contour lines as identify patterns and places at specific elevations.

Objectives:

Students will be able to:

- ✓ Explain the relationship between the hydrosphere and lithosphere in a watershed.
- ✓ Identify simple topographic features on topographic maps.
- ✓ Visualize topographic features using 3D imagery.

Student Activities:

Students will:

- Engage by working with a simple model of a watershed.
- Explore by comparing their model to a typical watershed.
- Explain by identifying features on a contour map.
- Elaborate by using a 3D image to understand contours.
- Evaluate by relating contour maps to their local area.

National Science Standards Grades 5-8

1. Table 6.1 SCIENCE AS INQUIRY

- Different kinds of questions suggest different kinds of scientific investigations. Some investigations involve observing and describing objects, organisms, or events; some involve collecting specimens; some involve experiments; some involve seeking more

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information; some involve discovery of new objects and phenomena; and some involve making models.

- Mathematics is important in all aspects of scientific inquiry.

2. STRUCTURE OF THE EARTH SYSTEM

- The solid earth is layered with a lithosphere; hot, convecting mantle; and dense, metallic core.

III. Lesson III (2 class periods): The Water Cycle

Overview:

Earth is almost a closed system to matter—very little material moves in and out of the Earth system. Therefore, the planet's matter must be recycled. The water cycle is one example of how matter is cycled through each of Earth's spheres. Students will use 3D animations to learn about different processes within the water cycle and the importance of these processes, as well as water itself, to our planet's functioning.

Objectives:

Students will be able to:

- ✓ Explain that Earth is a closed system for matter, therefore matter must be cycled through Earth's spheres.
- ✓ Give examples of processes by which matter within the Earth System is transformed in the water cycle.
- ✓ Relate the water cycle to each of Earth's spheres (lithosphere, hydrosphere, atmosphere, and biosphere).

Student Activities:

Students will:

- **Engage** by working with a model of a closed system.
 - **Explore** by exploring 3D animations of water cycle processes.
 - **Explain** by recording notes on the water cycle.
 - **Elaborate** by creating a diagram of the water cycle.
 - **Evaluate** by explaining why atoms and molecules must cycle within the Earth System.
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Project 3D VIEW (Virtual Interactive Environmental Worlds)

National Science Standards
Grades 5-8

1. SCIENCE AS INQUIRY

- Different kinds of questions suggest different kinds of scientific investigations. Some investigations involve observing and describing objects, organisms, or events; some involve collecting specimens; some involve experiments; some involve seeking more information; some involve discovery of new objects and phenomena; and some involve making models. Understandings about scientific inquiry

2. STRUCTURE OF THE EARTH SYSTEM

- The solid earth is layered with a lithosphere; hot, convecting mantle; and dense, metallic core.
- Land forms are the result of a combination of constructive and destructive forces. Constructive forces include crustal deformation, volcanic eruption, and deposition of sediment, while destructive forces include weathering and erosion.
- Water, which covers the majority of the earth's surface, circulates through the crust, oceans, and atmosphere in what is known as the "water cycle." Water evaporates from the earth's surface, rises and cools as it moves to higher elevations, condenses as rain or snow, and falls to the surface where it collects in lakes, oceans, soil, and in rocks underground.
- Clouds, formed by the condensation of water vapor, affect weather and climate.

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