Teacher's Guide to *Valles Caldera: The Science*
Next Generation Science Standards Correlation

The units, activities and resources on this website were designed to support the Next Generation Science Standards (NGSS). Generally, these resources are aimed at a middle school audience, but many can be enriched to be appropriate for high school.

Science Practices and Cross Cutting Concepts

All of the units address the science practices and cross cutting concepts, below.

Science Practices

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating and communicating information

Cross Cutting Concepts

1. Patterns
2. Cause and Effect
3. Scale, Proportion, and Quantity
4. Systems and System Models
5. Energy and Matter in Systems
6. Structure and Function
7. Stability and Change of Systems

Disciplinary Core Ideas

The website was designed with an Earth Systems approach with the disciplinary core ideas woven throughout the sections: fire, climate change, and geology.

Fire

Ignition: Las Conchas

- MS. Structure and Properties of Matter
- MS. Chemical Reactions
- MS. Forces and Interactions
- MS. Energy
- MS. Earth Systems

Fire and Watershed

- MS. Energy
- MS. Matter and Energy in Organisms and Ecosystems
- MS. Interdependent Relationships in Ecosystems
- MS. Earth Systems

Severity of Burns

- MS. Energy
- MS. Growth, Development and Reproduction of Organisms
- MS. Natural Selection and Adaptations
- MS. Matter and Energy in Organisms and Ecosystems
- MS. Interdependent Relationships in Ecosystems
- MS. Earth's Systems
- MS. Weather and Climate
- MS. Human Impacts

Fire Ecology

- MS. Energy
- MS. Matter and Energy in Organisms and Ecosystem
- MS. Interdependent Relationships in Ecosystems
- MS. Growth, Development and Reproduction of Organisms
- MS. Natural Selection and Adaptations
- MS. Earth's Systems
- MS. Weather and Climate
- MS. Human Impacts

Climate Change

Valles Caldera Lake Cores

- MS. Matter and Energy in Organisms and Ecosystem
- MS. Interdependent Relationships in Ecosystems
- MS. Growth, Development and Reproduction of Organisms
- MS. Natural Selection and Adaptations
- MS. History of the Earth
- MS. Earth's Systems
- MS. Weather and Climate

Anthropogenic Impacts

- MS. Structure and Properties of Matter
- MS. Chemical Reactions
- MS. Energy
- MS. Matter and Energy in Organisms and Ecosystem
- MS. Interdependent Relationships in Ecosystems
- MS. Natural Selection and Adaptations
- MS. History of the Earth
- MS. Earth's Systems
- MS. Weather and Climate
- MS. Human Impacts

Impacts on Water Quality

- MS. Chemical Reactions
- MS. Forces and Motion
- MS. Matter and Energy in Organisms and Ecosystem
- MS. Interdependent Relationships in Ecosystems
- MS. Growth, Development and Reproduction of Organisms
- MS. Earth's Systems
- MS. Weather and Climate
- MS. Human Impacts

Geology

Geologic History

- MS. History of Earth
- MS. Earth Systems

Caldera Formation

- MS. History of Earth
- MS. Earth Systems

Magma Chemistry

- MS. Structure and Properties of Matter
- MS. Chemical Reactions
- MS. Forces and Interactions
- MS. Earth Systems

Caldera Hydrology

- MS. Structure and Properties of Matter
- MS. Chemical Reactions
- MS. History of the Earth
- MS. Earth Systems
- MS. Human Impacts