

GO-Outdoors

Caltech Geological and Planetary Sciences Outreach Program



Outdoors

Connecting local K-12 teachers and community leaders with Caltech geoscientists for accessible & inclusive outreach in the outdoors.

Who are we? GO-Outdoors is a group of Caltech graduate students in geoscience with a passion for outreach and the outdoors. Through our diverse expertise across a breadth of topics, **we aim to help (1) enrich PUSD teachers' geoscience curricula, and (2) increase K-12 students' exposure and access to the geosciences through field- and place-based activities.**

Below is a **menu of outreach activities** we have already developed. We are happy to lead any of these activities with your class, provide you with the resources and guidance to lead them yourself, or develop new activities in collaboration with you.

Field Trips

Geology & Natural Hazards

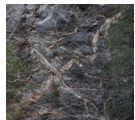
NGSS fulfilled



Fire and hydrology in our foothills

Students will explore geomorphology, and the effects of fires, water, and humans on a watershed and landscape (3.5h)

MS-ESS2-2
MS-ESS2-4
MS-ESS3-4



Seismic city

This is a day-long trip exploring local/regional faults around Pasadena and the local mountains (3-8h)

HS-ESS1-5
HS-ESS2-1



Mapping how rivers move mountains

Students will discover how a watershed determines the movement of rocks by matching rock samples to a geologic map (25min)

MS-ESS2-2
MS-ESS2-4



Debris flow safety in our neighborhood

Students will visit a local debris basin and learn how humans can manage debris flows to keep our neighborhoods safe (3h)

2-ESS1-1
2-ESS2-1
4-ESS2-1

Ecology



Trees and water availability

Students will compare and contrast leaves from different local trees and connect their observations to water availability (25min)

MS-LS2-1
MS-LS2-2



Ecology and symbiosis

Students will act out and define different types of ecosystem interactions through an ecosystem network activity (25min)

MS-LS2-2

Microbiology



Finding the beauty in microbial diversity (field trip portion)

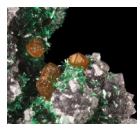
Students will visit a local park and learn about the microbial world around them through a hike and various science activities (5h)

HS-LS2-3
HS-ESS2-7

In-Classroom Activities

Geology & Natural Hazards

NGSS fulfilled



Rocks and minerals

Students will distinguish different rocks and minerals among handheld samples and describe their formation processes (1h)

MS-ESS2-1



Party time for volcanoes

Students will demonstrate how difficult it can be to predict the occurrence of volcanoes, earthquakes, and other sudden events (1h)

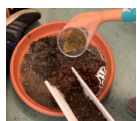
MS-ESS3-2



How rocks record Earth's climate

Students will contrast different rock samples and learn how scientists use rocks to understand Earth's past climatic conditions (1h)

MS-ESS2-2
MS-ESS3-5



Simulating California debris flows

Students will test hypotheses about the factors that can change the strength of a debris flow through a hands-on experiment (2h)

2-ESS1-1
2-ESS2-1
4-ESS2-1
4-ESS3-2

Ecology



Plant light-blocking experiment

Students will demonstrate the importance of sunlight for photosynthesis through a light-blocking experiment (2x 1h)

4-PS3-2



Getting our hands dirty with soils

Students will compare and contrast different types of soil, including soil from their neighborhood, through hands-on observations (1h)

MS-ESS2-2

Engineering



Making a battery out of soil

Students will demonstrate how the chemical energy stored in soils can be transformed into other useful forms of energy (1.5h)

4-PS3-4



Renewable energy

Students will associate natural resources with their ability to create energy and evaluate the pros & cons of different energy sources (3h)

4-ESS3-1

Microbiology



Finding the beauty in microbial diversity (in-classroom portion)

Students will use macroscopic and microscopic observations to watch a microbial community develop in mud collected on a field trip (2x 1.5h)

HS-LS2-3
HS-ESS2-7

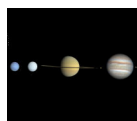
Planetary Science/ Astronomy



The phases and eclipses of the Moon

Students will demonstrate the connection between the Moon's phases and its relative position to the Earth and Sun (1h)

MS-ESS1-1



The scale of the Solar System

Students will deduce the relative sizes of the planets and their distances from the Sun using information about their properties (1h)

MS-ESS1-3

To request an outreach visit, download these resources, or learn more about us



go-outdoors.caltech.edu



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