



# PASSPORT 2000

Name

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School

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Date

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U.S. Department of the Interior  
U.S. Geological Survey

## **Introduction**

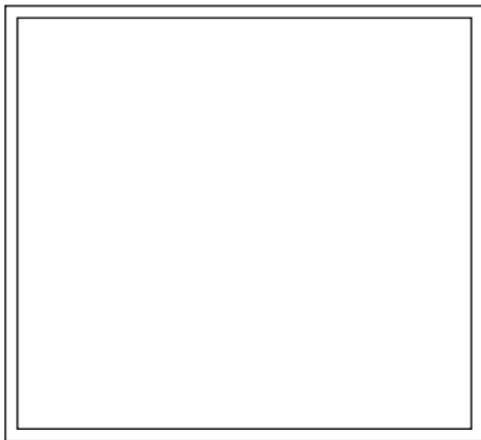
Now that you have picked up your Passport, you can begin your journey through the sciences here at the U.S. Geological Survey (USGS) in Menlo Park. We are spread out across a large campus so you will want to leave plenty of time to see everything. Scientists here at the USGS study geology, analyze water and biologic resources, and create maps. Find out how much you already know about the Sciences of the Earth during your adventures.

## **How to use your Passport**

This Passport is a guide to the many theme areas around the USGS campus. See the Passport Checkpoint map to find out where to get your Passport stamped. As you visit the Passport Checkpoints, you will find what scientists are studying at the USGS. To begin your adventure, write your name, school, and date in the Passport. Now you are ready to travel forward and learn about the USGS; that first checkpoint is just around the bend! Have a wonderful adventure here at the USGS!

## USGS

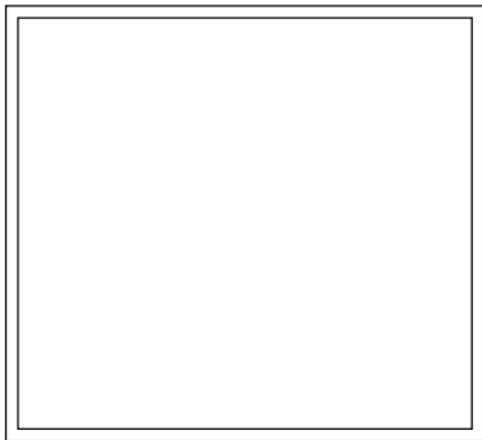
The U.S. Geological Survey was founded on March 3, 1879. During the past 121 years, the USGS has studied the geology, mapped the land, tested the water, and studied the plants and animals of our nation. Our studies contribute to the wise use of our resources and the health, safety, and well-being of our citizens. Our motto is “Science for a changing World.” Maybe you too can become a USGS scientist.



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## Biological Resources

Biologists at the USGS study the rare, as well as the common plants and animals that share with us the Earth's ecosystems. Their studies include migratory birds, Sequoia forests, desert frogs, fish, and salamanders. These scientists examine the effects of disease and contaminants on wildlife. These biologic data are used to help manage Federal lands, including National Parks and National Wildlife Refuges, and to protect migratory species. How many migratory species do you know?



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**BIOLOGICAL  
RESOURCES**

## Computer Technology

At the USGS, computers are used by scientists to collect, create, and send data as part of their everyday job. We use the latest technology, including multimedia, geographic information systems (GIS), and CD-ROM's, to prepare information. This information is then available to the public. The USGS has many Web sites on the Internet. During your next surfing session on the Net, check out the USGS at <http://www.usgs.gov>



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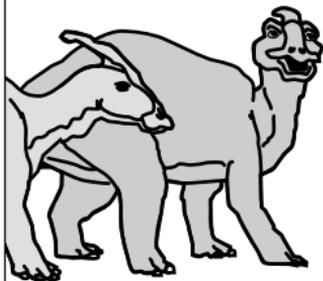
**COMPUTER  
TECHNOLOGY**

## Dinosaurs

These animals lived on Earth during the Mesozoic Era from 225 to 65 million years ago. They were the largest animals ever to live on land. We know that these animals were here from their fossils, such as bones, teeth, and footprints. Footprints from the *Tyrannosaurus rex* are as long as 39 inches from front to back. How big is your footprint? Some scientists think that the dinosaurs died out when a large asteroid hit the Earth near what is now southern Mexico and changed the world's climate for many, many years.



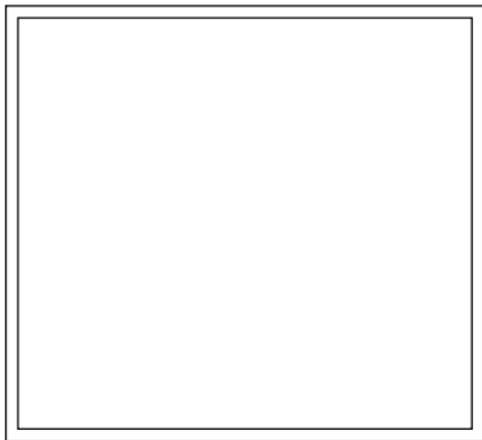
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**DINOSAURS**

## Earthquakes

When two pieces of the Earth's crust suddenly slip and move against each other, that movement usually creates the earthquakes that we feel. Scientists measure the energy of earthquakes to find out where they happened and how strong they were. The USGS in Menlo Park uses a computer network to collect earthquake information from all over northern and central California. Each of us needs to prepare for earthquakes, because they will always be a part of life in California.



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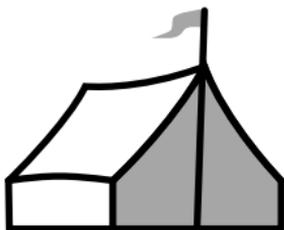
**EARTHQUAKES**

## Field Camp

Geologists often work in very remote areas collecting rock and soil samples, taking notes, and drawing maps. They live in tents and cook for themselves, while also looking out for wild animals and protecting themselves against stormy weather. In the 1880's, this type of field camp was very common and really not too different from the ones used today.



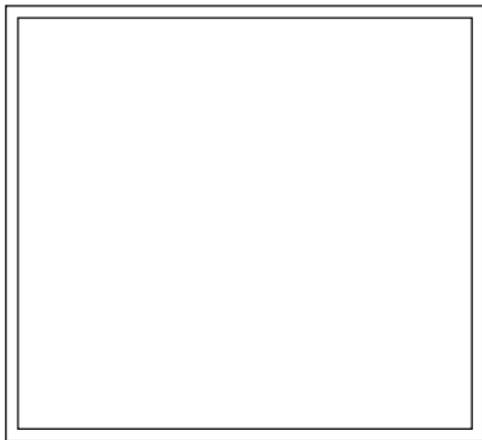
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**FIELD CAMP**

## Fossils

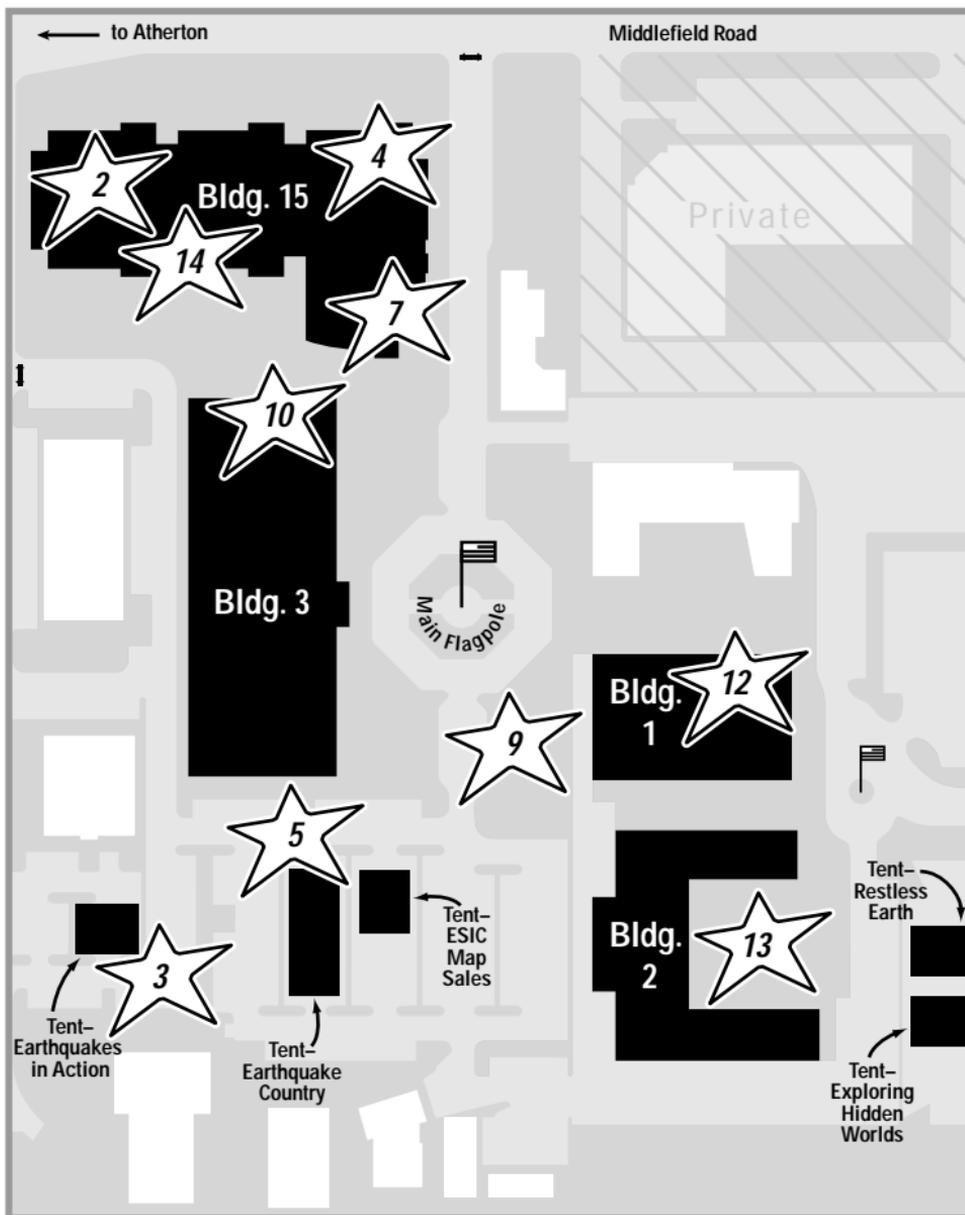
Fossils are the traces and remains of animals and plants that lived in the past. We find fossils in rocks and sediments, and some can be as much as 600 million years old. Scientists use fossils, some too small to see without a microscope, to help find out how old rocks are and to tell what the environment was like when the plant or animal was alive. Did you know that when dinosaurs were alive there were no people? We know this because no fossil bones from people have been found with bones from dinosaurs. Dinosaurs died out about 65 million years ago; the oldest human fossils are only about 3 million years old.



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**FOSSILS**



to Palo Alto →

## PASSPORT CHECKPOINTS

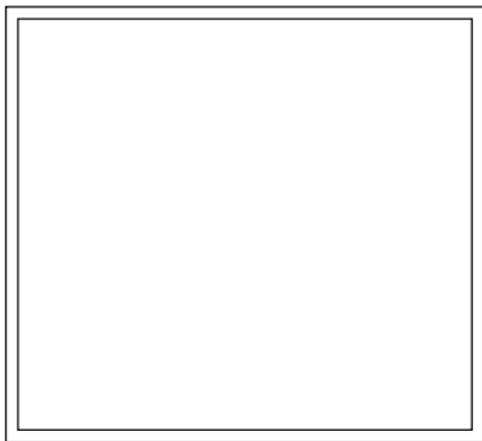


1. USGS—*Bldg. 6*
2. Biological Resources—*Bldg. 15, 2nd floor*
3. Computer Technology—*Earthquakes in Action Tent*
4. Dinosaurs—*Bldg. 15, 3rd floor*
5. Earthquakes—*Earthquake Country Tent*
6. Field Camp—*Bldg. 6 lawn*
7. Fossils—*Bldg. 15, Library*
8. Geologic Mapping—*Bldg. 5*
9. Gold Panning—*Main Flagpole*
10. Maps and Mapping—*Bldg. 3, 2nd floor*
11. Planetary Studies—*Exploring Hidden Worlds Tent*
12. Rocks and Minerals—*Bldg. 1*
13. Volcanoes—*Bldg. 2, patio*
14. Water Resources—*Bldg. 15, waterfall*



## Geologic Mapping

Geologists make maps of the rocks and other features of the Earth so that they can study how the rocks are related. These maps can show faults, landslides, minerals, fossils, and volcanoes, as well as where earthquakes have happened. By using these maps, geologists can help people plan for the best use of land, protect the environment, and find the safest places for people to live and work. Geologists are also using digital maps created on computers to display and analyze geologic features. You can buy these maps at our Map Sales office and check them out at many libraries.



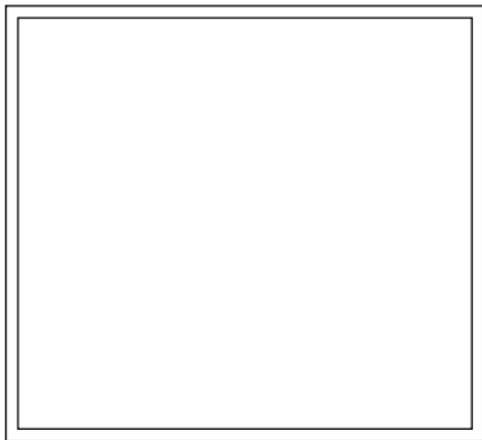
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**GEOLOGIC  
MAPPING**

## Gold Panning

During the Gold Rush, early California prospectors used a flat pan to separate out gold from other sediments in streams. Gold is a very heavy mineral and always sinks to the bottom. By swirling the water and sediment containing gold around in the pan, the gold will collect at the bottom of the pan. In California today, prospectors still look for gold in streams in the same way California prospectors did in 1849. Those early prospectors were called “the 49ers!”



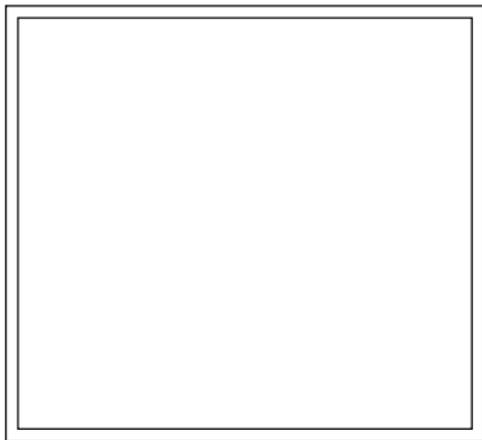
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**GOLD  
PANNING**

## Maps and Mapping

Maps are drawings or pictures of places we visit or study. Maps are easy to carry around and full of information about countries, oceans, roads, and planets! We use maps to travel, plan for the future, and understand our environment. From hiking on the Earth to landing a spacecraft on Mars, maps make our lives easier by letting us know where we are. Can you imagine a map made from digital photographs of the whole U.S.? The USGS has them right now!



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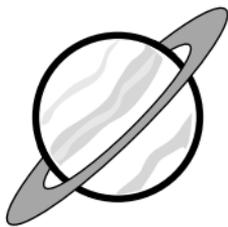
**MAPS AND  
MAPPING**

## Planetary Studies

Scientists at the USGS work with NASA scientists to study and map the planets and moons of our Solar System. Studying the geology of the planets can help us understand how the Earth was formed. Mars and the Moon are two of our close neighbors in the Solar System and were the first planets studied. Now we are making maps of the moons of Jupiter and Saturn! If you watch the early morning or evening sky, you can see the planet Venus; it will look like a bright star. Scientists at the USGS helped design the rover that was sent to Mars. Would you like to be a space traveler someday?



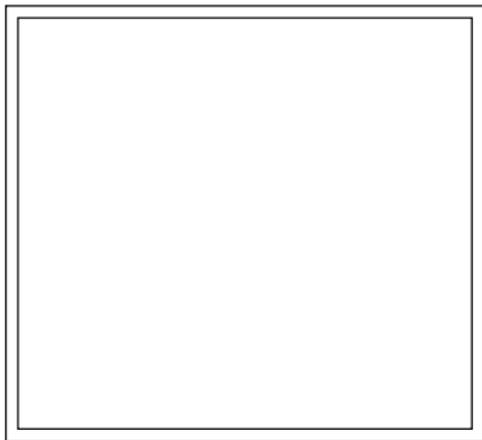
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**PLANETARY  
STUDIES**

## Rocks and Minerals

Rocks are made of many kinds of minerals. Mineral crystals can have beautiful shapes and colors. Quartz is one of the most common minerals, and gold is one of the rarest. Scientists divide rocks into three groups—igneous, sedimentary, and metamorphic. Granite is a common igneous rock that forms many of the high peaks in the Sierra Nevada. Sandstone is a sedimentary rock that is used to make patio walkways. Marble is a metamorphic rock that is formed when limestone (a sedimentary rock) is changed by the heat and pressure deep under the Earth's surface. Marble is used for counter tops and fireplace fronts.



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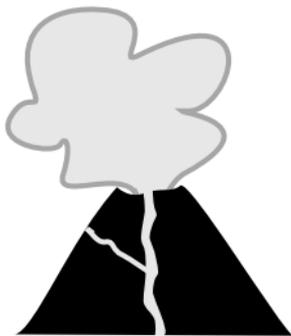
**ROCKS AND  
MINERALS**

## Volcanoes

The edge of the Pacific Ocean, including the western United States, is surrounded by volcanoes. Because there are so many volcanoes, the area around the Pacific is called the Ring of Fire. By studying volcanoes and learning to predict when they are about to erupt, USGS scientists have saved many lives. Geologists from the USGS predicted the eruptions of Mt. St. Helens, Washington, in 1980 and Mt. Pinatubo, Philippines, in 1991, as well as predicting many eruptions of Hawaiian volcanoes. Two of the USGS volcano observatories are the Hawaiian Volcano Observatory and the Cascade Volcano Observatory in the State of Washington.



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**VOLCANOES**

## Water Resources

Water is our most valuable resource. USGS scientists map where fresh water is found, study the plants and animals that live in the water, and measure how safe the water is to drink. Did you know that not all fresh water is in lakes and rivers? Much of it is underground. By learning about water resources, we can help manage these resources for the future. You can help protect this important resource by understanding that you and the water you use are part of the Earth's ecosystem.



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**WATER  
RESOURCES**

# Congratulations!

You have completed your  
adventure tour around the  
U.S. Geological Survey.

Where will your science  
adventures take you next?

U.S. Geological Survey  
345 Middlefield Road  
Menlo Park, CA 94025-3591

Hours—M-F, 7:45-4:15

Phone—(650) 853-8300

Internet—<http://www.usgs.gov>