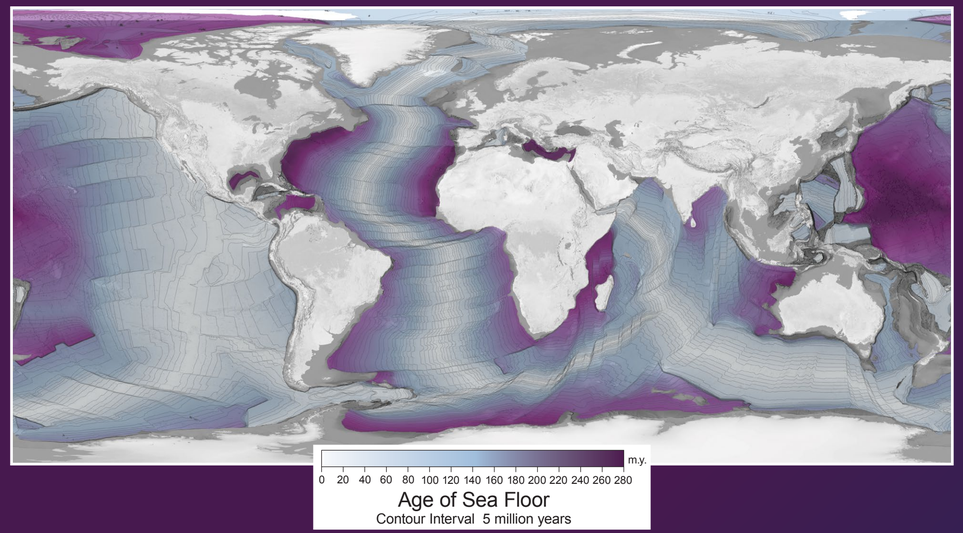
Earth Science Everywhere

EARTH SCIENCE WEEK

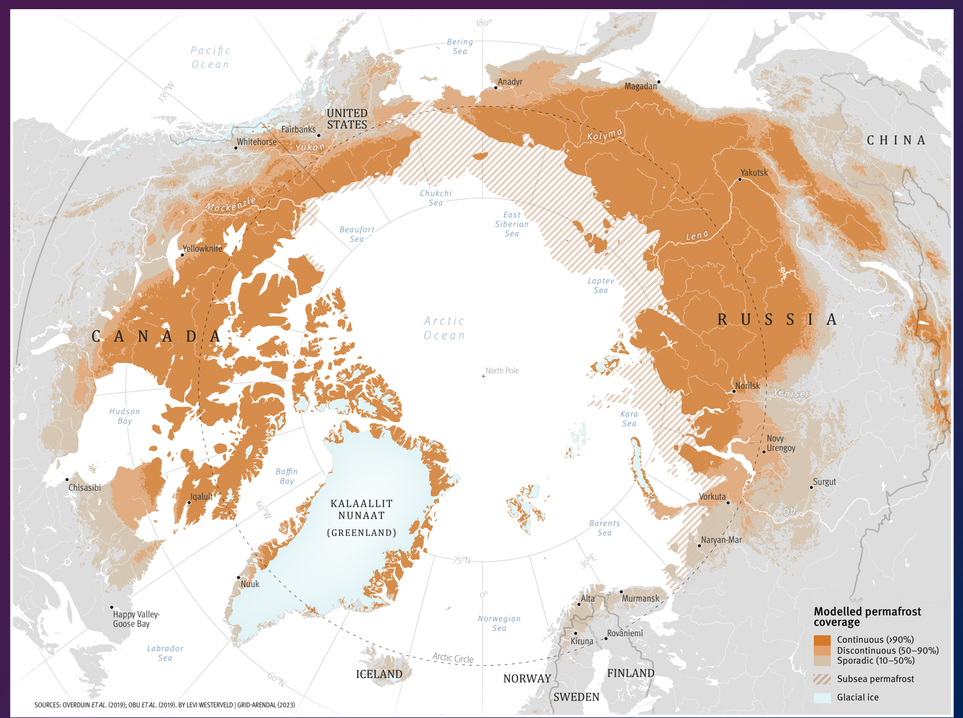


This map shows the **age of the ocean floor** with the lines or contours of 5 million years as shown in the colorbar. Learn more about this map on the poster back and view the interactive version online at https://bit.ly/NOAA-seafloorage

Credit: NOAA Science on a Sphere/ NOAA National Centers for Environmental Information

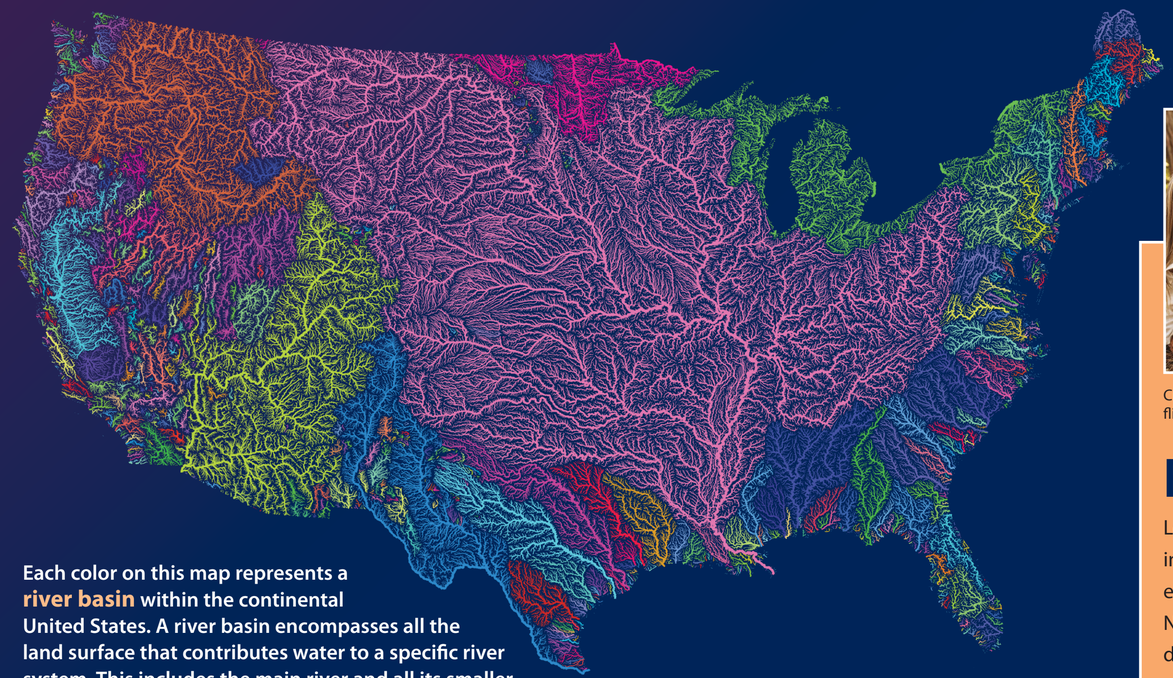
Earth Science Everywhere recognizes the widespread and intricate nature of Earth's processes, studied and observed across vast scales, from local to global environments. Geoscience is all around us, shaping the world we inhabit and the choices we make. From continental drift to groundwater flow, Earth's dynamic systems unfold before us, offering insights into the forces that govern our planet's past, present, and future.

Explore the maps and consider the geoscience processes that are being shown. What impact might these processes have on your life or to your community? Why might these processes be important to study and consider? Also consider how each image helps to show that earth science is everywhere. What meanings of 'everywhere' do the images each provide, and when they are thought of together?



Permafrost, defined as ground that has been frozen for at least two years, is mainly found in Earth's coldest regions. The orange areas on this map show the extent of permafrost coverage in the Arctic.

Credit: GRID-Arendal



Each color on this map represents a **river basin** within the continental United States. A river basin encompasses all the land surface that contributes water to a specific river system. This includes the main river and all its smaller tributaries, as well as lakes, wetlands, and groundwater resources within the basin boundaries.

Credit: Robert Szucs/www.grasshoppergeography.com

Credit: Botanic Gardens of Sydney, via Flickr. https://www.flickr.com/photos/botanic-gardens-sydney/52050952991

Bring it Local!

Learn about your own community by exploring local data. Visit **https://bit.ly/ESW-2024** to explore local data such as satellite data from NASA, weather data from NOAA, surface water data from USGS, and soil data from NRCS.

As you explore the data, consider how local data differs from the global, regional, and continental data shown here. Reflect on the importance of collecting and analyzing data at various scales for informed decision-making and environmental management in your community.

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Earth Science Week | October 13–19, 2024 | www.earthsciweek.org

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You're Invited

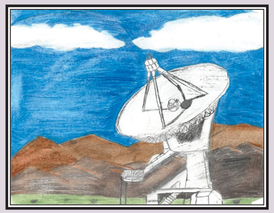
"Earth Science Everywhere," the theme of Earth Science Week 2024 (October 13–19), explores the many ways that earth science is conducted — by various types of people and professions in interconnected disciplines — to help solve problems for communities and the planet.

You are invited to join in the celebration of Earth Science Week 2024. Play your part by learning about and raising awareness of how earth science being done in your community is helping to solve problems and improve sustainability.

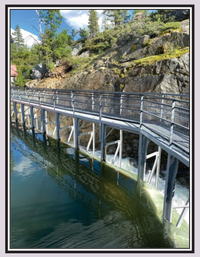
Get Involved

We encourage you to participate in Earth Science Week by attending, planning, and/or hosting events; entering the Earth Science Week contests; and more! Visit www.earthsciweek.org to:

- Participate in Earth Science Week contests.
- Watch the Earth Science Week webinar series.
- Browse a collection of online resources.
- Participate in focus days.
- Plan an Earth Science Week event.
- Scan this QR code for more information about how to get involved in Earth Science Week 2024.



Earth Science Week 2023 Visual Arts Contest finalist entry by Tracer Montoya



Earth Science Week 2023 Photography Contest finalist entry by Mandy Roche

Find Out More

See the Earth Science Week 2024 Toolkit (www.earthsciweek.org/toolkit/) and website (www.earthsciweek.org/) for webinars, ways to get involved, and instructional resources. Have a great Earth Science Week!

Start preparing for next year's Earth Science Week, October 12–18, 2025.

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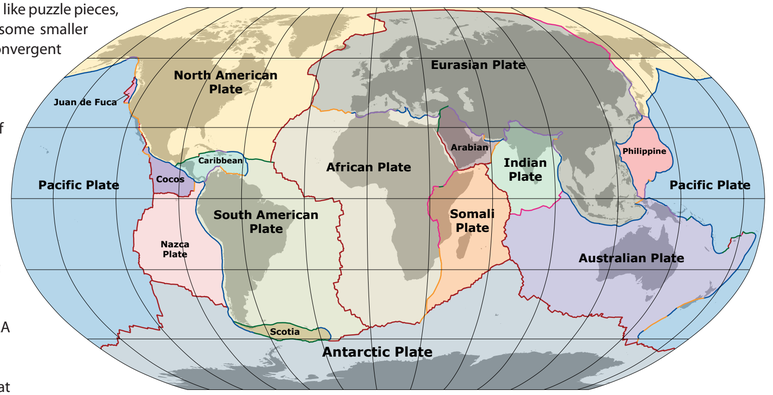
Exploring the Age of the Seafloor

The Earth's surface is made up of tectonic plates that fit together something like puzzle pieces, forming fault lines where they meet. There are seven major plates and some smaller ones. These plates move apart at divergent boundaries and collide at convergent boundaries. At transform boundaries, the plates slide past each other.

Learning Activities

1. Examine the Age of the Seafloor map on the poster front and a map of the major tectonic plates. Identify the type of boundary at which new crust is made and explain your reasoning using evidence from the maps. Also, make observations of any patterns or trends you notice.
2. Construct a seafloor spreading model using toilet paper, pencils, and confetti to help explain the map and explore other related data. Detailed instructions, discussion questions, and related data can be found at https://bit.ly/IODP-SeafloorSpreadingModel
3. Explore the interactive version of the seafloor map online and other NOAA deep sea resources at www.earthsciweek.org/resources/2024/
4. How do you think scientists know the age of the seafloor? Learn more at https://bit.ly/ScientificOceanDrilling



Tectonic plates divide the Earth's crust into distinct sections that are always slowly moving.
credit: M.Bitton modified from Hasterok, Derrick (8 June 2022). New maps of global geological provinces and tectonic plates. American Institute of Physics - Phys.org. Retrieved on 27 March 2023., CC BY-SA 3.0.

Exploring Permafrost in the Arctic

Permafrost, frozen ground lasting at least two years, is found in Earth's coldest regions: the Arctic, boreal zones, Antarctica, and high-altitude areas. It profoundly impacts the plant, animal, and human communities in these regions. Permafrost underlies 15% of the northern hemisphere's exposed land. It is prevalent across the Arctic and extends into areas like Alaska, Canada, Greenland, Russia, and the Tibetan Plateau. Permafrost varies in thickness and distribution, and is classified into continuous, discontinuous, sporadic, and isolated zones. These zones range from large expanses of continuous permafrost, covering over 90% of the landscape, to smaller patches in sporadic and isolated zones. Additionally, permafrost exists beneath the seabed in Arctic continental shelves, with vast areas estimated to exceed 400 meters in thickness.

Learning Activities

1. Examine the Extent of Permafrost in the Arctic map on the poster front. What patterns do you notice in the distribution of permafrost across the Arctic region? How might variations in temperature and precipitation influence the extent of permafrost in different areas of the Arctic?
2. Construct a model that examines impacts to communities built on ground containing permafrost using ice, gravel, hot water, and a container. Detailed instructions, discussion questions, and related data can be found at https://bit.ly/PermafrostActivity
3. Learn more about permafrost through cartoons, a board game, augmented reality, and more resources from https://frozengroundcartoon.com/

A soil pit with ice at 55 cm deep
Skip Walker, United States Permafrost Association

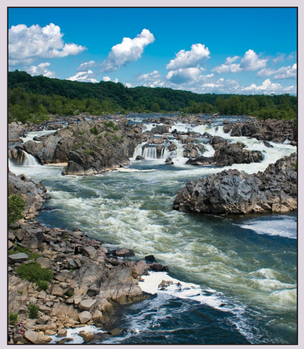
4. Virtually explore the Permafrost Tunnel Research Facility at https://virtualice.byrd.osu.edu/permafrost/

Exploring Watersheds in North America

Watersheds serve as natural drainage systems, collecting rainfall and channeling it towards a common outlet such as lakes, rivers, or oceans. The health of watersheds directly impacts the availability and cleanliness of water for drinking, agriculture, and ecosystems. Additionally, watersheds play a critical role in regulating water cycles, mitigating floods, and replenishing groundwater reserves. Understanding and managing watersheds is essential for sustainable water resource management and ecosystem conservation, ensuring the well-being of both human and natural communities.

Learning Activities

1. Examine the Watersheds in North America map on the poster front, make a hypothesis as to where the outlets for each watershed may be located.



Potomac River, Virginia, USA
iStock/Douglas Rissing

2. Construct a model of a watershed using a shower curtain and a spray bottle. Monterey Bay Aquarium has detailed instructions and discussion questions that can be found at https://bit.ly/MB_watershed
3. Explore the watershed where you live at USGS Science in Your Watershed website https://water.usgs.gov/wsc/
4. Follow along on the journey of a raindrop using River Runner (https://river-runner-global.samlearner.com/). Choose a starting point anywhere on the map and track the raindrop's pathway as it navigates through various waterways. Observe how the landscape and water systems evolve along the raindrop's route.

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Soil Science Society of America
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