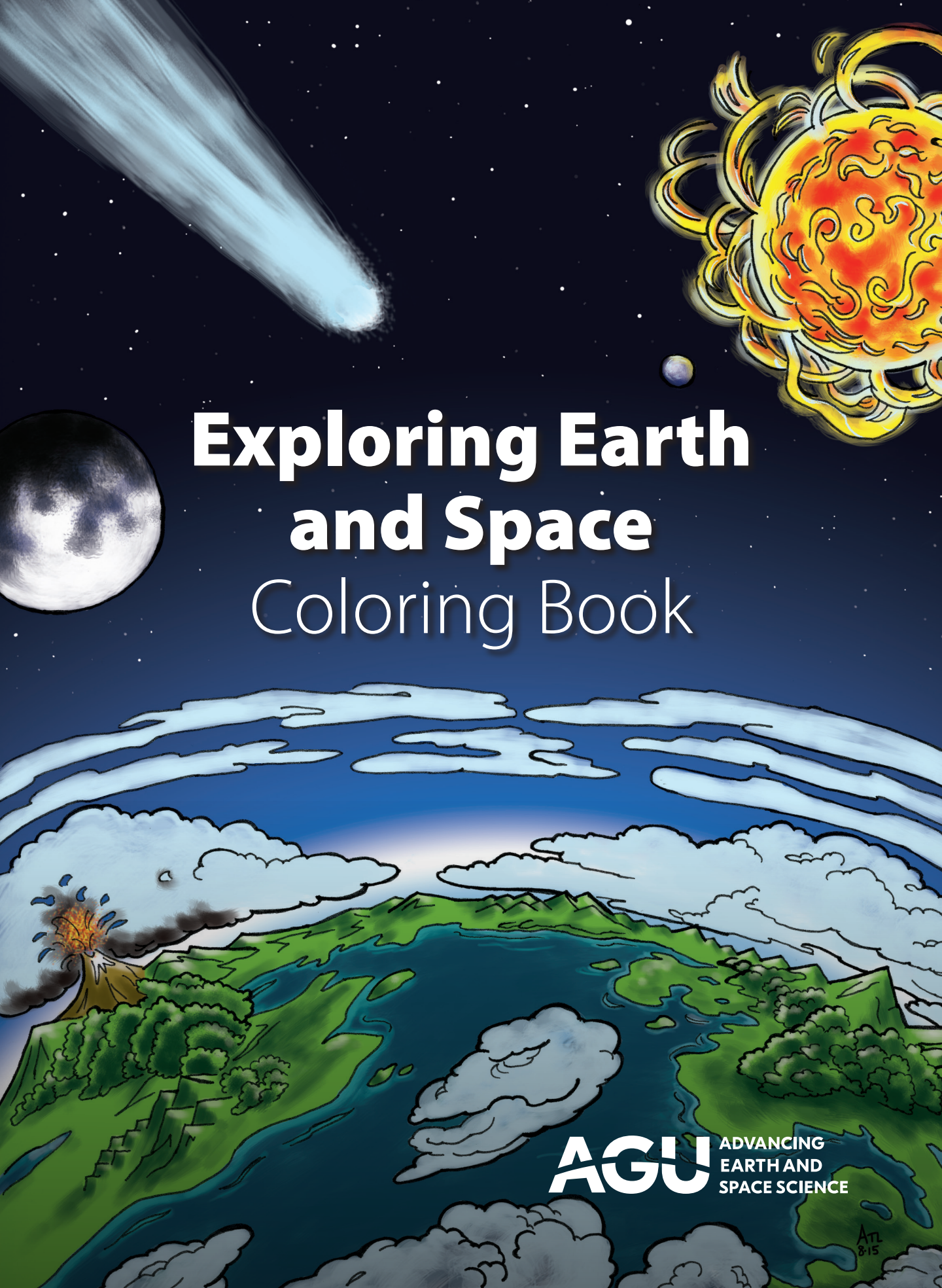




Exploring Earth and Space

Coloring Book

AGU

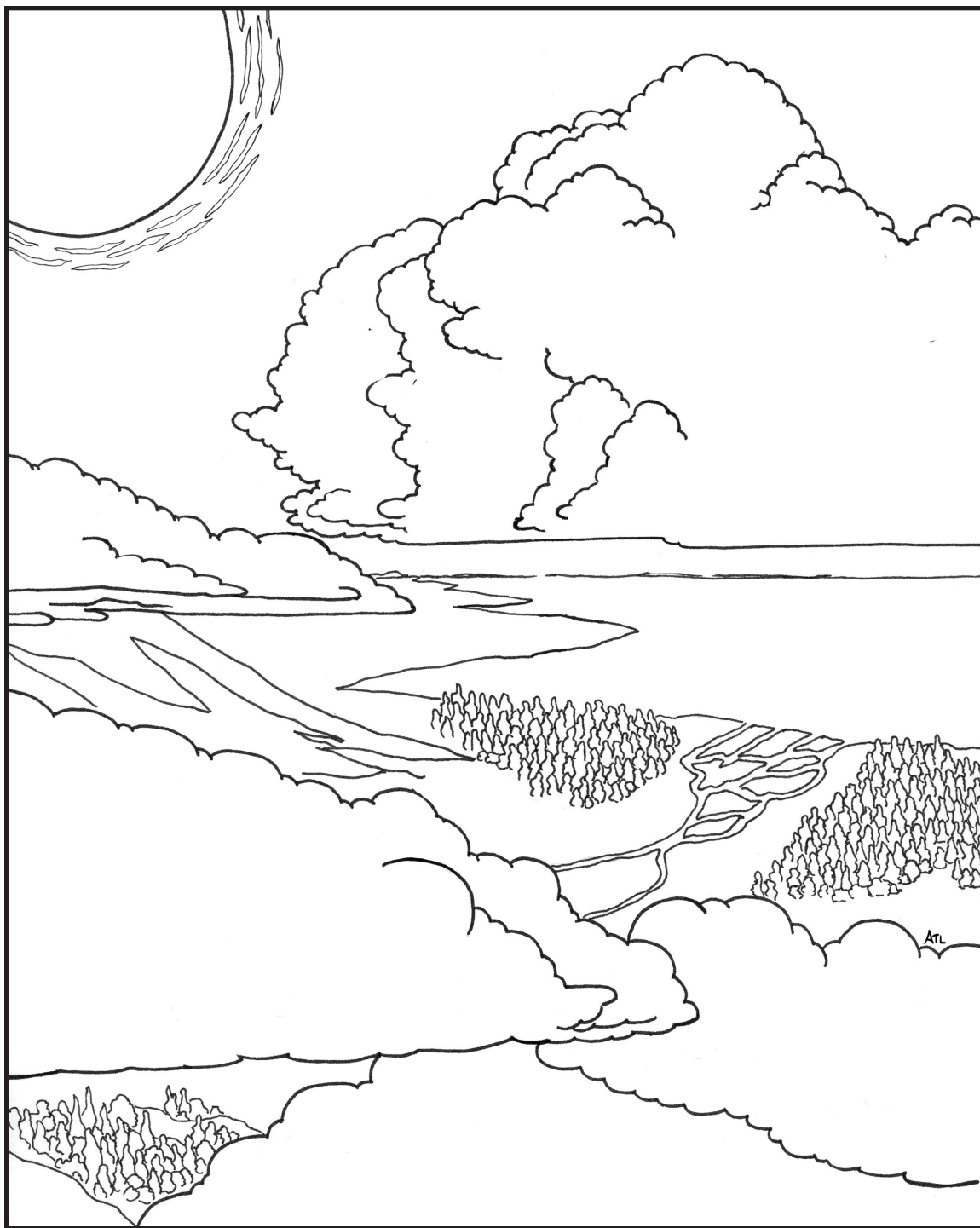
ADVANCING
EARTH AND
SPACE SCIENCE

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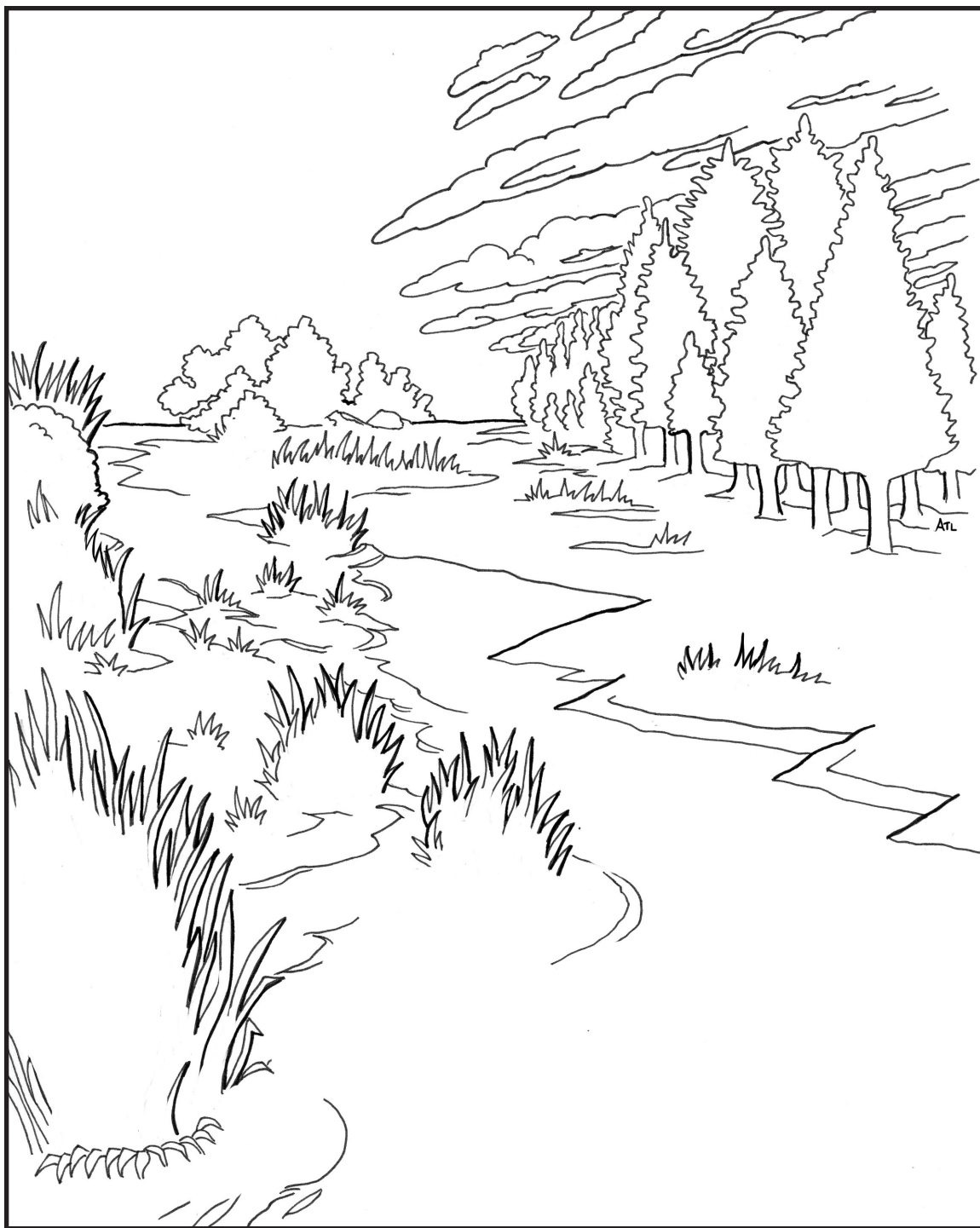
Exploring Earth and Space

Coloring Book

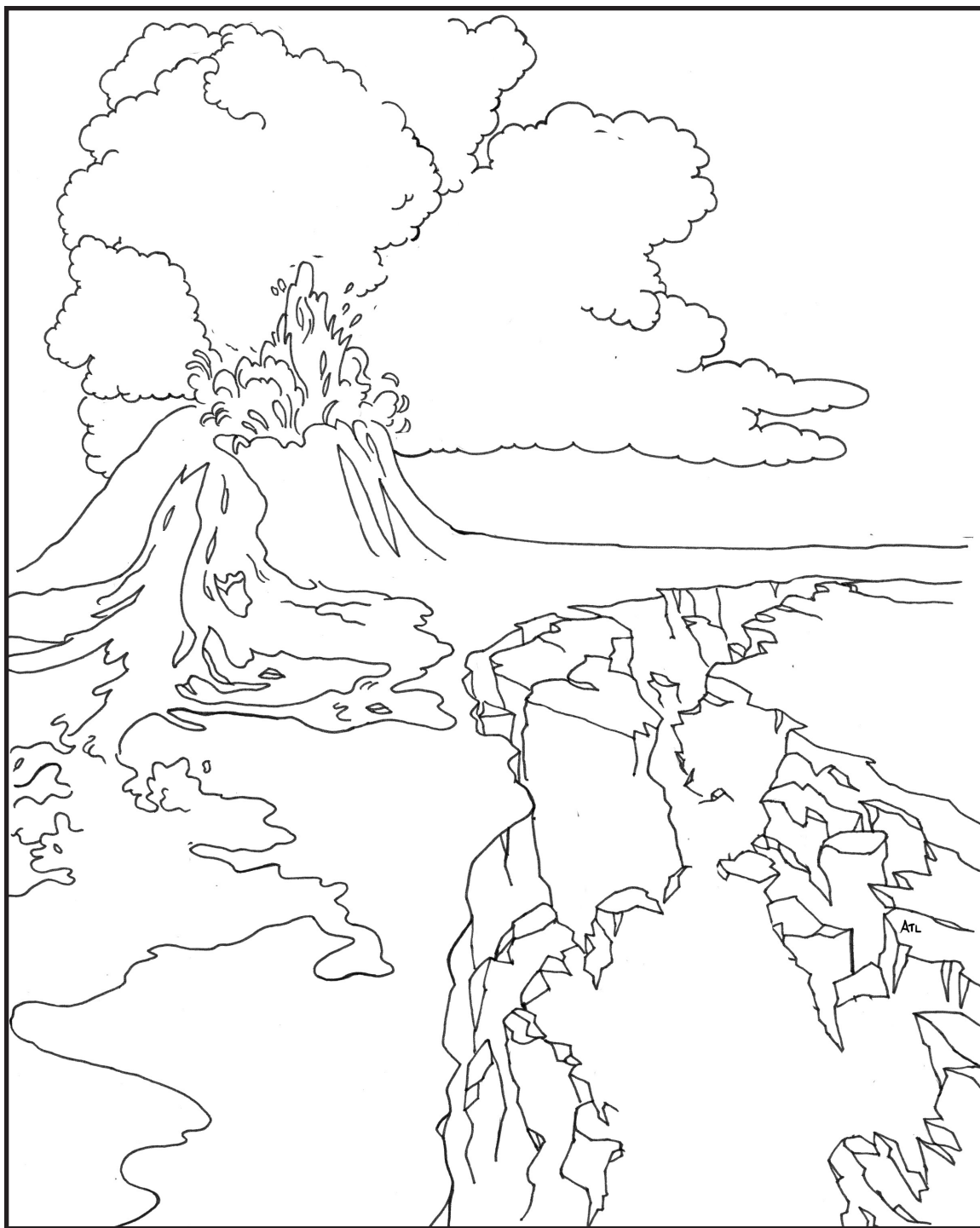
From rivers that carve out canyons to tectonic plates that build mountains, our rocky planet Earth is always changing. In space, planets—with their own volcanoes and thunderstorms—whirl around the Sun. Earth and space scientists are dedicated to studying our solar system, from the moon of the distant dwarf planet Pluto to the very bottom of our oceans, not only to understand these things better but also to protect our planet and us.



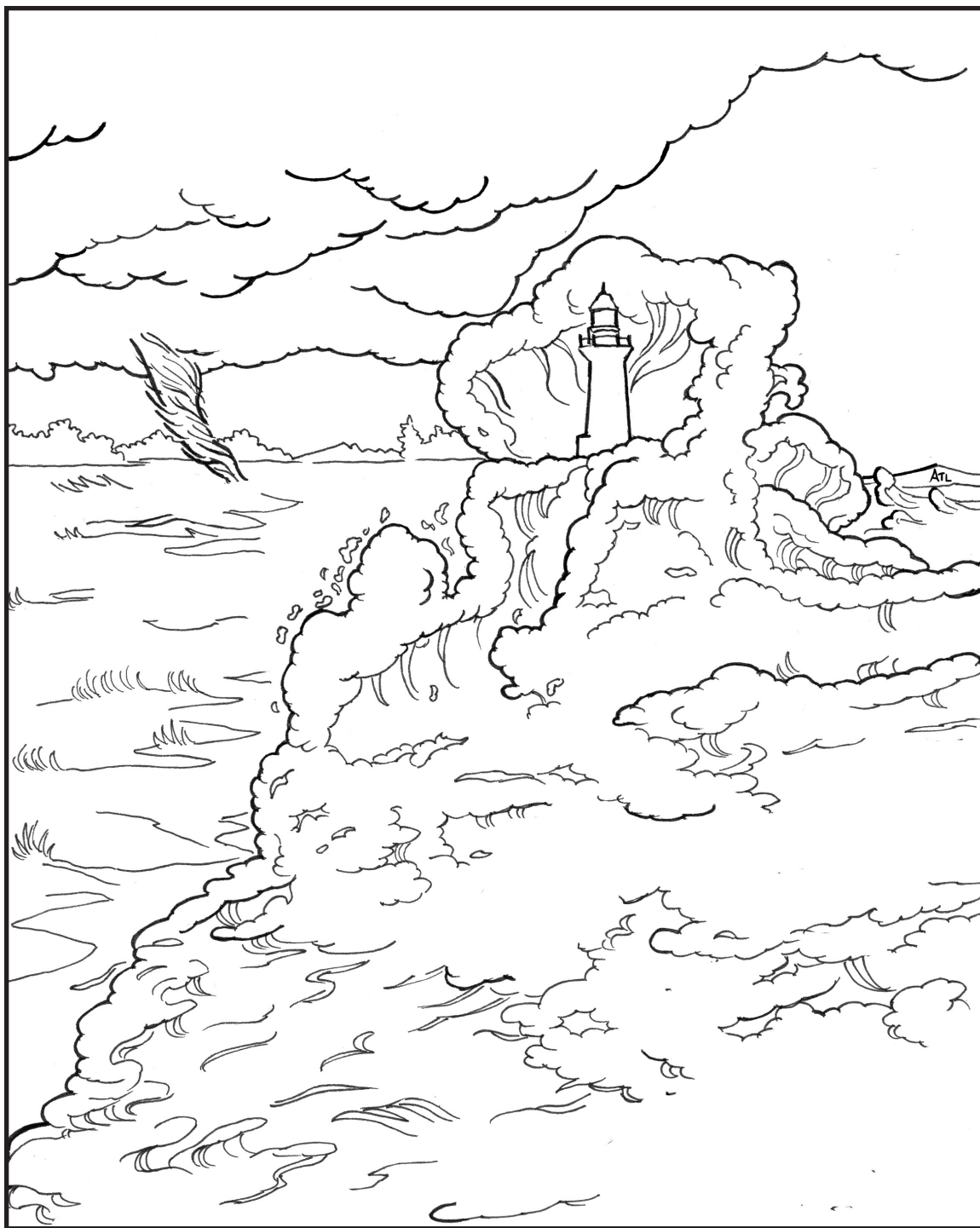
Some days it rains, some days it's cloudy, some days it's sunny—and some days all three can happen! Scientists studying the weather can tell us if next week will be cold or hot or if you should expect rain or sunshine.



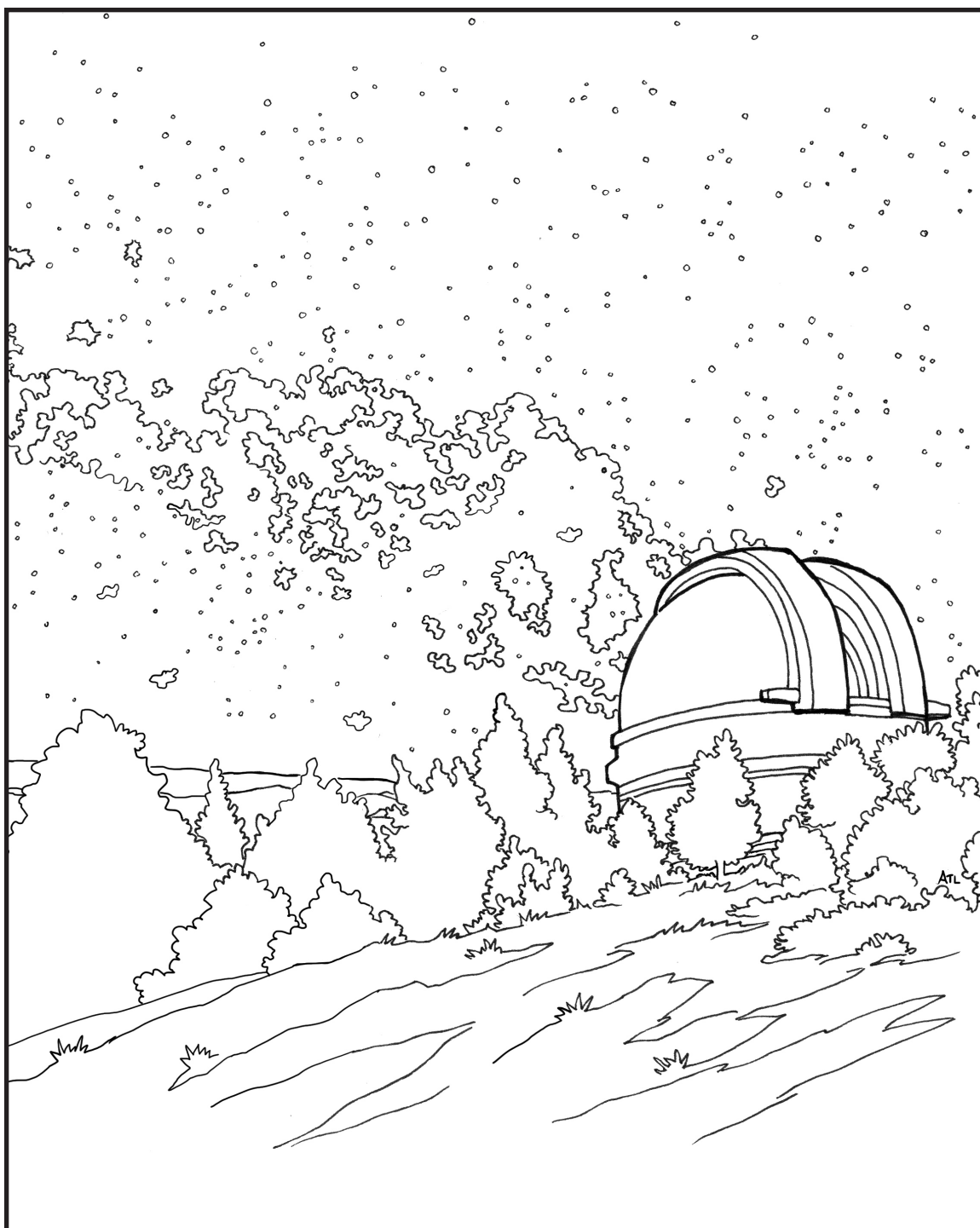
The pattern of weather over years or decades is called the climate. Some places, like Australia, have hot, dry climates. Others, like Canada, can get very cold and wet. Scientists study the climate to see how it changes over time.



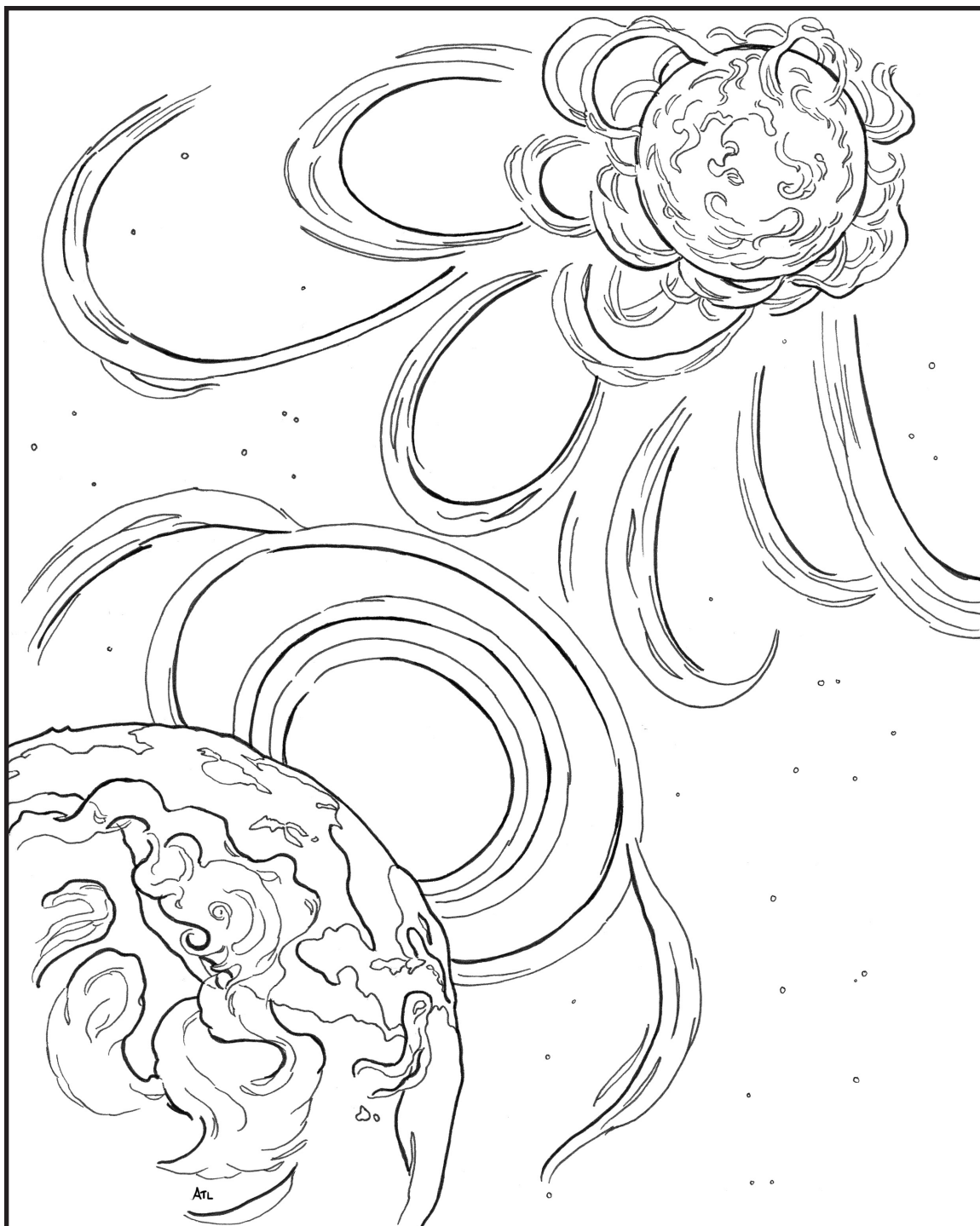
Every once in a while, the ground shakes during an earthquake, the side of a mountain crumbles during a landslide, or a volcano spews steam, ash, and lava during an eruption. Earth scientists study these natural hazards to keep us safe!



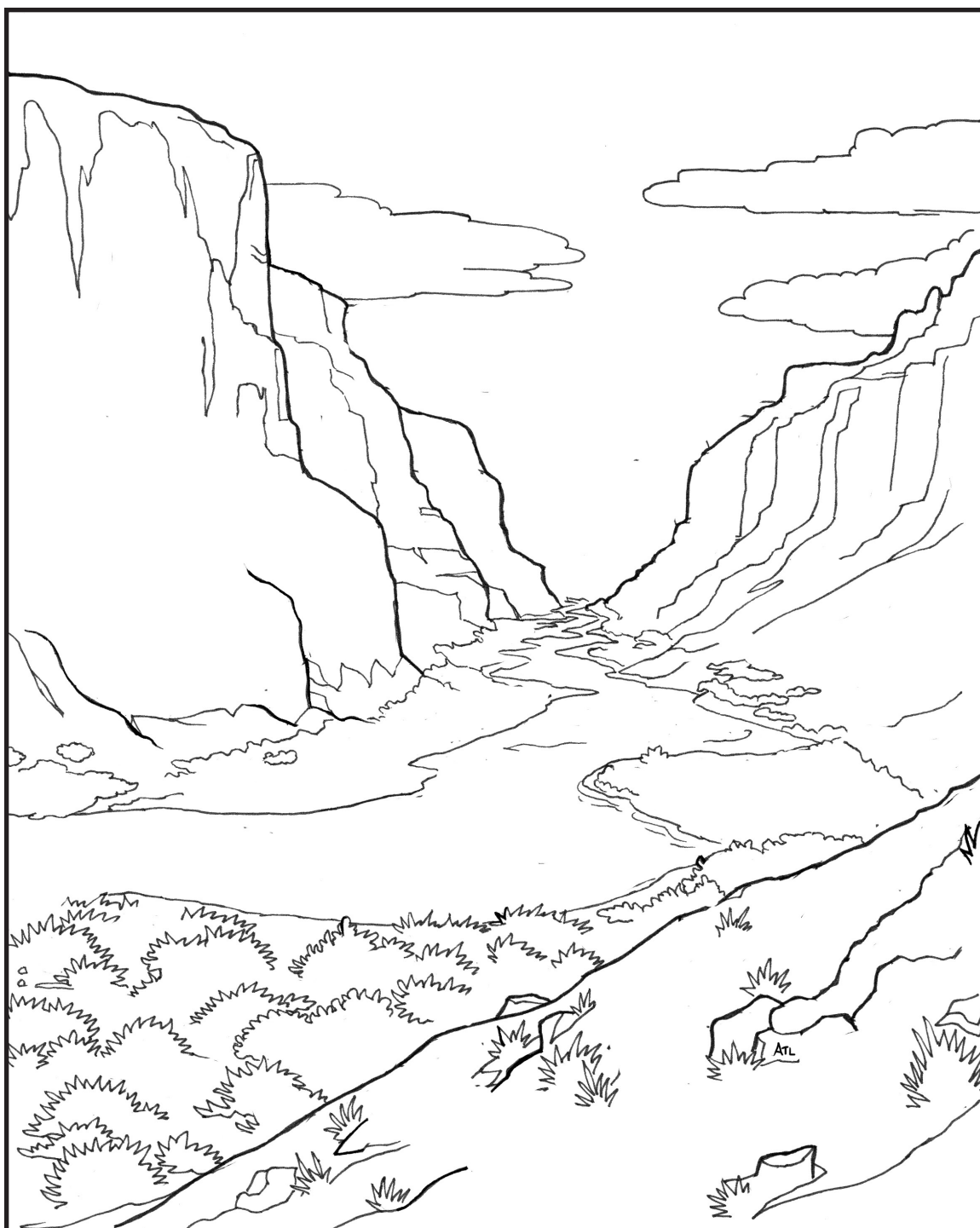
Weather can also be a natural hazard. Atmospheric scientists study the formation of tornadoes and hurricanes so people can better prepare themselves for these dangers.



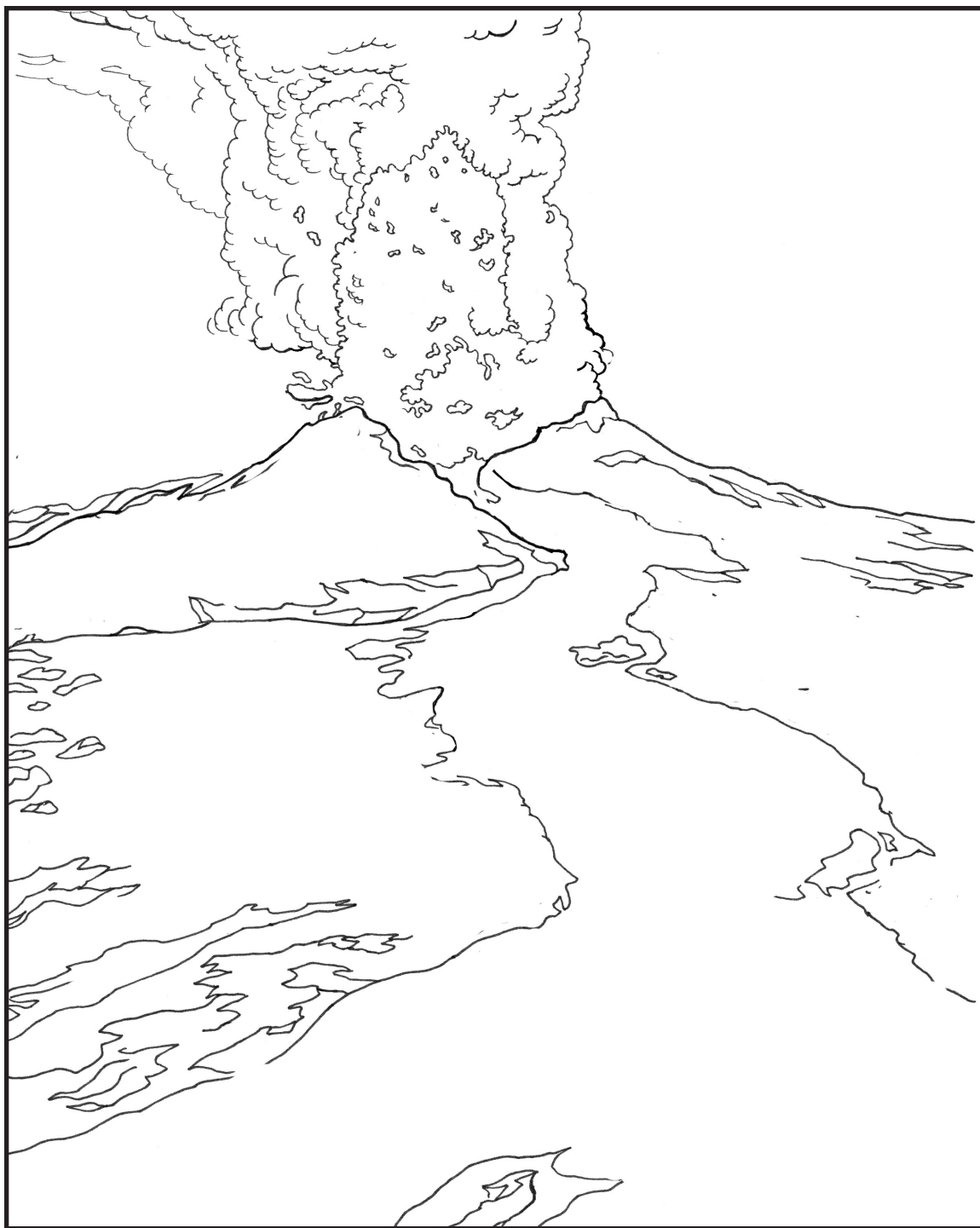
Early space scientists observed patterns in how the moon and stars moved in the sky and discovered that these motions could be predicted. Modern space scientists study the planets of our solar system and beyond. By studying other planets, scientists can learn more about our very own planet, Earth.



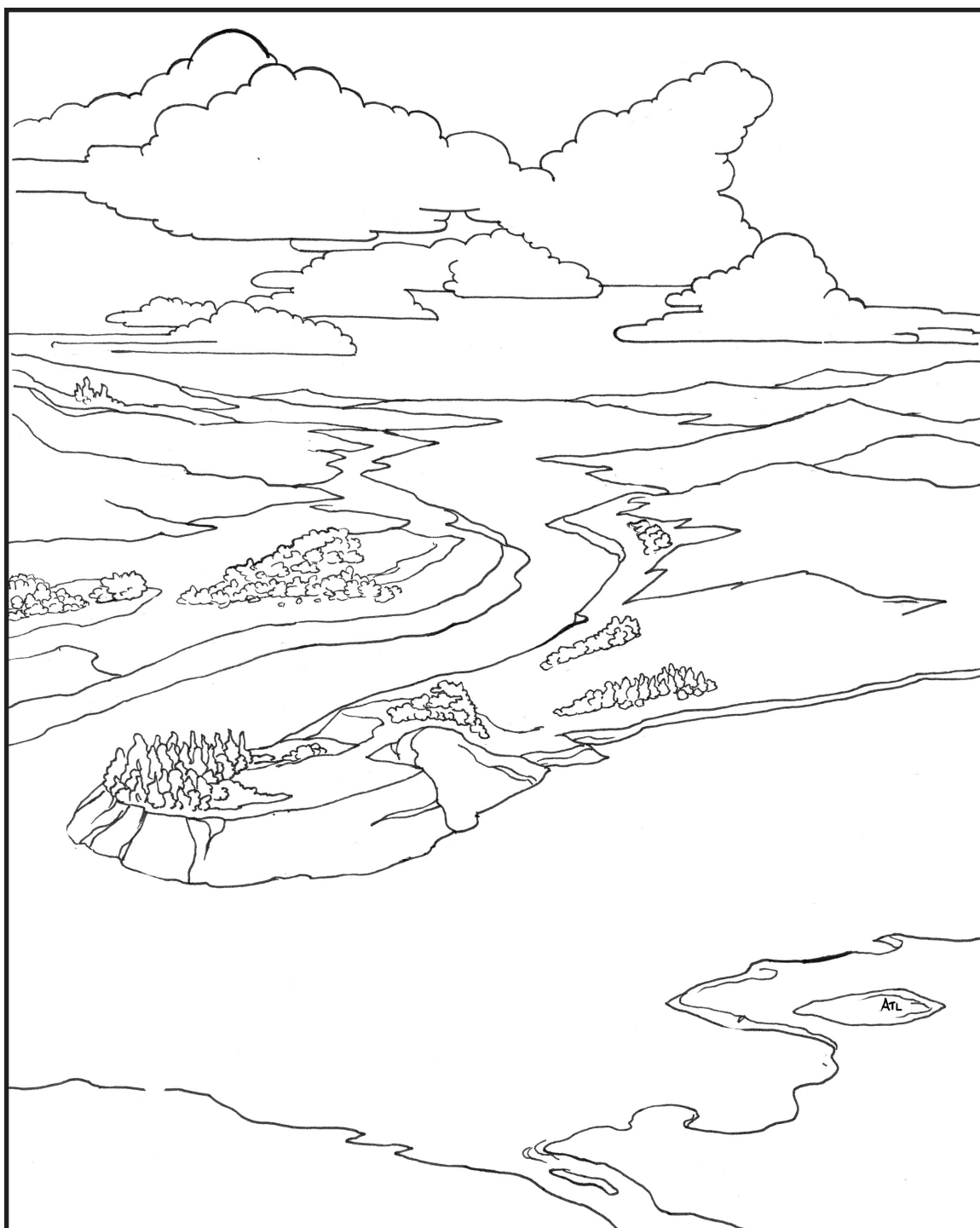
The Sun is our closest star, so it appears larger and brighter than other stars. Scientists study how the Sun's rays affect the protective layer around Earth, called the magnetosphere. This way, people on Earth can be better prepared in case the Sun burps its gases in our direction.



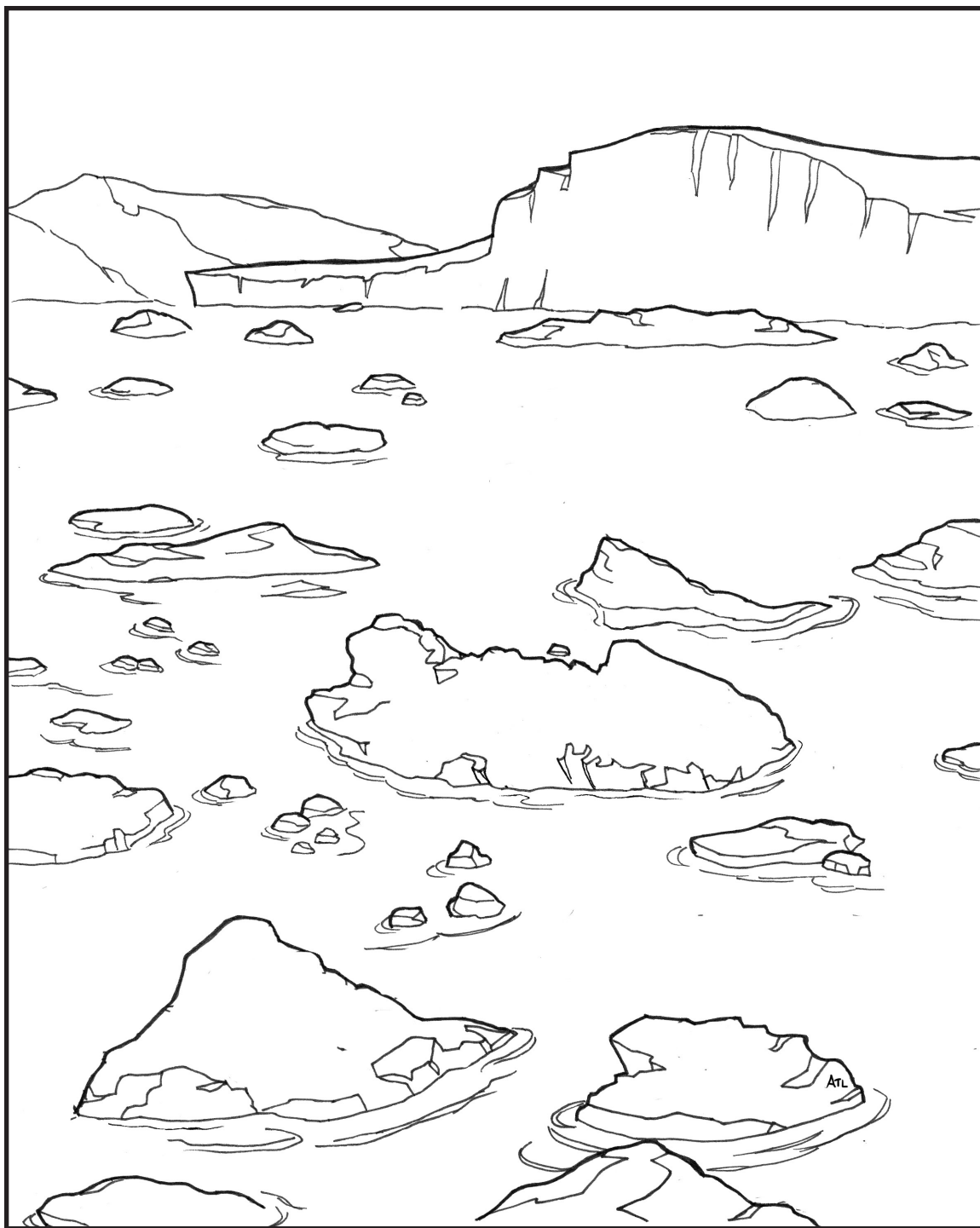
Earth scientists want to know how our planet formed, which is why they study patterns of rock formations, the rivers that flow over the land, and rain and wind, which shrink and smooth out the rocks over millions of years.



Sometimes, changes on Earth's surface happen suddenly. Volcanoes can erupt, covering the land with lava, or earthquakes can change the shape of a coast.



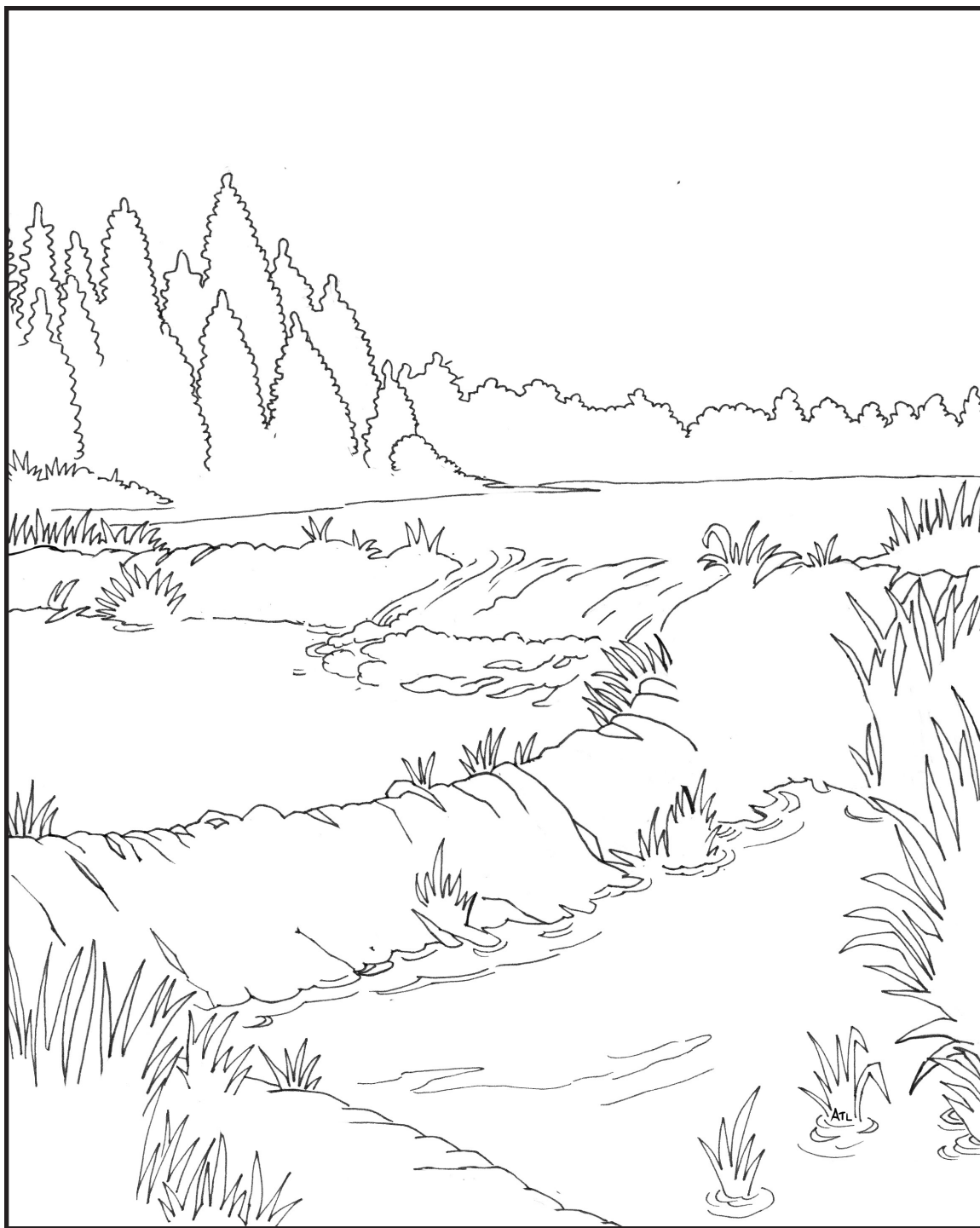
Earth is also covered by oceans, rivers, lakes, ponds, and other bodies of water. Many plants and animals live in this water. Humans depend on water to survive! Water scientists help us understand how it moves.



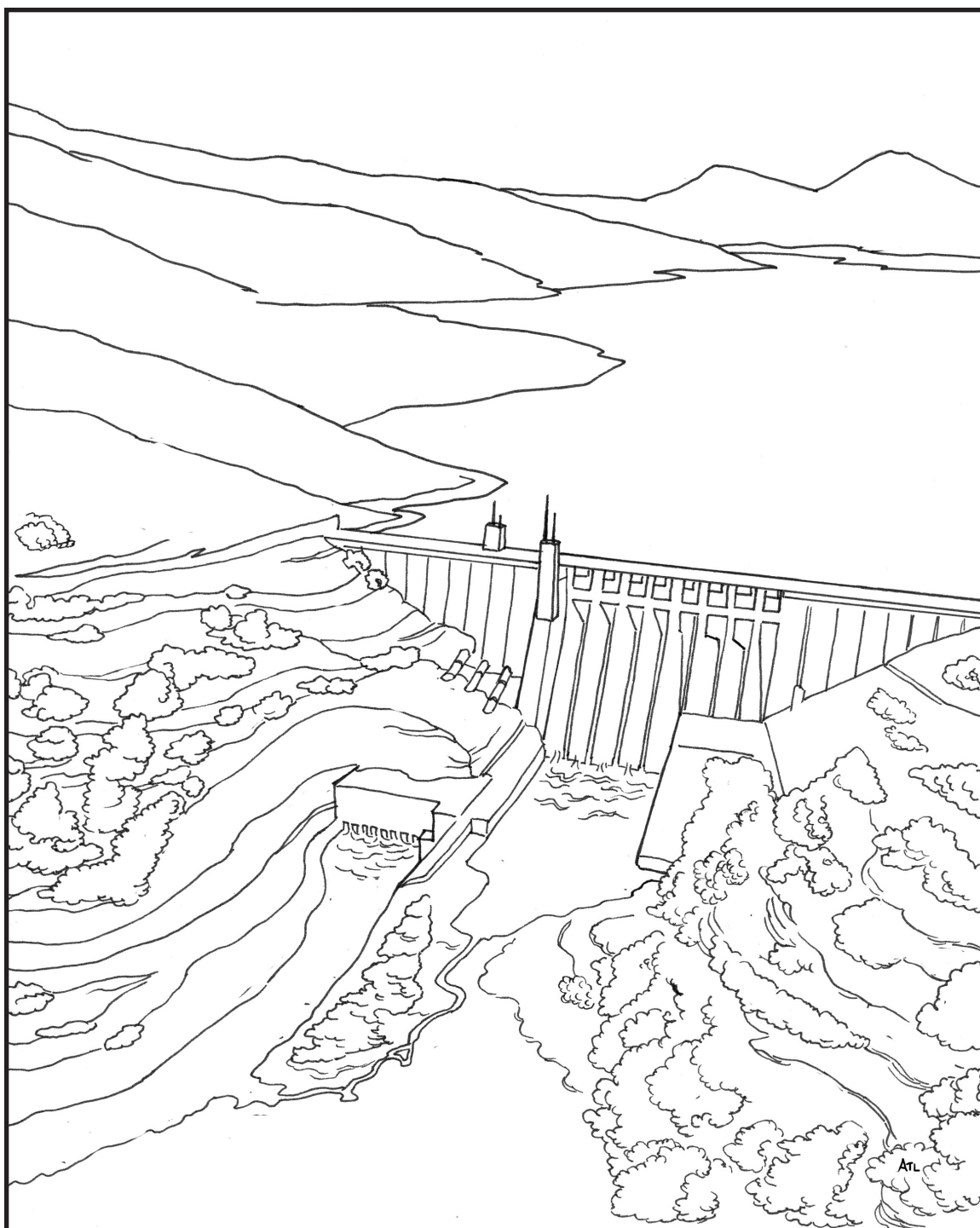
Some of Earth's water is frozen into glaciers, which are huge sheets of ice on land. Earth scientists study how climate change can melt glaciers, which can raise sea level.



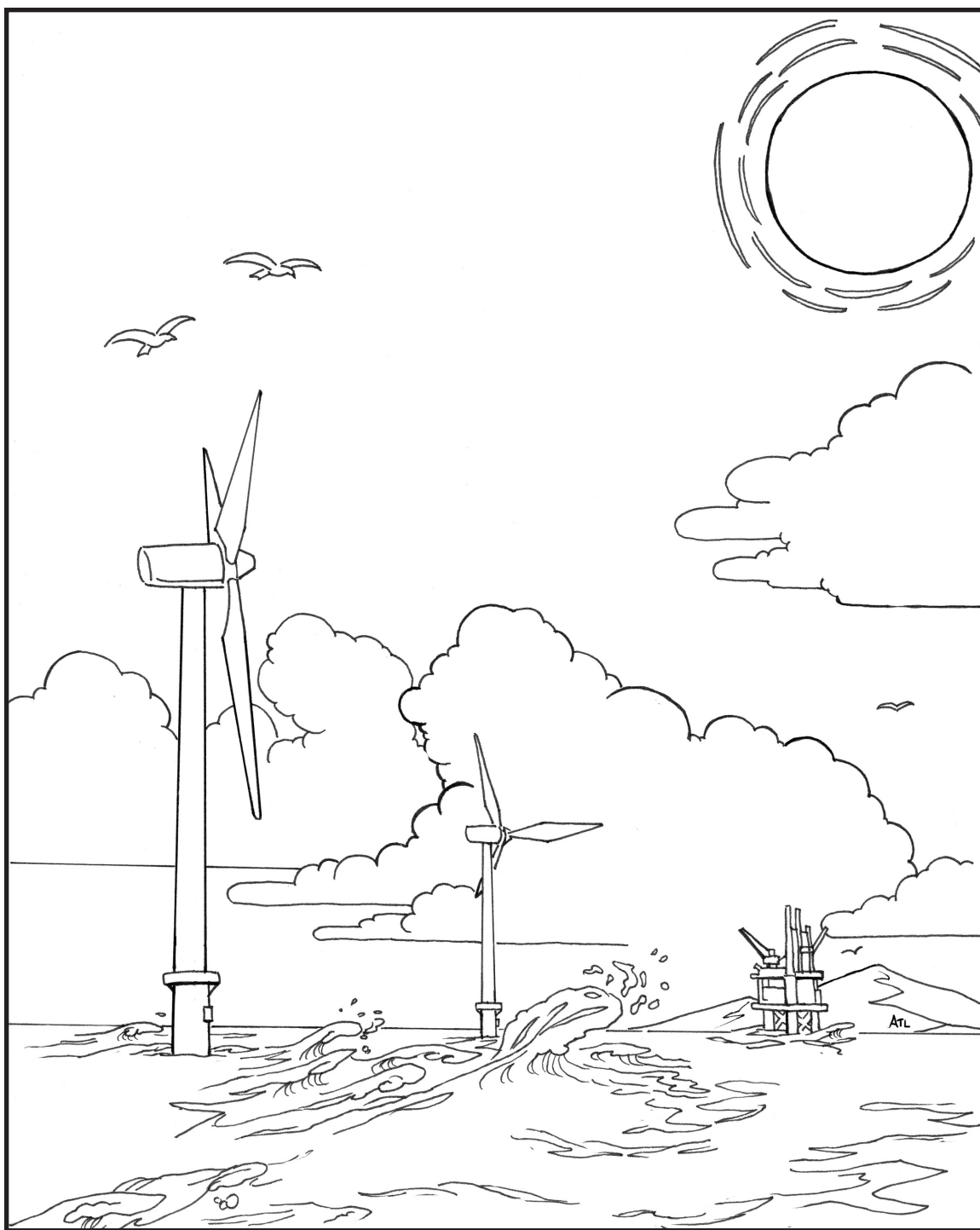
Earth scientists also study how living things can affect Earth, such as how tree roots can break through rocks or how tiny organisms in soil can add heat to the air.



Beavers, who build dams out of wood, can affect the environment. Some water scientists study how beaver dams can change the course of a stream.



Human beings change Earth more than we think. We cut down trees, we build dams out of steel and concrete, and sometimes we even change the shape of rivers.



Humans also use Earth's natural sources of energy. Some of this energy will last a long, long time—like wind, waves, and the Sun's rays—but some of these resources will be used up one day, like oil from deep underground. That's why it's important to always recycle and turn your lights off when you leave the house. That way, energy isn't wasted!

Glossary

Ash: Bits of pulverized rock and glass launched into the sky during a volcanic eruption.

Atmosphere: The different layers of gases that surround a planet.

Climate: The pattern of weather over time, such as years or decades.

Earthquake: A sudden or violent shaking of the ground as a result of movements deep within Earth.

Glacier: A huge sheet of ice that moves slowly across land.

Hurricane: A strong, circular storm that forms over the ocean.

Landslide: The sliding down of a large amount of rocks or dirt from the side of a mountain or cliff.

Magnetosphere: An outer, invisible layer of Earth's atmosphere that shields Earth from some of the Sun's energy.

Natural hazard: A potentially harmful event that happens on Earth that is not caused by humans.

Organism: A living thing.

Tectonic plate: A piece of the hard, rigid shell that covers the Earth. The plates move a tiny bit every year and, over billions of years, have moved all around the Earth.

Tornado: A type of storm in which huge gusts of wind twirl in a giant funnel shape.

This coloring book is tied to the Next Generation Science Standards and covers the following Disciplinary Core Ideas:

Page 2: ESS2.D: Weather and Climate

Page 3: ESS2.D: Weather and Climate

Page 4: ESS3.B: Natural Hazards

Page 5: ESS3.B: Natural Hazards

Page 6: ESS1.A: The Universe and Its Stars

Page 7: ESS1.A: The Universe and Its Stars

Page 8: ESS2.A: Earth Materials and Systems; ESS1.C: The History of Planet Earth

Page 9: ESS1.C: The History of Planet Earth

Page 10: ESS2.C: The Roles of Water in Earth's Surface Processes

Page 11: ESS2.C: The Roles of Water in Earth's Surface Processes; ESS3.A: Natural Resources

Page 12: ESS2.E: Biogeology

Page 13: ESS2.E: Biogeology

Page 14: ESS3.C: Human Impacts on Earth Systems

Page 15: ESS3.A: Natural Resources

Resources for Teachers

AGI's Critical Issues Program

<http://www.americangeosciences.org/critical-issues>

American Geoscience Institute (AGI): Earth Science Education

<http://www.k5geosource.org/index.html>

Climate Literacy and Energy Awareness Network

http://cleanet.org/clean/educational_resources/index.html

Earth Science Literacy: Big Ideas for Teaching

http://www.earthscienceliteracy.org/es_literacy_22may09.pdf

Explaining Climate Change

<http://www.explainingclimatechange.ca/Climate%20Change/Lessons/lessons.html>

IRIS's Earthquake Resources

<http://www.iris.edu/hq/retm>

NASA Educational Resources

<http://www.nasawavelength.org/>

Teach the Earth

http://serc.carleton.edu/k12/k-8_browse.html?q1=sercvocabs__163%3A30

Windows to the Universe

<http://www.windows2universe.org/>

For a full list of resources, please visit

<http://education.agu.org/teachers/resources/>.

**The purpose of the American Geophysical Union
is to promote discovery in Earth and space science
for the benefit of humanity.**

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