



# Exploring Earth and Space

Coloring Book

探索地球与空间  
填色书

**AGU** ADVANCING  
EARTH AND  
SPACE SCIENCE

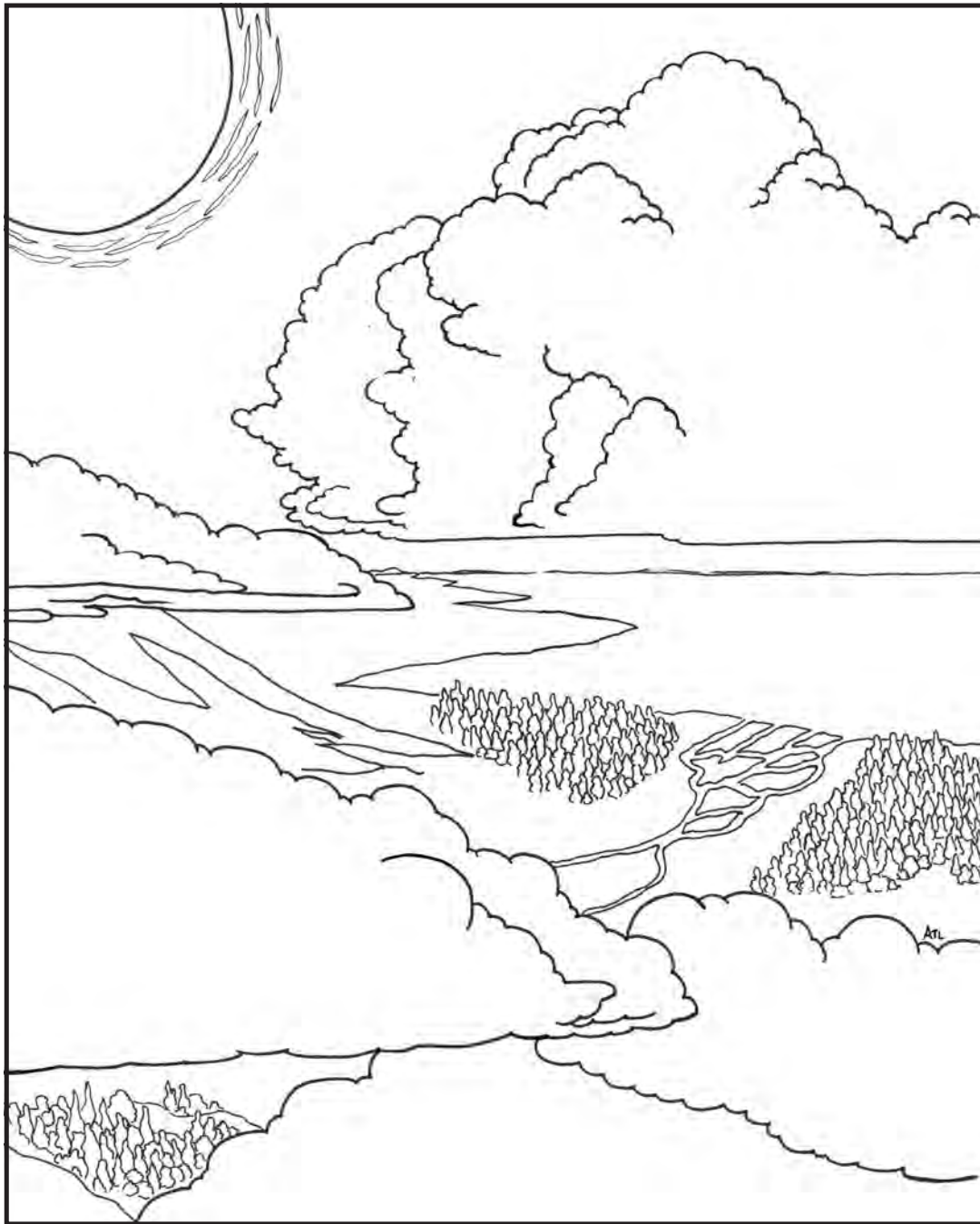
# Exploring Earth and Space Coloring Book

## 探索地球与空间 填色书

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.

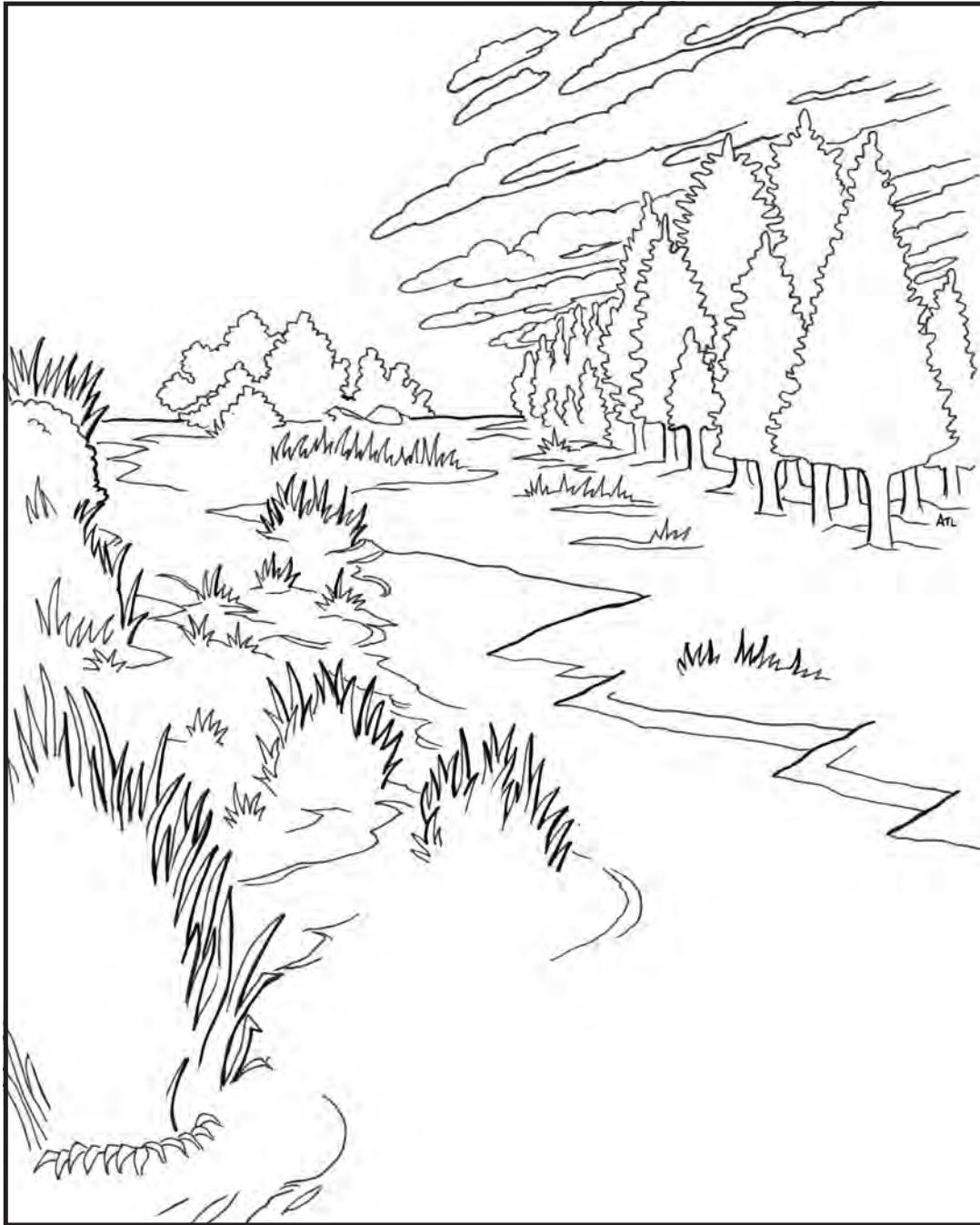
从雕蚀峡谷的河流到构建山脉的构造板块，我们所在的“岩石星球”-地球-始终处在不断变化中。在太空中，行星围绕太阳旋转，经历着火山喷发、雷暴。从月球到遥远的矮行星冥王星再到海洋的最深处，地球与空间科学家们致力于研究太阳系中的一切，并保护我们的地球和人类。

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.



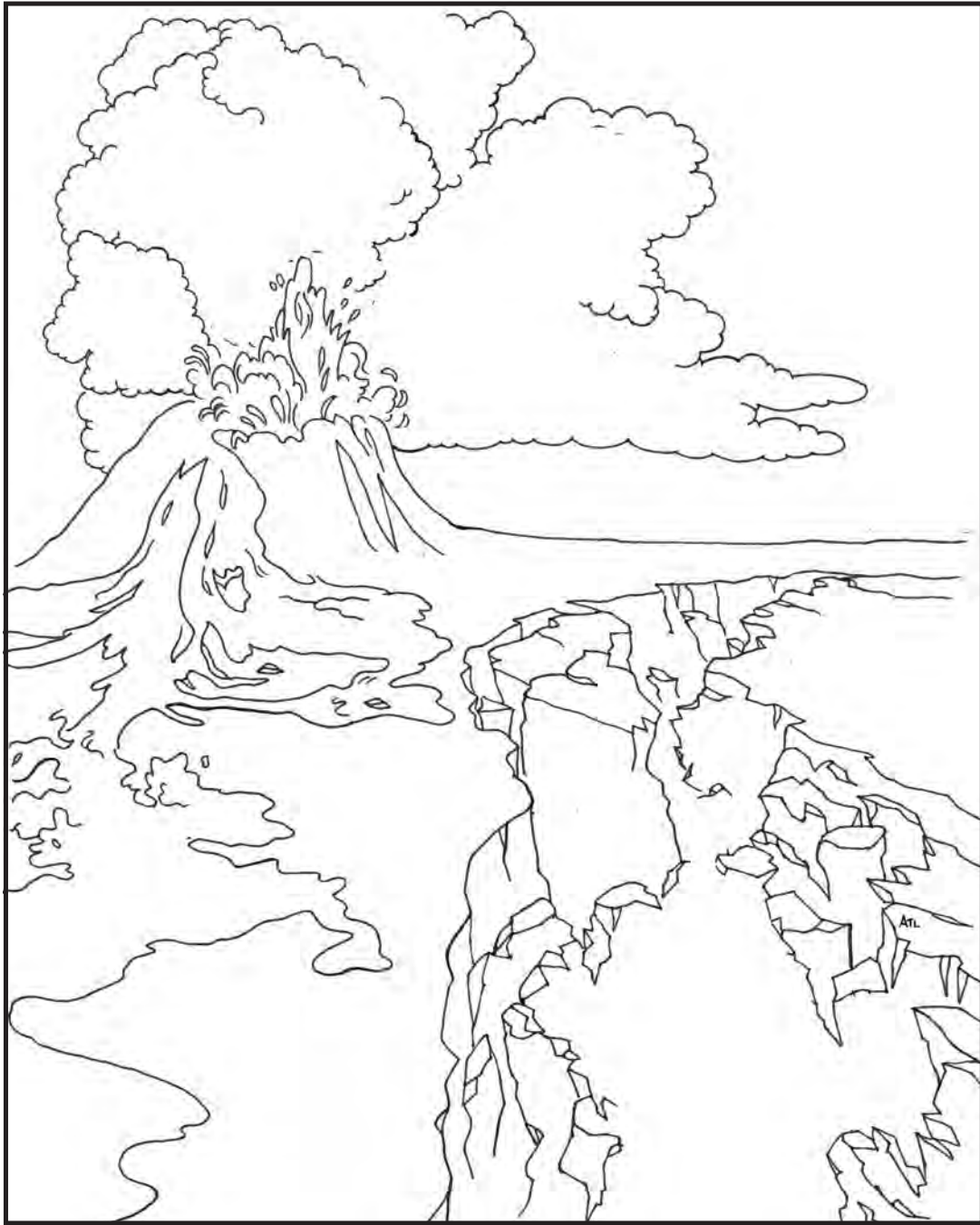
有些天下雨、有些天多云、有些天晴天，有些天里三种天气都可能发生！研究天气的科学家-气象学家-可以告诉我们下周天气是寒冷还是炎热、预计会下雨还是阳光灿烂。

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.



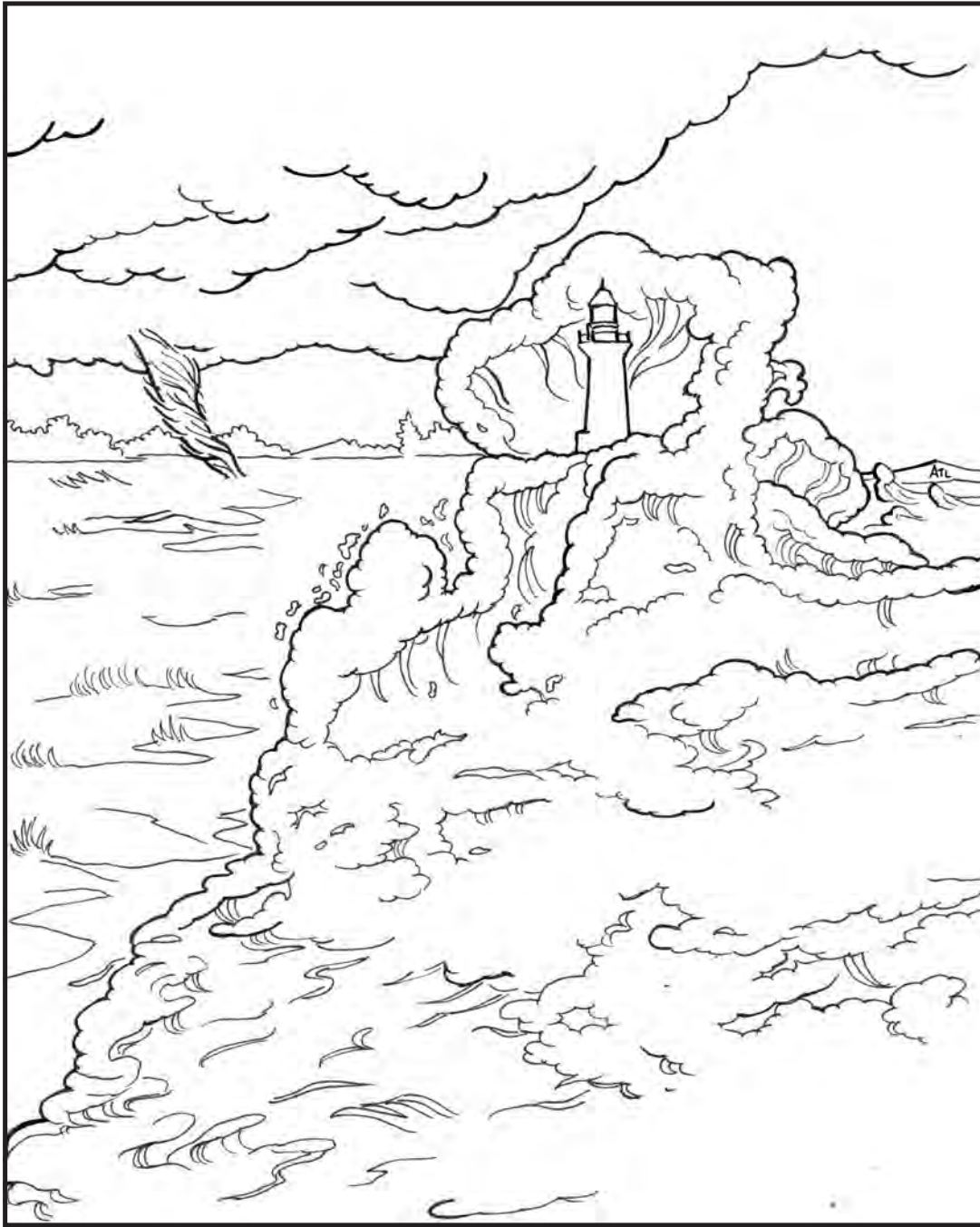
数年或数十年的天气模式被称为气候。有些地方例如澳大利亚，气候炎热干燥；而有的地方例如加拿大，则非常寒冷和湿润。气象学家们研究气候，看它是如何随时间发生变化的。

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!



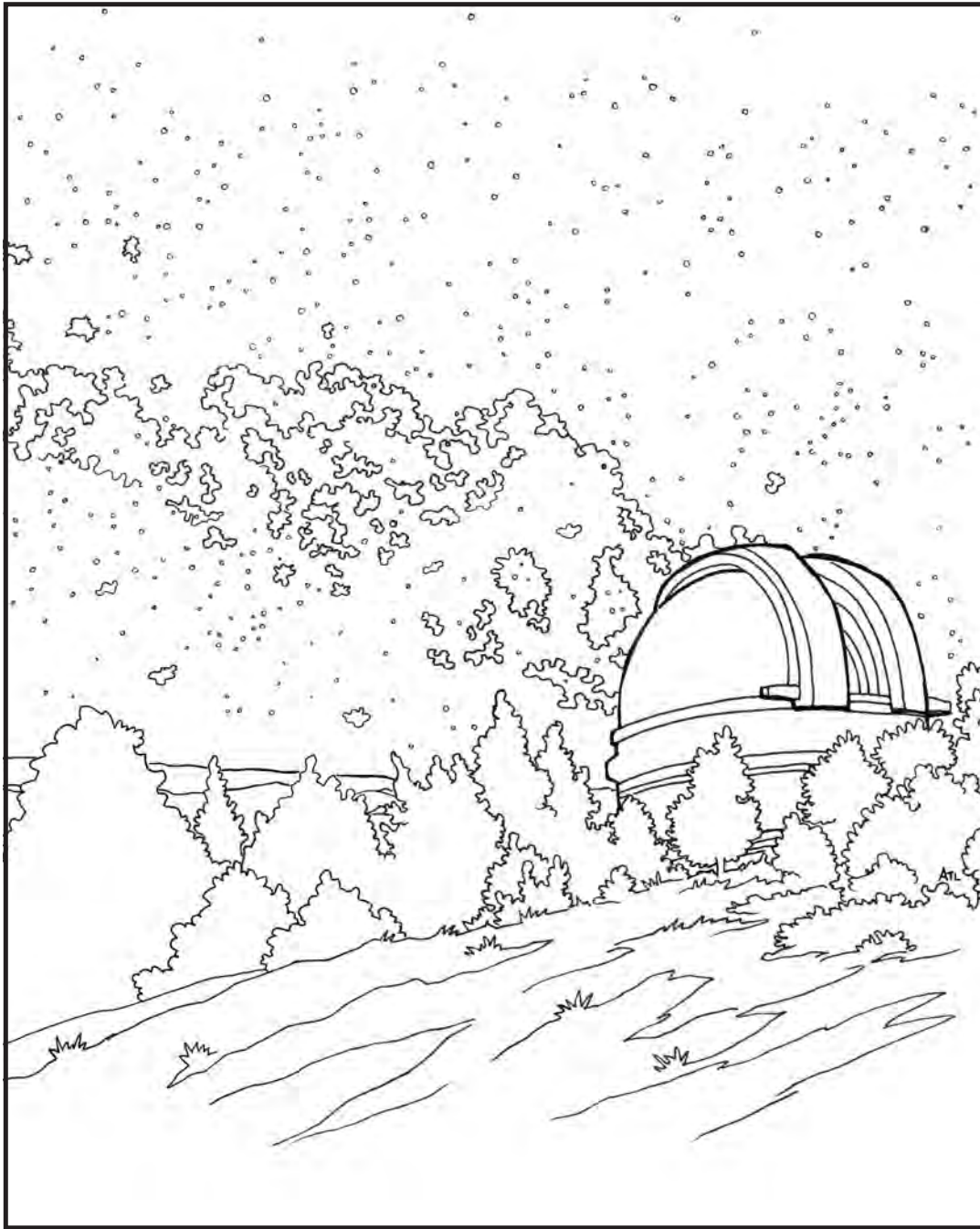
每隔一段时间，地球会发生地震，山摇地动，山体滑坡坍塌，或者火山喷发，喷出蒸汽、火山灰和熔岩。地球科学家研究这些自然灾害，以确保我们的安全！

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.



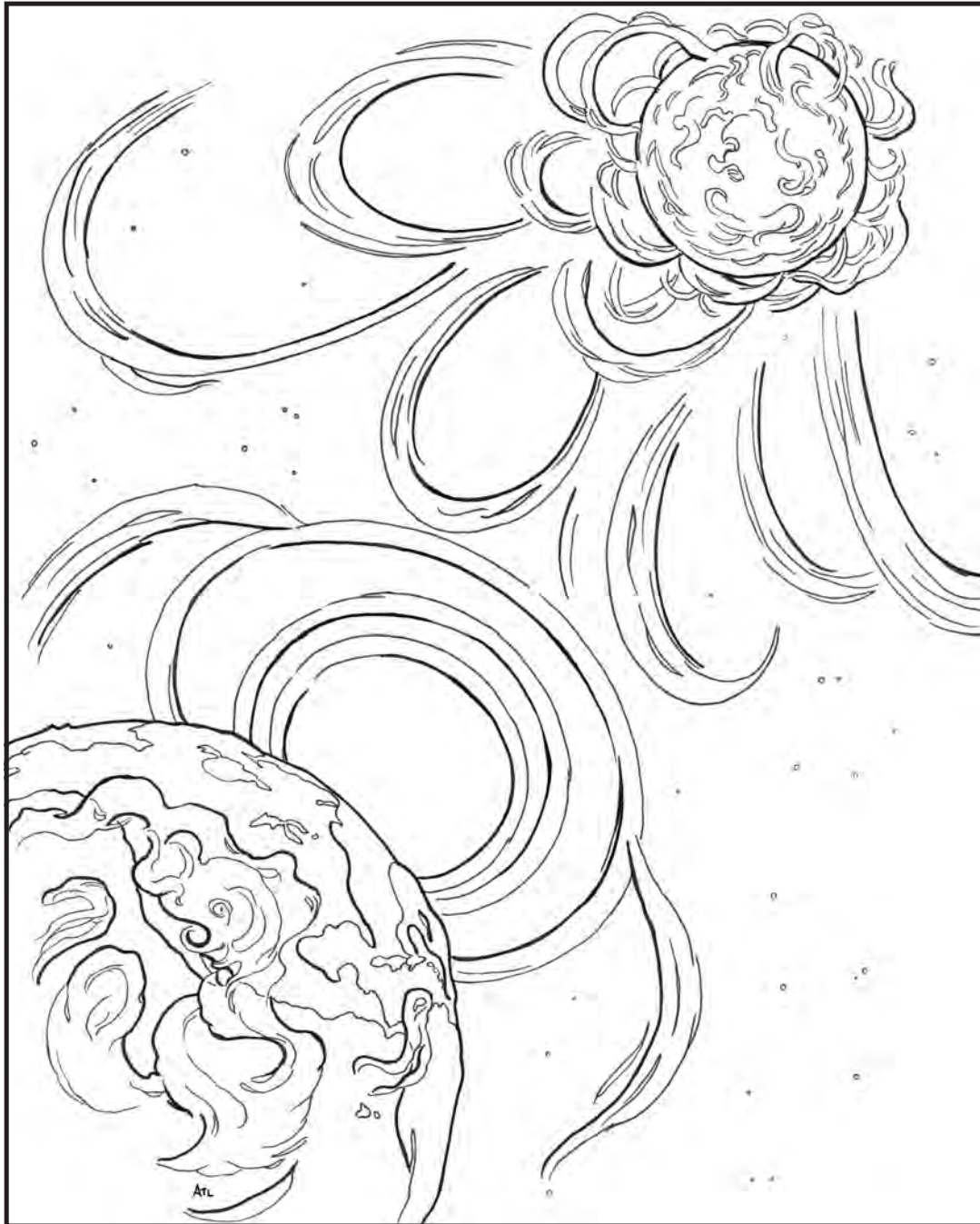
(极端) 天气也可能成为一种自然灾害。大气科学家研究龙卷风和飓风的形成，使人们能够更好地为规避这些危险做好准备。

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.



早期的空间科学家观察月球和恒星在太空中的运动模式，发现这些运动是可以预测的。现代空间科学家研究太阳系内外的行星。通过研究其他行星，科学家可以更多地了解我们自己的星球-地球。

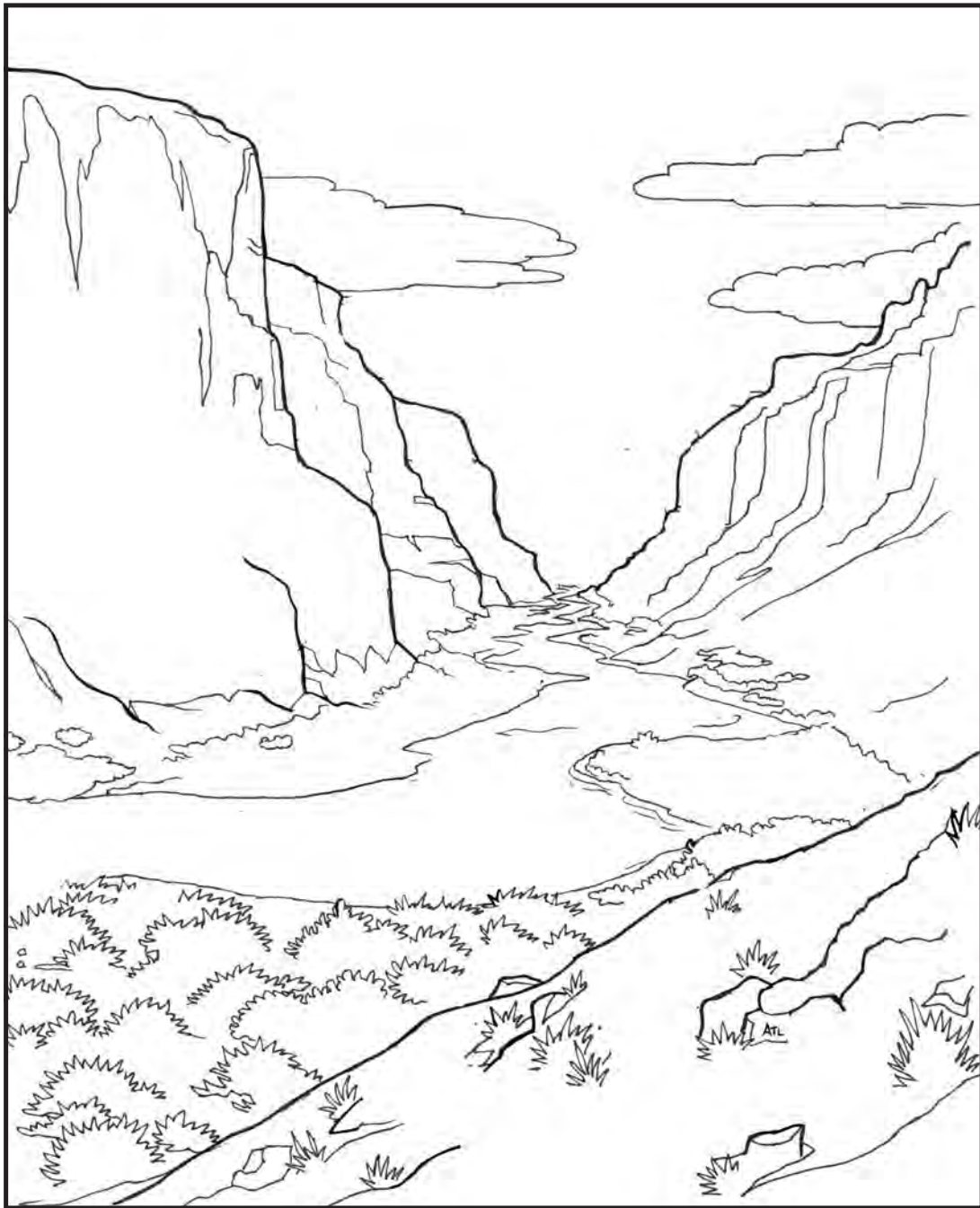
The Sun is our closest star, so it appears larger and brighter than other stars. Scientists study how the Sun's rays affect the protective layer around Earth, called the magnetosphere. This way, people on Earth can be better prepared in case the Sun burps its gases in our direction.



太阳是离我们最近的恒星，因此它看起来比其他恒星更大、更亮。科学家研究了太阳光线如何影响地球周围的保护层，即地球磁场。这样一来，地球上的人们就可以更好地去做准备，以防太阳向地球方向喷来的“气流”（即太阳风，特指太阳大气离开太阳吹向太阳系的“风”，由带电粒子组成，抵达地球时往往引起磁暴与强烈极光）。

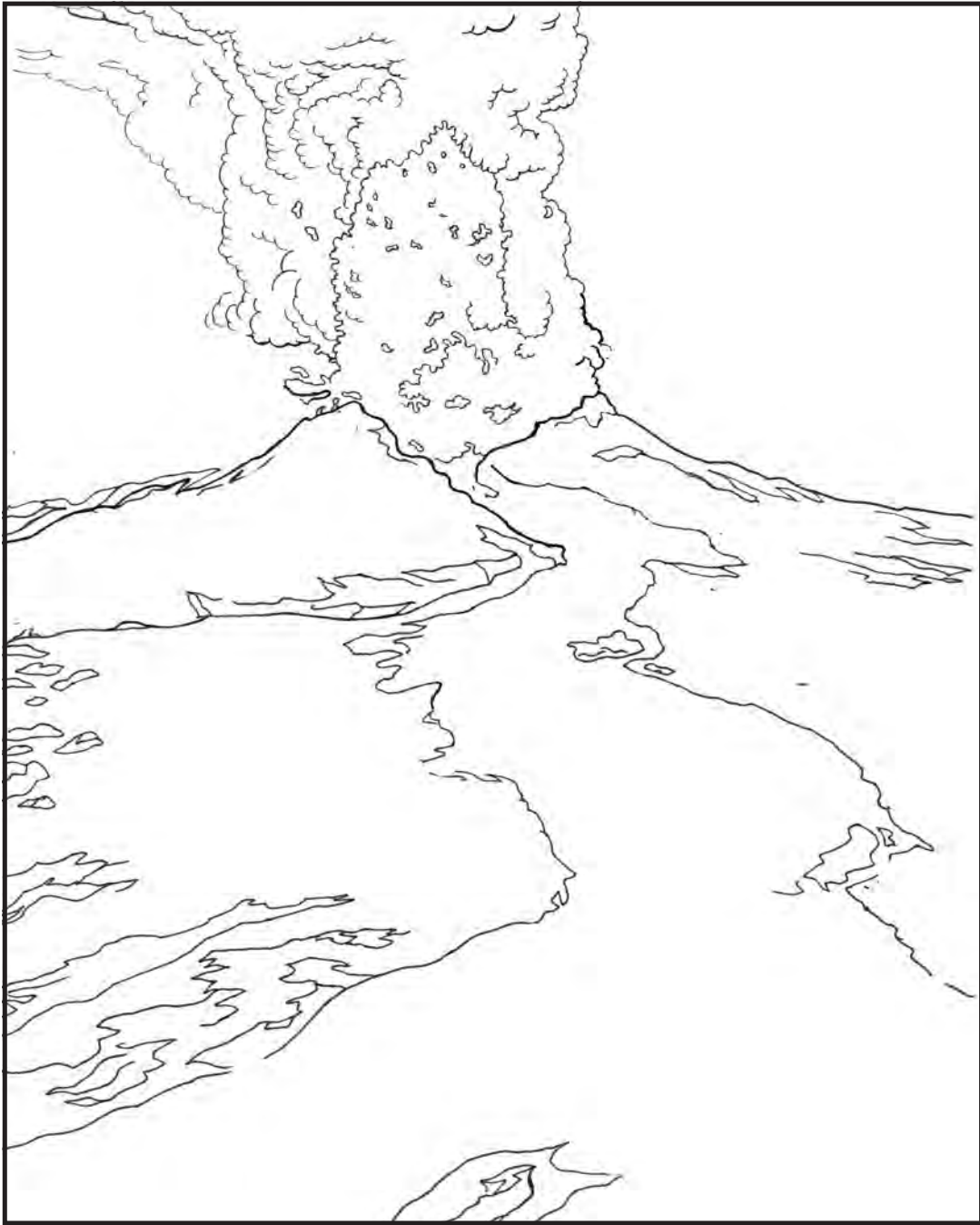


Earth scientists want to know how our planet formed, which is why they study patterns of rock formations, the rivers that flow over the land, and rain and wind, which shrink and smooth out the rocks over millions of years.



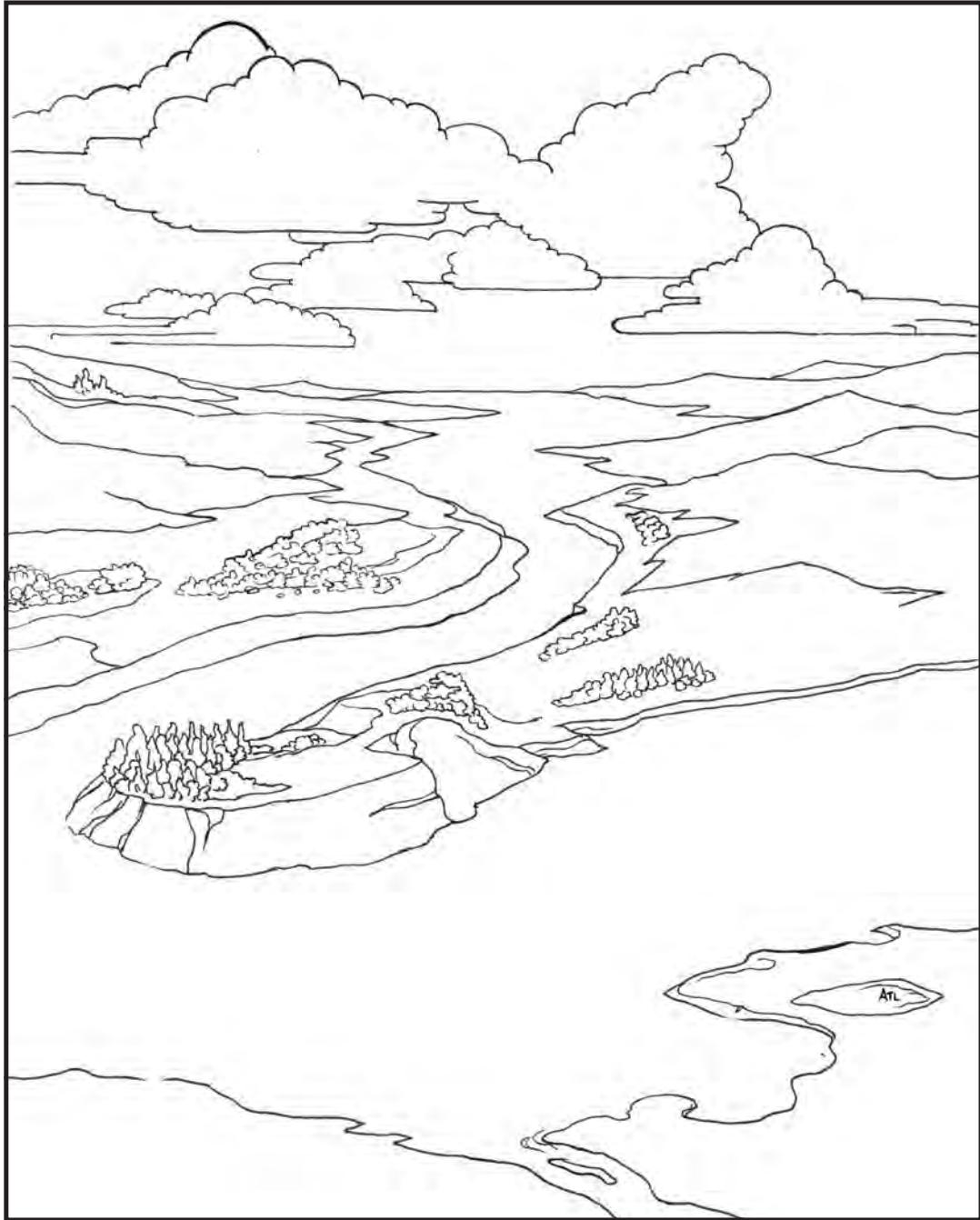
地球科学家希望了解我们的星球是如何形成的，这就是为什么他们要研究岩石的形态、流经陆地的河流、以及风和雨在数百万年里对岩石的侵蚀与打磨。

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.



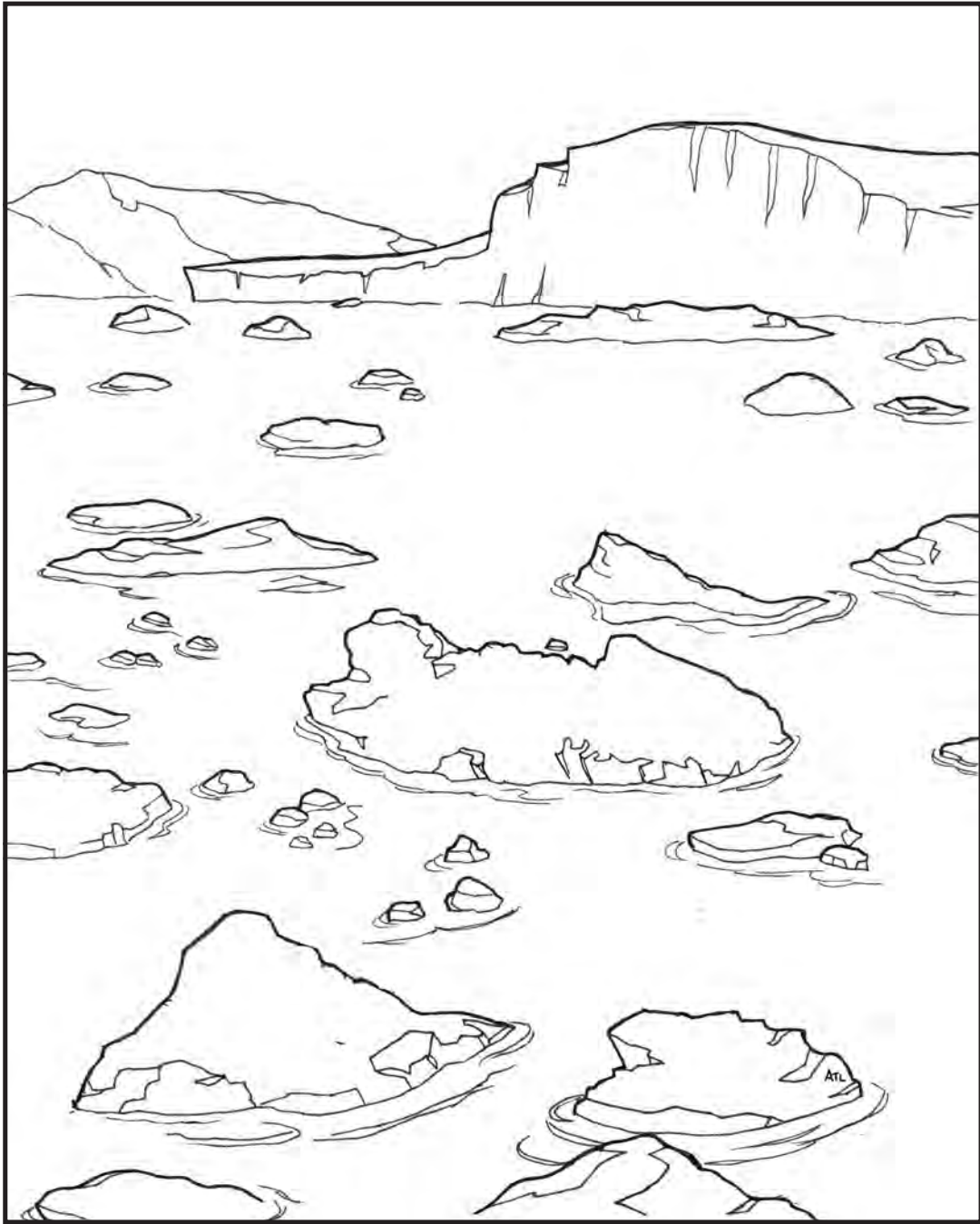
有时地球表面的变化会瞬间发生。比如，火山喷发使熔岩覆盖大地；或者地震可以改变海岸的形状。

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.



地球也被海洋、河流、湖泊、池塘和其他水体所覆盖。许多植物和动物都生活在这些水体中。人类靠水生存！水文学家帮助我们了解水是如何运动的。

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.



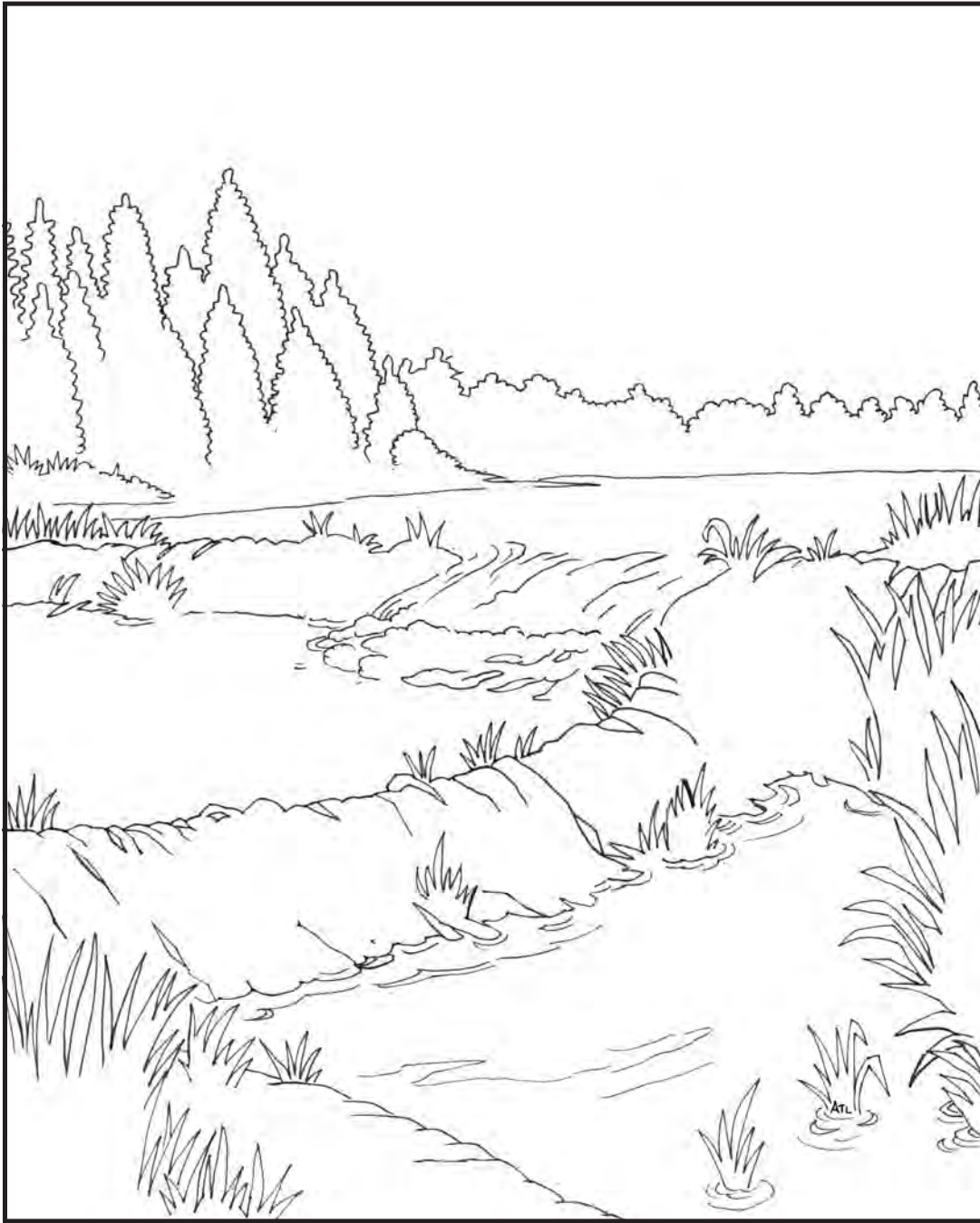
地球上的一些水体会被冻结为冰川，即陆地上的巨型冰层。地球科学家研究气候变化如何融化冰川，从而提高海平面。

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.



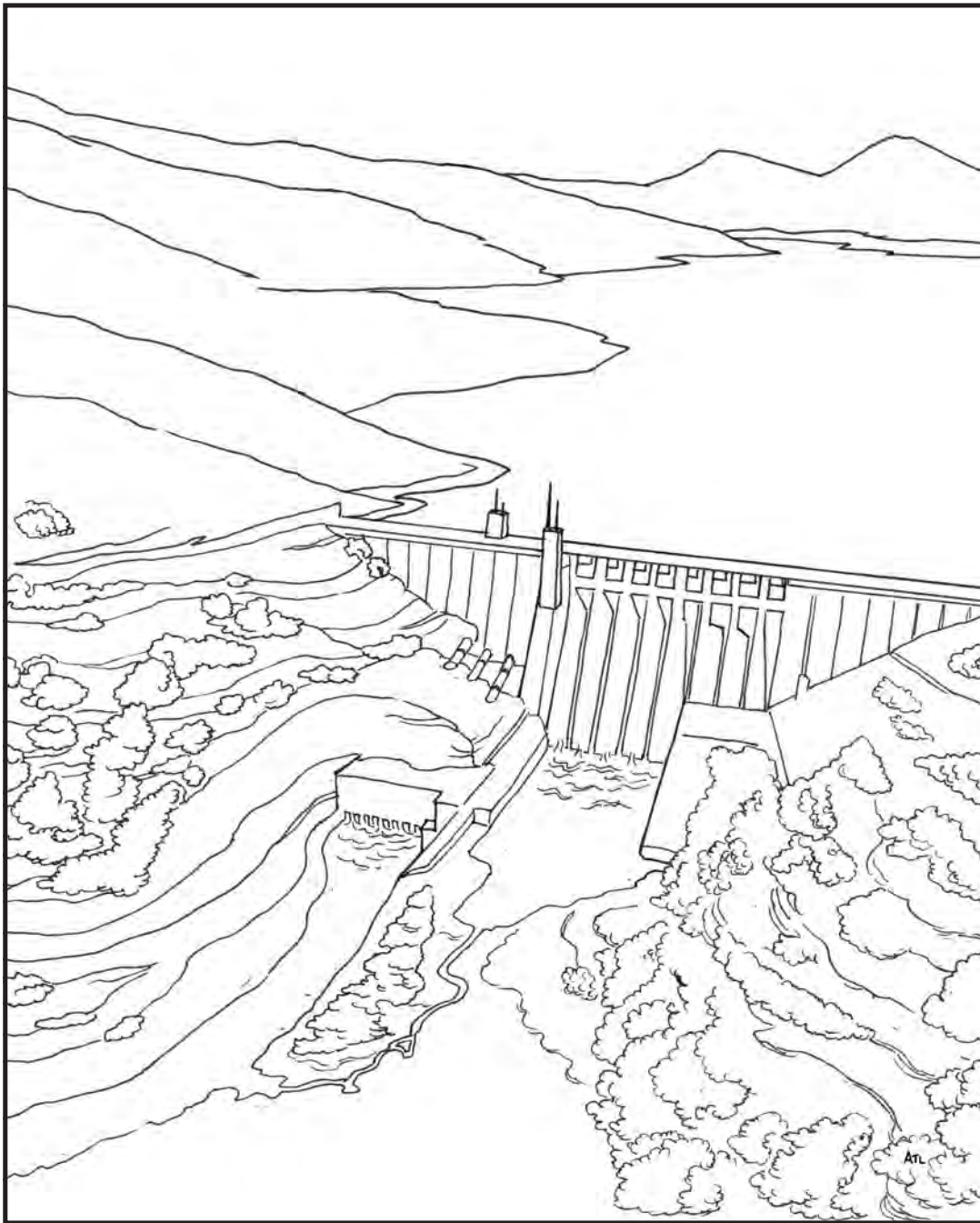
地球科学家还研究生物如何影响地球，例如树根可以穿透岩石，或者土壤中的微生物如何向空气中释放热量。

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.



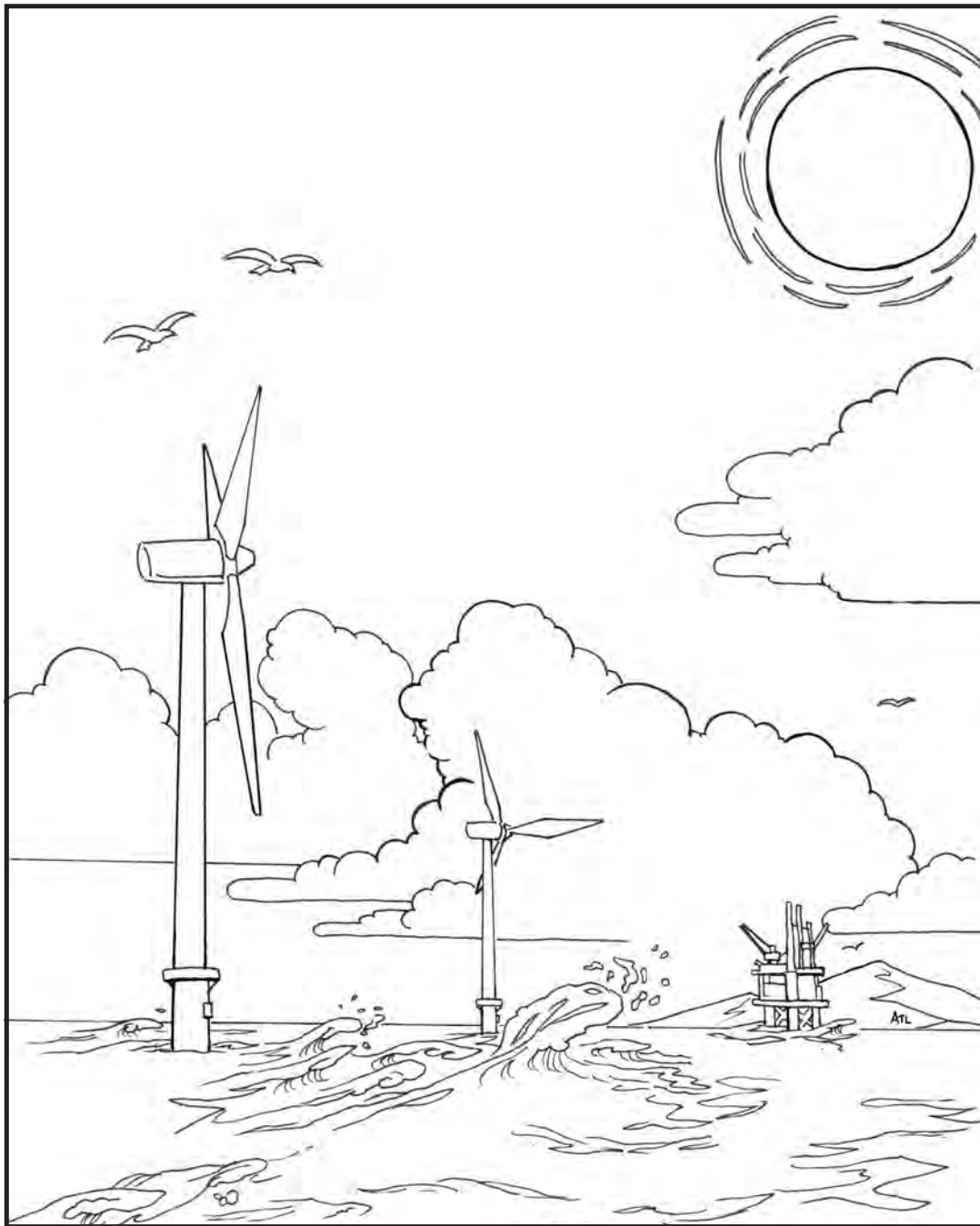
河狸用木头筑坝，会影响自然环境。一些水文学家研究河狸坝如何改变河流的流向。

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.



人类对地球的改变远远超乎我们的想象。我们砍伐树木、修建钢筋和混凝土大坝，有时我们甚至改变河流的形状。

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!



人类还利用地球上的自然能源。其中有些能源会持续很长时间，例如风能、波浪能和太阳能；但是有些资源总有一天会被用光，例如地下深处的石油。这就是为什么循环利用至关重要，当你离开家时要记着关灯，这样不会浪费能源。



# Glossary

## 词汇表

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

火山灰：火山喷发时喷向空中的岩石碎屑和（玻璃质）熔岩

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

大气层：环绕行星的不同气体层

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

气候：随时间变化的天气模式，如多年或几十年

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

地震：由于地球深处的运动导致突然或剧烈的地面震动

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

冰川：在陆地上缓慢移动的巨大冰层

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

飓风：在海洋上形成的强烈环状风暴

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

山体滑坡：大量岩石或泥土从山体或悬崖边上滑落

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

磁场：地球大气层外部不可见的圈层，保护地球免受太阳能量的影响

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

自然灾害：地球上发生的非人为原因造成的潜在有害事件

**Organism:** A living thing.

有机体：一种生物

**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.

构造板块：覆盖地球上的坚硬外壳。板块每年都会发生微小移动，数十亿年来它们在地球上到处移动

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

龙卷风：巨大的阵风以漏斗状旋转所形成的风暴

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

**美国地球物理学会的主旨是推进地球和空间科学的  
发展、造福全人类。**

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