PAPER WORLD

PLANET EARTH

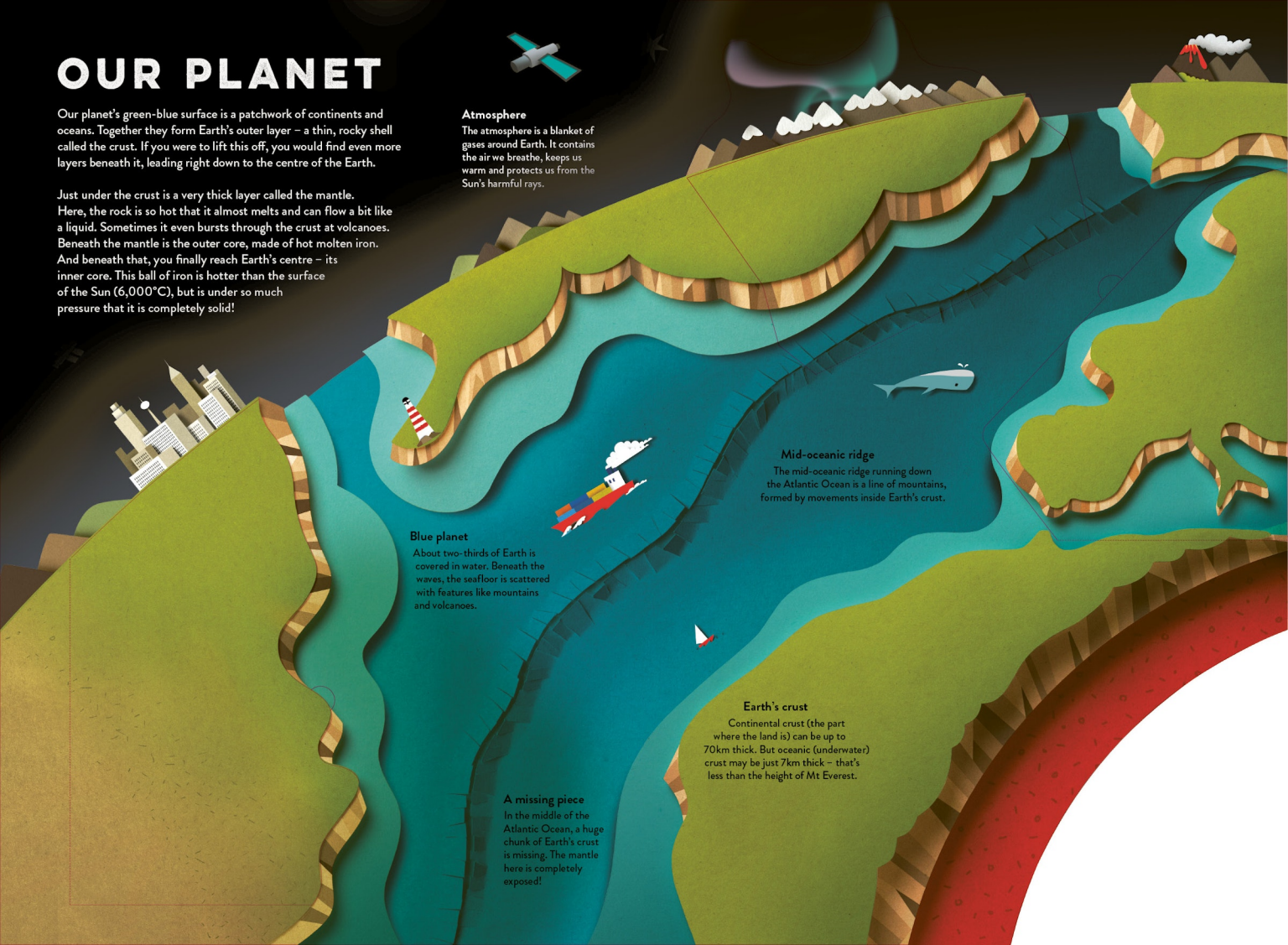
Take a look inside Planet Earth – with 30 flaps to lift!

illustrated by BOMBOLAND

OUR PLANET

Our planet's green-blue surface is a patchwork of continents and oceans. Together they form Earth's outer layer – a thin, rocky shell called the crust. If you were to lift this off, you would find even more layers beneath it, leading right down to the centre of the Earth.

Just under the crust is a very thick layer called the mantle. Here, the rock is so hot that it almost melts and can flow a bit like a liquid. Sometimes it even bursts through the crust at volcanoes. Beneath the mantle is the outer core, made of hot molten iron. And beneath that, you finally reach Earth's centre – its inner core. This ball of iron is hotter than the surface of the Sun (6,000°C), but is under so much pressure that it is completely solid!



Atmosphere
The atmosphere is a blanket of gases around Earth. It contains the air we breathe, keeps us warm and protects us from the Sun's harmful rays.

Mid-oceanic ridge
The mid-oceanic ridge running down the Atlantic Ocean is a line of mountains, formed by movements inside Earth's crust.

Blue planet
About two-thirds of Earth is covered in water. Beneath the waves, the seafloor is scattered with features like mountains and volcanoes.

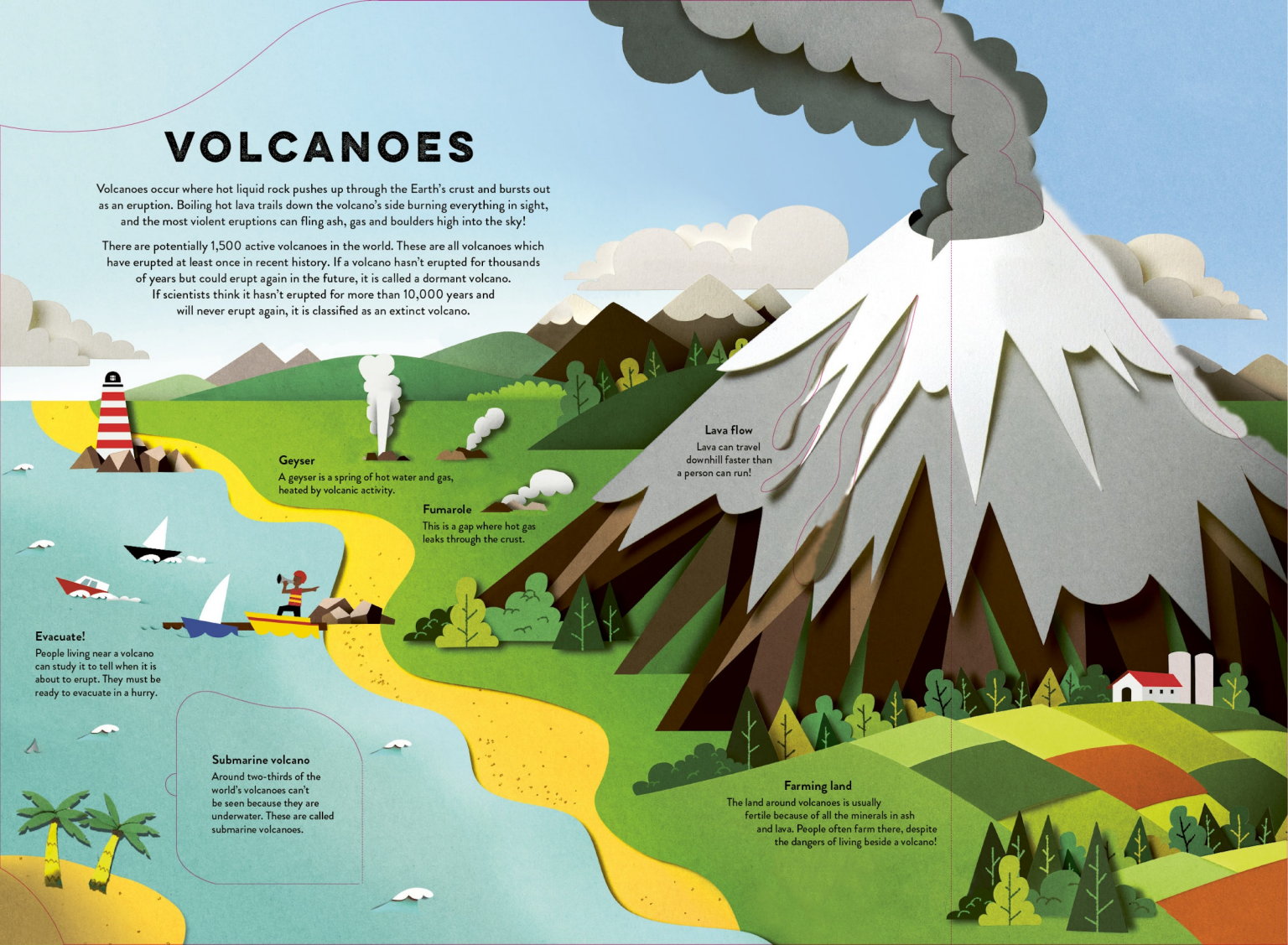
Earth's crust
Continental crust (the part where the land is) can be up to 70km thick. But oceanic (underwater) crust may be just 7km thick – that's less than the height of Mt Everest.

A missing piece
In the middle of the Atlantic Ocean, a huge chunk of Earth's crust is missing. The mantle here is completely exposed!

VOLCANOES

Volcanoes occur where hot liquid rock pushes up through the Earth's crust and bursts out as an eruption. Boiling hot lava trails down the volcano's side burning everything in sight, and the most violent eruptions can fling ash, gas and boulders high into the sky!

There are potentially 1,500 active volcanoes in the world. These are all volcanoes which have erupted at least once in recent history. If a volcano hasn't erupted for thousands of years but could erupt again in the future, it is called a dormant volcano. If scientists think it hasn't erupted for more than 10,000 years and will never erupt again, it is classified as an extinct volcano.



Geyser
A geyser is a spring of hot water and gas, heated by volcanic activity.

Fumarole
This is a gap where hot gas leaks through the crust.

Lava flow
Lava can travel downhill faster than a person can run!

Evacuate!
People living near a volcano can study it to tell when it is about to erupt. They must be ready to evacuate in a hurry.

Submarine volcano
Around two-thirds of the world's volcanoes can't be seen because they are underwater. These are called submarine volcanoes.

Farming land
The land around volcanoes is usually fertile because of all the minerals in ash and lava. People often farm there, despite the dangers of living beside a volcano!

CAVES

Under our feet can be a vast, hidden world of twisting tunnels and gaping caves. The biggest, most common caves form when rainwater trickles through the rock and hollows it out over hundreds of thousands of years. Eventually they can result in huge underground passages.

Rainwater is actually slightly acidic, and gradually dissolves rocks such as limestone. As the water passes through the stone, it starts to carry some of the minerals it has dissolved. So when the water drips, it can leave behind traces of minerals, which build up over time to form huge stalactites hanging from cave ceilings. Where water drips onto the cave floor, upward-pointing stalagmites are made instead.

Sinkhole
If the ground above a cave becomes too thin, it can collapse, forming a tunnel-shaped sinkhole.

Cavern
A cavern is an underground space carved out by water as it reacts with chemicals in the stone.

Dripstone features
Features such as stalagmites (which point up) and stalactites (which hang down) are also called dripstone features.

Chimney
Vertical tunnels are called chimneys, or wells. They are carved out by underground waterfalls.

Exploring caves
Potholers are always looking for new caves and seeking adventure. Scientists, called speleologists, also visit caves to study them. A hard hat, protective clothing and a torch are crucial tools underground, where there is always the risk of tight tunnels, floods and getting lost.

Siphon
A passageway completely flooded with water is known as a siphon.

Unique wildlife
Caves are home to animals not found anywhere above the ground. The proteus is a cave salamander which has never seen daylight, so is completely blind!

STORMS

When the wind picks up and dark clouds gather in, it looks like a storm is on the way. Storms can range from heavy rain and snow, to thunderstorms, sandstorms or twisting tornadoes. They usually happen when there are sudden changes in the atmosphere, with warm air rising rapidly.

The more severe a storm is, the faster its winds will be. The worst storms have winds faster than a jet plane – they can destroy homes and habitats, and even kill people. When a storm strikes, it is important to stay safe while you wait for it to pass.

Hurricanes

These huge storms form over tropical oceans as hot air rises and spins. In the Indian Ocean they are called cyclones and in the Pacific they are called typhoons. They bring strong winds, heavy rain and huge waves. Their spinning clouds can be seen from space!

Blizzards

Winter storms of wind and snow are called a blizzard. They can make it very difficult to see where you are going, and bring extreme cold.

Weather forecasting

Scientists called meteorologists can predict the weather. They study photographs taken by weather satellites, and look at information gathered at weather stations: special buildings which record temperature, rainfall and wind speed.