Chapter 2

Shaping of the Earth's Surface



The Big Questions

1. *What shapes the Earth's surface?*
2. *What is plate tectonics? What are the effects of plate movement?*
3. *How are landforms formed and how are they classified?*
4. *How are humans and other living beings connected to these landforms?*
5. *How do disasters associated with different landforms impact human lives?*

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The Earth's surface is not consistent; it is constantly being transformed by powerful forces acting from within and on the surface of the planet. One of the most important ideas that explains these changes is the theory of plate tectonics, which describes how large pieces of the Earth's crust move slowly over the molten mantle. The movement of these plates gives rise to various **landforms**, such as mountains, volcanoes, plains, and valleys. Understanding plate tectonics and landforms helps us explain natural phenomena like earthquakes, volcanic eruptions, and the formation of continents and oceans, and allows us to better appreciate the dynamic nature of the Earth.

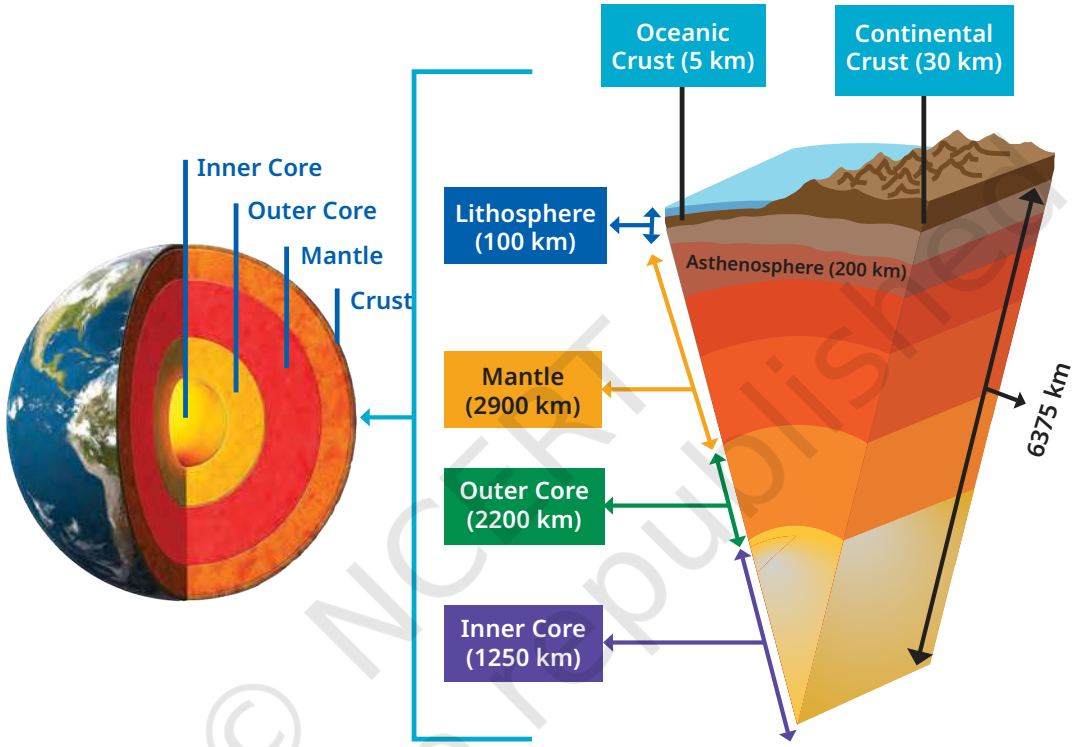
Landforms: A landform is a natural feature on the Earth's surface formed by processes, such as weathering, erosion, deposition, and the movement of the Earth's crust. Examples of landforms include mountains, valleys, plateaus, plains, deserts, and coastal features.

Plate Tectonics

Plate tectonics is an important theory, given by W.J. Morgan, in earth science, that explains the movement of the Earth's crust. According to this theory, the outermost layer of the Earth is not one single piece but is broken into several large and small pieces called **tectonic plates**. These plates move slowly over the semi-molten layer beneath them and are responsible for major physical features and natural phenomena, such as mountains, earthquakes, and volcanoes.

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The Earth is made up of three main layers: **crust**, **mantle,** and **core**. The crust is the outermost layer on which we live. Below the crust lies the mantle, which is very thick and hot. The core is the innermost layer and is extremely hot and heavy. The crust along with the upper part of the mantle forms the **lithosphere.** This lithosphere is broken into different tectonic plates. Beneath the lithosphere lies the **asthenosphere**, which is semi-molten and allows the plates to move.



Crust
Thickness varies from 30–40 km under continents to 5–7 km under the ocean.

Asthenosphere
A hot, mobile layer of partially molten rock.

Outer core
A fluid layer mainly consisting of iron and nickel.

Lithosphere
The rigid outer layer of the Earth that includes the crust and upper mantle.

Mantle
The mostly solid layer between the crust and the Earth's outer core.

Inner core
A solid, hot spinning metal ball that is the densest part of the Earth.

Fig. 2.1. The Earth's interior (Given values are approximate)

Tectonic plates are massive slabs of solid rock that move very slowly, usually a few centimetres per year. There are three main types of tectonic plates—**continental plates**, which carry continents; **oceanic plates**, which carry ocean floors; and **mixed plates**, which carry both continents and oceans. Some of the major tectonic plates

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of the world include the Pacific Plate, Eurasian Plate, African Plate, North American Plate, South American Plate, Indo-Australian Plate, and Antarctic Plate.

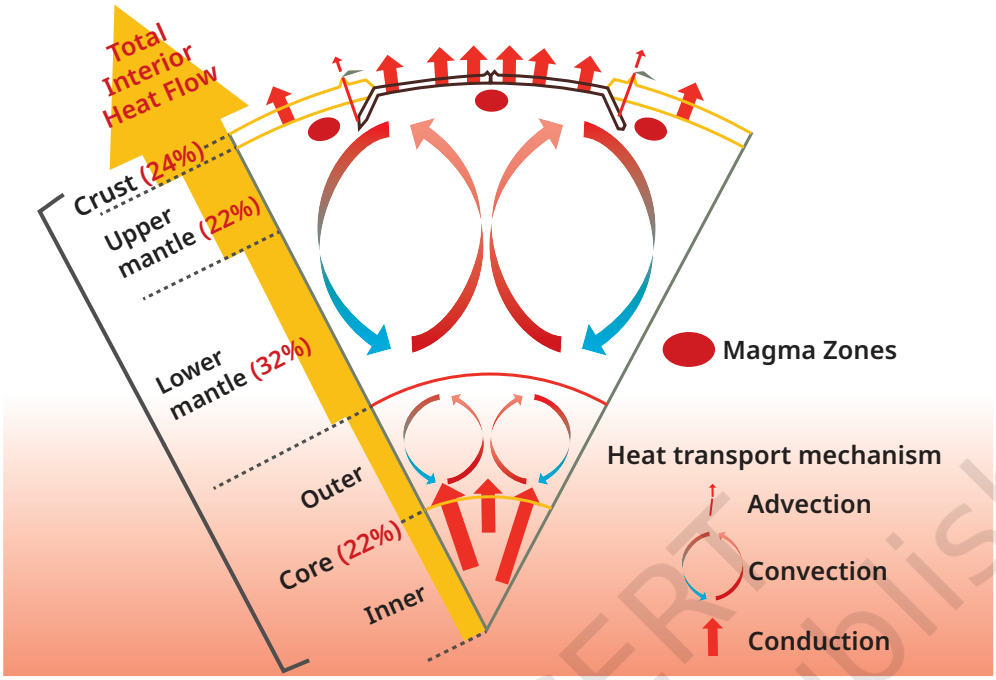


Fig. 2.2. Movement of material below the crust

The movement of tectonic plates is caused by **convection currents** in the mantle. Heat from the Earth's core causes molten material in the mantle to rise, while cooler material sinks. This continuous movement creates convection currents that push and pull the tectonic plates, causing them to move in different directions.

The edges where tectonic plates meet are called **plate boundaries**. There are three main types of plate boundaries. The first is the **convergent boundary**, where two plates move towards each other. When continental plates collide, they form fold mountains, such as the Himalaya. When an oceanic plate collides with a continental plate, the oceanic plate sinks beneath the continental plate, leading to volcanic activity and earthquakes. The second type is the **divergent boundary**, where plates move away from each other. In this case, magma rises from below and forms new crust, creating features, such as mid-ocean ridges. The Mid-Atlantic Ridge is a good example. The third type is the **transform boundary**, where plates slide past each other without creating or destroying crust. This type of movement mainly causes earthquakes, such as along the San Andreas Fault in the United States.

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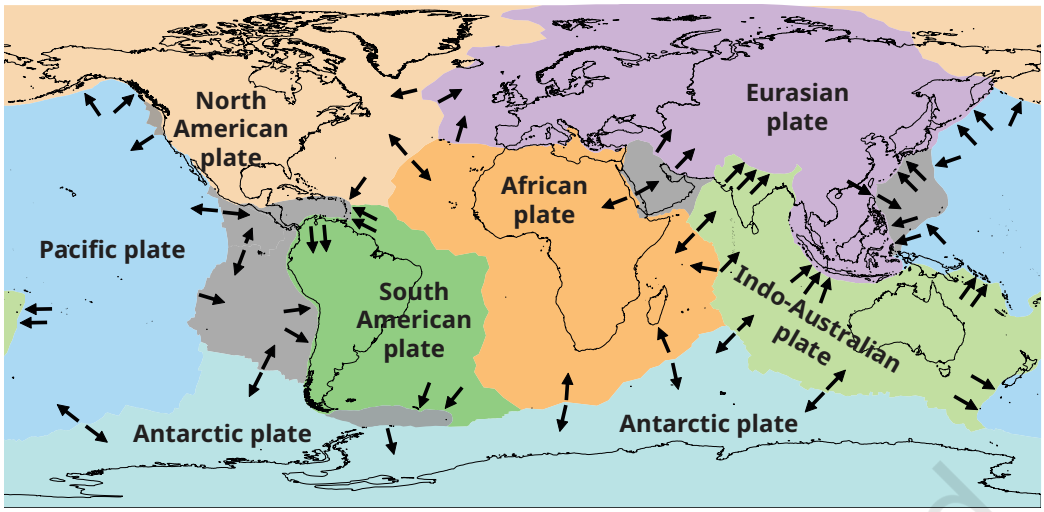


Fig. 2.3. World map showing major plates and their direction of movement

LET'S MAP

Pick any two plates from the map above and complete the table given below.

Name of the plate	Continents	Ocean



Plate tectonics plays a major role in shaping the Earth's surface. The movement of plates leads to the formation of mountains, valleys, ocean basins, volcanoes, and earthquakes. It also explains the distribution of continents and oceans across the Earth. Most earthquakes and volcanoes occur along plate boundaries, especially around the Pacific Ocean, an area known as the **Ring of Fire**.



LET'S EXPLORE

Examine the plate map (Fig. 2.3) with the earthquake and volcano map (Fig. 2.4). What correlation do you observe?

In conclusion, the theory of plate tectonics helps us understand how the Earth's surface is constantly changing. It explains the origin of many landforms and natural disasters. This theory is very important for identification of earthquake and volcano-prone regions and managing disasters arising from them.

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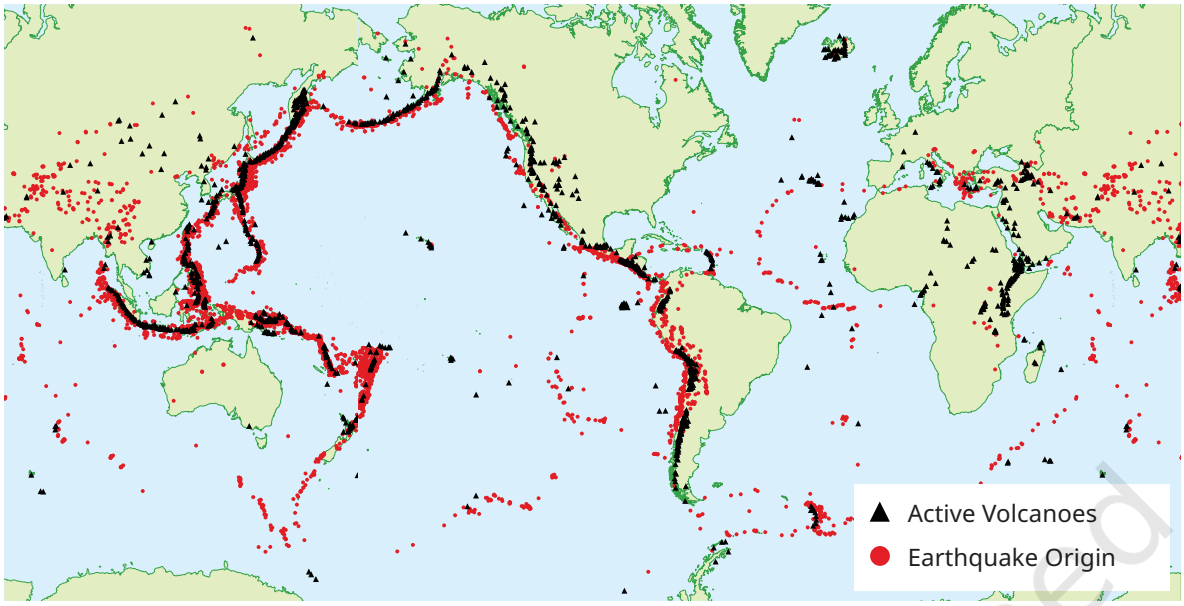


Fig. 2.4. Map showing the distribution of earthquakes and volcanoes

LET'S EXPLORE

Observe the map showing the distribution of earthquakes and volcanoes (Fig. 2.4). Can you identify which continents and countries are located around the Ring of Fire with the help of an atlas or a globe?



LET'S EXPLORE

Does India have a risk of earthquakes?

India has experienced some major earthquakes in the past, resulting in thousands of deaths. A large earthquake in a densely populated country like India can cause severe damage to life and environment. Can you find out which region is more vulnerable to earthquakes? Why do you think human lives are at risk?



Fig. 2.5. The extensive damage caused by the major earthquake in Gujarat in 2001

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DON'T MISS OUT



In early times too, earthquakes were known as '*bhūkampa*', meaning the shaking of the Earth. In the *Bṛihatsaṁhitā*, Varāhamihira dedicated a section to earthquakes, noting how changes in wind, rain, clouds, animal behaviour, and planetary alignments could signal them. He attributed earthquakes to four elemental forces—*Vāyu* (wind), *Agni* (fire), *Indra* (heaven/thunder), and *Varuṇa* (water), each linked to specific constellations and regions. This reflects an early attempt to blend observations with cosmological reasoning and physical phenomenon in India.

LET'S EXPLORE

Look carefully at this photograph and answer the following questions:

- → What do you think caused this situation?
- → What could that grey powder be?
- → What does it tell us about the Earth's internal forces?

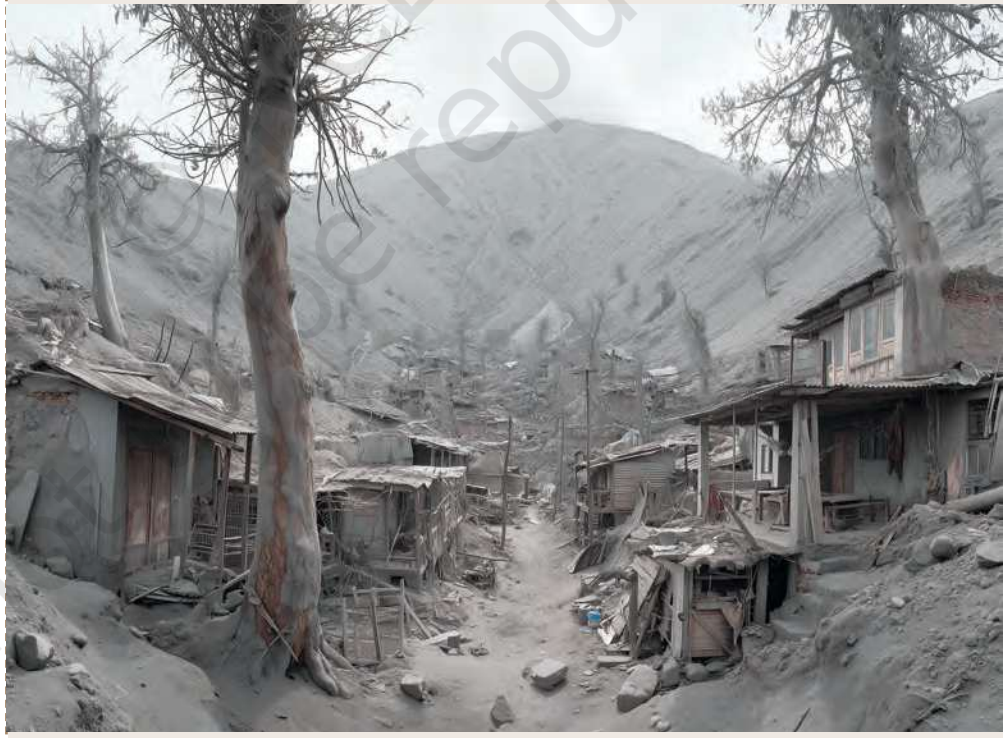


Fig. 2.6. Photograph showing the deposition by volcanic eruption

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DON'T MISS OUT

The mud volcano at Baratang Island is a rare natural wonder in India and a unique attraction of the Andaman and Nicobar Islands. Unlike fiery volcanoes, here you will find mud bubbling out due to natural underground gases and pressure.



Fig. 2.7. India's only mud volcano in Baratang in the Andaman and Nicobar Islands



Process of Weathering and Erosion

Weathering and erosion play a vital role in the development of landforms by continuously breaking down and reshaping the Earth's surface. Over long periods of time, weathering and erosion work together to wear down mountains, carve valleys, form plains, and create features, such as caves, cliffs, and river deltas, gradually giving shape to the diverse landscapes we see on Earth today.

Weathering

Weathering is the process through which rocks on the Earth's surface break down into smaller pieces due to various processes. It does not involve movement of the broken material, only the breaking down. There are three main types of weathering: **physical weathering**, in which rocks break into smaller pieces due to temperature changes, frost, or wind; **chemical weathering**, in which minerals in rocks

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Physical heating and cooling, water, wind, and ice expansion

Chemical substances in the air and in rain

Biological plants and animals

Fig. 2.8. Types of weathering

change because of reactions with water, air, or acids, leading to new substances; and **biological weathering**, which is caused by plants, animals, or micro-organisms, for example, when plant roots grow into cracks of rocks and split them apart. Weathering plays an important role in shaping the Earth's surface and forming soil.

Erosion

Erosion is the process by which soil, rocks, and other surface materials are worn away and carried from one place to another by natural agents like water, wind, ice, or waves. Unlike weathering that only breaks down rocks, erosion involves movement of the broken material. There are several types of erosion — **water erosion**, caused by rivers, rain, or ocean waves; **wind erosion**, common in dry and sandy areas; **glacial erosion**, where moving ice scrapes and carries rocks; and **coastal erosion**, where sea waves wear away the



Fig. 2.9. Erosion caused by (a) water and (b) wind

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land along the shore. Erosion shapes landforms and can both create and destroy features on the Earth's surface.

Erosion affects many human occupations by changing the land and soil on which people depend. For farmers, erosion removes the fertile topsoil needed for crop growth, leading to lower yields. For those living near rivers and coasts, erosion can wash away land, houses, and roads, causing damage and loss of property. In construction and mining, erosion destabilises land, posing safety risks. Even industries like tourism and fishing suffer, since beaches, rivers, and fertile lands may be destroyed. This shows that erosion not only shapes the Earth's surface but also directly affects human labour and livelihoods.

LET'S EXPLORE

Observe the photographs (Fig. 2.9) and also note the types of erosion. How are farmers affected by erosion due to water and wind?

DON'T MISS OUT

The Sindhu-Sarasvatī civilisation employed sophisticated techniques, including **contouring, bunding, terracing,** dams, and canals for water management. Multiple Sanskrit texts document these practices, including the Vedas, *Kṛiṣhiparāśhara*, Kauṭilya's *Arthaśhāstra,* and specialised treatises like *Vṛikṣhāyurveda*. The *Arthaśhāstra* contains detailed guidelines on land assessment and categorisation based on fertility and productivity.

The Zabo system in Nagaland represents an integrated farming approach using earthen bunds on hillslopes for soil and water conservation. Check dams were constructed across small streams to reduce water velocity, prevent soil erosion, and allow sediment deposition. These structures were designed to slow down water flow and enhance groundwater recharge.

Contouring: A continuous contour trench (CCT) is a water conservation technique in which trenches are dug along the contour lines of a hillside to slow down, hold, and infiltrate rainwater, preventing soil erosion and recharging groundwater.

Bunding: Earthen embankments built along contour lines to slow surface run-off, reduce soil erosion, increase water infiltration and soil moisture.

Terracing: Terracing is a soil conservation practice that creates a series of level or gently sloping steps on a hillside to prevent soil erosion.



Agents of Gradation

Agents of gradation are natural forces that wear down, transport, and deposit materials on the Earth's surface, helping to level or smooth it over time. The main agents of gradation are **running water, glaciers, wind, waves, and groundwater**. Running water

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erodes rocks and soils to form valleys and plains. Glaciers scrape and carry huge amounts of material, carving U-shaped valleys. Wind shapes deserts by eroding and depositing sand. Sea waves erode coastlines to form cliffs, beaches, and bays. Groundwater dissolves rocks, such as limestone, creating caves, and sinkholes. Together, these agents are continuously modifying landforms, lowering high areas, and filling up low areas.

DON'T MISS OUT

Landforms have played a major role in shaping the history of human civilisations. Rivers and fertile plains like those of the Ganga, Nile, Brahmaputra, and Indus, gave rise to agricultural societies and early cities. Mountains acted both as barriers and protectors—the Himalayas shielded India from invasions but also allowed cultural exchanges through passes like the Khyber pass. Deserts, such as the Thar limited the development of large settlements but encouraged trade routes, such as the Silk Route. Coasts and harbours supported trade, travel, and cultural contacts with distant lands, helping kingdoms like those in south India flourish. Even today, history shows that wars, settlements, trade, and cultural growth were all deeply influenced by the land's physical features.



Running Water

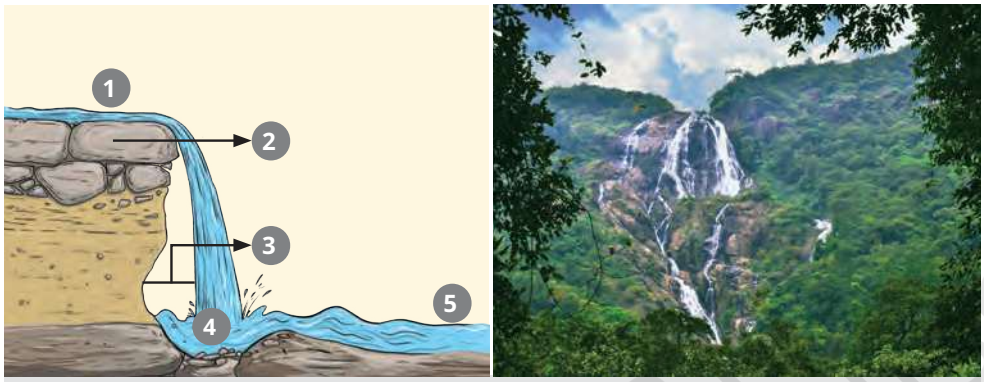
Rivers shape the land through the processes of erosion, transportation, and deposition, creating a variety of landforms along their course. At the upper course, rivers often form **V-shaped valleys, waterfalls**, and **rapids** due to steep gradients and strong erosive forces. In the middle course, the river starts to **meander**, forming **oxbow lakes,** and **floodplains** as it loses energy and begins depositing sediments. In the lower course, the river slows further and deposits large amounts of sediment, forming **deltas, levees**, and **alluvial fans**. These landforms are not only important for understanding river dynamics but also play a vital role in agriculture, settlement, and ecosystems.

Waterfall

A **waterfall** is a landform where a river flows over a steep cliff or vertical drop, creating a dramatic fall. Waterfalls form in the upper course of rivers, where hard rocks resist erosion, while softer rocks below are worn away, creating a sudden drop. They are not only

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beautiful natural features, but also attract tourists, making them important for local tourism and economy. Waterfalls are sometimes used for **hydroelectric power generation**, as the force with which the water falls, can be harnessed to produce electricity. In addition, they provide opportunities for recreation, such as trekking and photography, and often hold cultural or religious significance in certain regions.



1 River 2 Hard Rock 3 Gap 4 Plunge Pool 5 River

Fig. 2.10. Waterfall

Meander

A **meander** is a winding curve or bend in the middle or lower course of a river formed due to the lateral erosion and deposition



1 Oxbow lake 2 Steep Bank 3 River 4 Bar

Fig. 2.11. Meander

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of sediments. As the river flows, it erodes the outer banks of bends and deposits sediment on the inner banks, gradually creating large loops. Meanders are important for humans because the fertile soil deposited along their banks supports agriculture, making these areas ideal for farming. They also influence settlement patterns, as villages and towns often develop on the gentle slopes near meanders. In addition, meandering rivers can be used for navigation, irrigation, and, in some cases, tourism, as their scenic curves create attractive landscapes. The Grand Anicut, also known as Kallanai in Tamil Nadu, is an example of the use of rivers for irrigation.

Deltas

A **delta** is a landform formed at the mouth of a river, where it flows into a sea, ocean, or lake, and deposits the sediments it has carried from upstream. Over time, these deposits accumulate to form a fan-shaped or triangular area of land. Deltas are highly fertile due to their rich alluvial soil, making them ideal for agriculture and supporting crops, such as rice and jute. They are also important for fishing, as the mix of fresh and saltwater creates diverse aquatic life. Many deltas support dense human settlements and are centres of trade and transportation because rivers provide navigable routes. However, they can also be prone to flooding, which affects human life and activities.



1 River 2 Distributary 3 Islands/Bars 4 Sea

Fig. 2.12. Delta

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LET'S EXPLORE

Have you heard about the Sundarbans delta? Try and explore its uniqueness and find out why it is popular with tourists.



Fig. 2.13. Sundarbans delta



Waves and Currents

Waves and currents are constantly moving over the oceanic surface. They work in coastal areas and reshape the land along the coastal zone. The action of waves and currents creates a range of landforms along the coastline, such as **beaches, sand bars, sea cliffs, sea caves, arches,** and **stacks**. You will learn more about waves and currents in Part 2 of this textbook.

A **beach** is a landform made up of sand, pebbles, or rocks along the shoreline of a sea, ocean, or lake, created by the deposition of sediments by waves. Beaches are constantly shaped by wave action, tides, and currents, which move and deposit materials along the coast. For humans, beaches are popular tourist destinations for relaxation, swimming, and recreation, which boosts the local economy. Beaches also provide fishing areas, and some coastal communities rely on them for collecting sand and shells. Additionally, beaches act as natural barriers against strong waves and coastal erosion, helping safeguard human settlements near the coast.

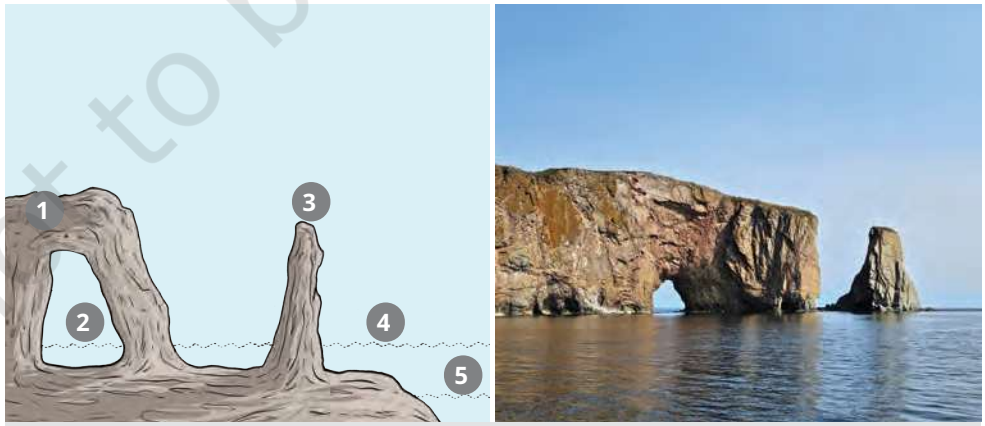
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1 Beach 2 Bay 3 Sea 4 Headland 5 Sand bar 6 Free end 7 River

Fig. 2.14. Beach

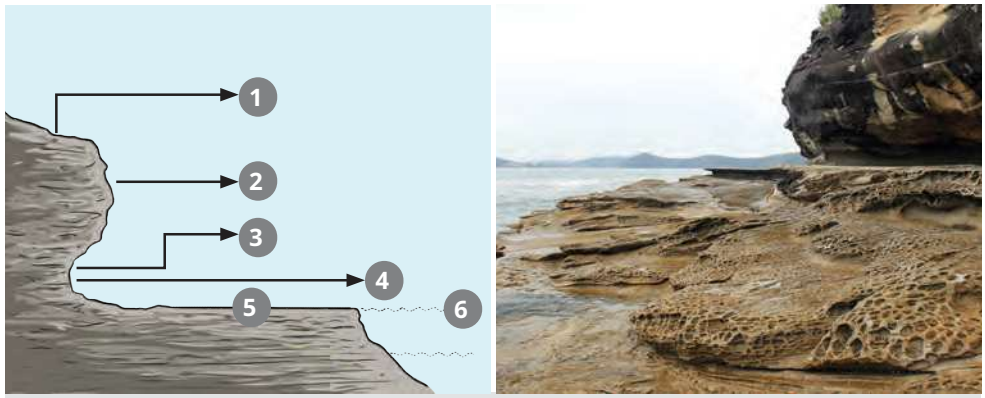
Coastal erosion occurs when waves, tides, and currents wear away the land along the coast, creating unique landforms. Some common **landforms of coastal erosion** include **cliffs** (steep rock faces formed as waves undercut the base of the coast), **wave-cut platforms** (flat areas left behind as cliffs retreat), **caves** (formed when waves erode weak parts of the rock), **arches** (created when caves on opposite sides of a headland meet), and **stacks** (isolated pillars of rock left standing after the arches collapse). These landforms not only shape the coastal landscape but also influence human activities, as some areas are important for tourism, while others may need coastal protection to safeguard settlements.



1 Headland 2 Sea arch 3 Sea stack 4 High-tide level 5 Low-tide level

Fig. 2.15. Sea arch and sea stack

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1 Headland 2 Sea cliff 3 Sea cave
4 High-tide level 5 Shore platform 6 Low-tide level

Fig. 2.16. Sea cliff and shore platform

Glaciers

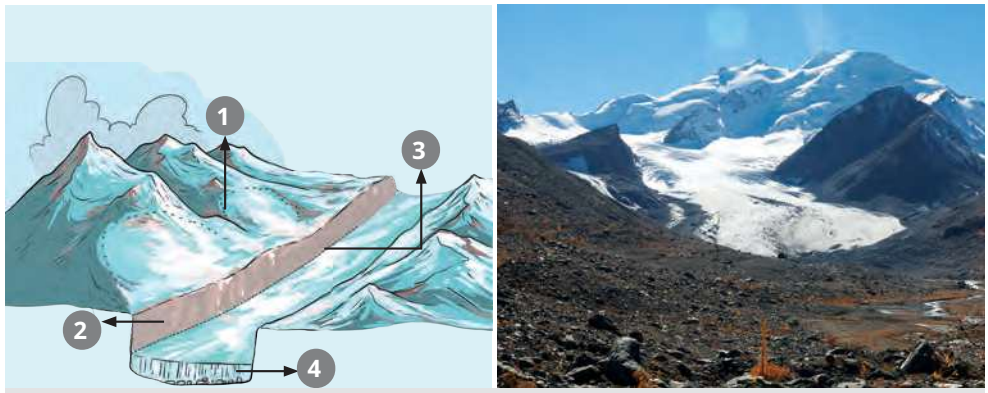
Glacial erosion occurs when glaciers slowly move over the land, carving and shaping the landscape. Common **landforms made from glacial erosion** include—**U-shaped valleys** (formed as glaciers widen and deepen river valleys), **cirques** (bowl-shaped depressions at the head of a glacier), **aretes** (sharp ridges between valleys), **hanging valleys** (which occur where smaller glaciers meet larger ones), and **fjords** (deep, narrow inlets created when the sea floods glacial valleys). These landforms are important for humans in several ways. U-shaped valleys and cirques often provide tourist attractions for trekking, skiing, and mountaineering. Fjords are used for harbours and fishing, while in some valleys the fertile glacial soil supports



1 Arete 2 Cirque 3 Pass

Fig. 2.17. Glacial landforms

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1 Hanging Valley 2 U-shaped valley 3 Glacier 4 Glacial ice

Fig. 2.18. U-shaped valley

agriculture. Additionally, glaciers are crucial sources of fresh water, feeding rivers that sustain human populations downstream.

Moraines are landforms created by the deposition of rocks, soil, and debris (called **till**) carried along and left behind by glaciers. They are formed when a glacier melts and deposits the material it has eroded from land. There are different types of moraines — **lateral moraines** (which form along the sides of glaciers), **terminal moraines** (found at the end of glaciers, marking their furthest advance), and **medial moraines** (formed when two glaciers meet and their lateral moraines join in the middle). Moraines are important for humans because they often create fertile soil for agriculture and can form natural dams and lakes used for water supply, irrigation, and sometimes hydroelectric power.



1 Lateral 2 Glacier 3 Mid moraine 4 Glacier 5 Terminal moraine 6 River

Fig. 2.19. Moraines

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THINK ABOUT IT

A devastating flood struck the Chamoli district in Uttarakhand in February 2021 in which many people and livestock lost their lives. There was severe damage to buildings, roads, bridges, and hydel projects, and connectivity to villages was adversely affected. Can you find out the reasons that led to the sudden and unexpected flood?

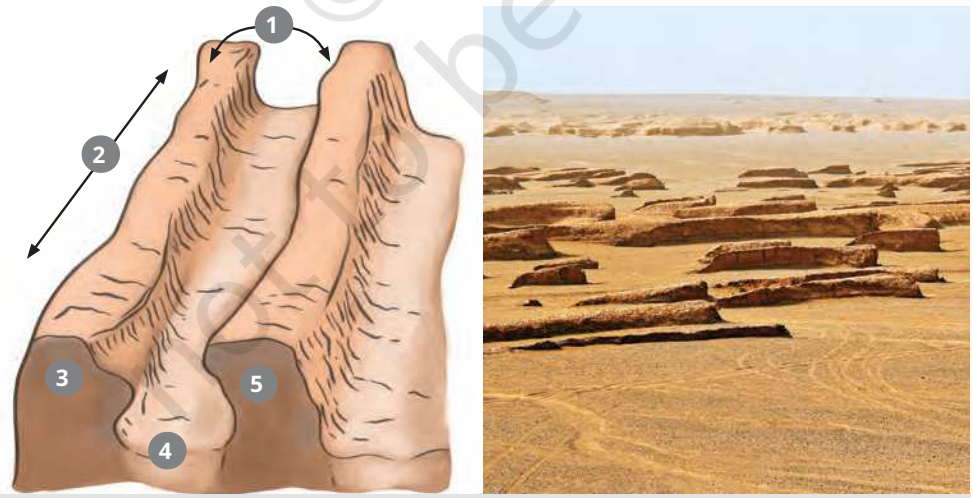


Fig. 2.20



Wind

Wind erosion occurs when strong winds pick up and carry away loose particles of sand and soil, gradually shaping the landscape. This process creates several distinctive **landforms**, such as **yardangs** (which are streamlined rock ridges carved by wind), **ventifacts** (which are rocks polished and shaped by sandblasting), **deflation**



1 Yardang 2 Wind 3 Hard rock 4 Soft rock 5 Hard rock

Fig. 2.21. Yardang

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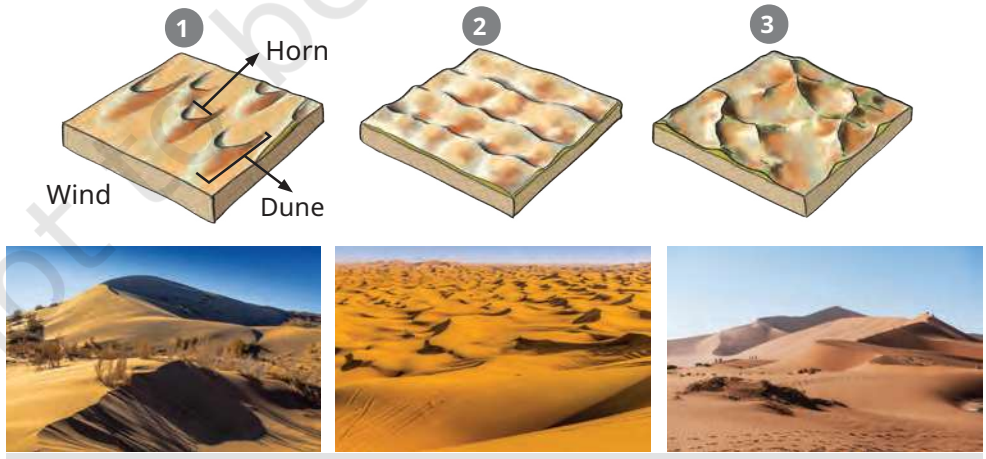


1 Wind 2 Oasis 3 Blown sand 4 Water table

Fig. 2.22. Oasis

hollows or **blowouts** (shallow depressions formed where loose material is removed), and **desert pavements** (flat surfaces left behind after finer particles are blown away). These landforms are important for humans as they influence **settlement patterns** and agriculture in arid regions, and ventifacts and yardangs attract **tourists and geologists** interested in unique desert landscapes.

Dunes are hills or ridges of sand formed by the wind in desert areas or along sandy coasts. There are several types of dunes, including **barchan dunes** (which are crescent-shaped and form in areas with limited sand and a single wind direction), **longitudinal dunes** (which are long ridges formed parallel to the prevailing wind), **star dunes** (which have multiple arms and form where winds come from different directions), and **parabolic dunes** (U-shaped dunes often



1 Barchan Dunes 2 Transverse Dunes 3 Star Dunes

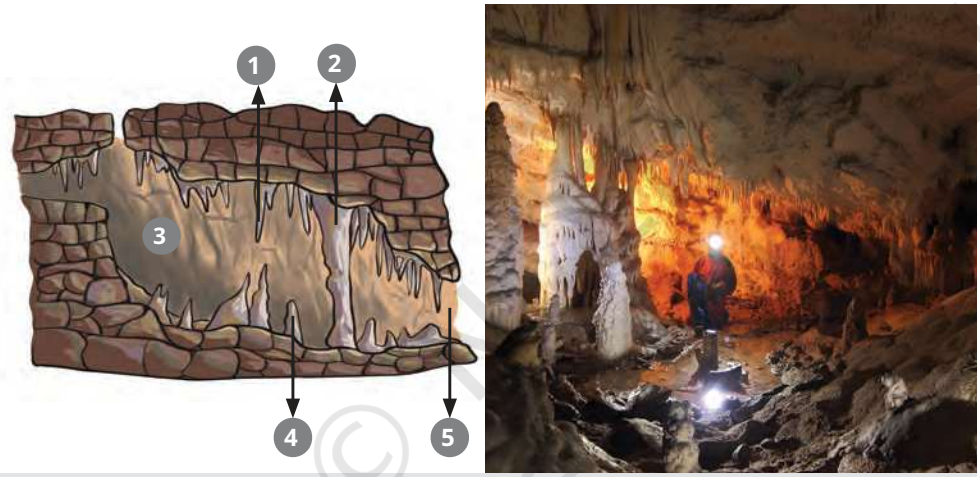
Fig. 2.23. Dunes

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stabilised by vegetation). For humans, dunes act as natural barriers against desertification and wind erosion, and provide areas for tourism and adventure sports. In some coastal regions, they protect settlements from strong sea winds and waves. In addition, sand from dunes is sometimes used for construction purposes.

Underground Water

Underground water, especially in areas of limestone or soluble rocks, creates unique landforms called Karst topography through **chemical weathering** and **erosion**. Common landforms of underground water include **caves** (hollow spaces formed as acidic water dissolves rock), **stalactites** (icicle-shaped formations hanging from the ceiling of caves), **stalagmites** (formations rising from the floor of caves), **sinkholes** or **dolines** (depressions formed when the



1 Stalactite 2 Pillar 3 Cave 4 Stalagmite 5 Cave mouth

Fig. 2.24. Cave

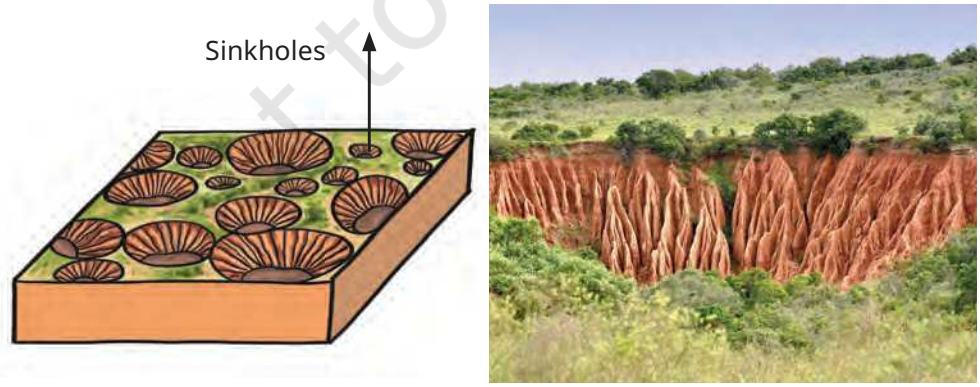


Fig. 2.25. Sinkholes

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Fig. 2.26. Underground river

ground collapses into an underground cavity), and **underground rivers** (which flow through cave systems). These landforms are important for humans because caves and underground rivers provide sources of fresh water, tourism opportunities, and, in some cases, cultural, or religious significance. Stalagmites and stalactites also attract geologists and adventurers, making them valuable for both study and recreation.



LET'S EXPLORE

Observe the landforms around your school or residence and try to identify which agent may have created them.

Landforms and Disasters

There are several disasters associated with different landforms that commonly occur around us. Four such disasters are presented below:

LET'S EXPLORE

Complete the exercises given at the end of each type of disaster with the help of newspapers, atlases, and books. Make a list of disaster-prone areas from India and the world and enlist mitigation measures quoting recent examples.

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Landslides

Landslides are caused by a combination of natural and human factors that make slopes unstable. Heavy and continuous rainfall is one of the main natural causes, as water seeps into the soil and rocks, increasing their weight and reducing friction. Earthquakes and volcanic eruptions can also trigger landslides by shaking the ground and weakening slopes. Steep slopes and the presence of loose or weathered rocks further increase the risk. Human activities, such as deforestation, mining, road construction, and unplanned construction on hillsides disturb the natural balance of slopes. Poor drainage systems and improper land use also contribute to landslides by allowing excess water to accumulate, leading to sudden slope failure.



Fig. 2.27. A landslide

Prone areas:

Mitigation measures:

Recent examples:

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Avalanches

Avalanches are caused by the sudden instability of snow on steep mountain slopes. Heavy snowfall within a short period adds extra weight to the snowpack, making it unstable, especially when it rests on weak or loosely bonded layers of snow. A sudden rise in temperature can cause partial melting, reducing the friction that holds the snow together. Strong winds may also pile up snow unevenly, creating fragile layers. Natural disturbances, such as earthquakes and vibrations, as well as human activities like skiing, trekking, or construction in mountainous areas, can trigger avalanches by disturbing the balance of the snow-covered slopes.



Fig. 2.28. An avalanche

Prone areas:

Mitigation measures:

Recent examples:

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GLOFs

Glacial Lake Outburst Floods (GLOFs) are caused by the sudden release of large volumes of water from glacial lakes due to natural and climatic factors. Rapid melting of glaciers because of rising temperatures increases the size and water level of glacial lakes, putting pressure on their natural dams made of ice or loose moraines. Heavy rainfall or intense snowfall can add excess water to these lakes. Earthquakes, avalanches, or landslides may strike the lake or weaken the dam, leading to its sudden collapse. As a result, the stored water is released abruptly, causing destructive floods in downstream areas.



Fig. 2.29. A GLOF

Prone areas:

Mitigation measures:

Recent examples:

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Dust Storms

Dust storms are caused by strong winds lifting large amounts of loose, dry soil and sand into the air. Prolonged drought and low rainfall dry out the soil, making it easier for wind to pick up the fine particles. Dust storms are common in desert and semi-arid regions where the soil is loose and dry. Sparse vegetation cover, often due to deforestation, overgrazing, or poor farming practices, also leaves the land exposed. Climate change and extreme weather conditions can further increase the frequency and intensity of dust storms.



Fig. 2.30. A dust storm

Prone areas:

Mitigation measures:

Recent examples:

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The Earth's surface is constantly changing due to powerful forces working both inside and outside the planet. Internal forces, such as earthquakes, volcanic eruptions, folding, and faulting create mountains, valleys, and ocean basins, while external forces like weathering, erosion, and deposition slowly wear them down and reshape them. Together, these natural processes give rise to the diverse landforms we see today, from the highest peaks to the deepest ocean floors. Human life, too, is deeply connected to these landforms, as it influences our climate, resources, settlements, and cultures. Understanding the shape of the Earth's surface helps us appreciate nature's power and prepare wisely for natural disasters, ensuring a safer and more sustainable relationship with our planet.

Before we move on...



- The Earth is made up of layers, namely, the crust, mantle, and core.
- Interior forces of the Earth (earthquakes, volcanoes, folding, and faulting) are responsible for the movement of the crust.
- External forces like weathering and erosion carve smaller landforms over the Earth's surface which affect human life in multiple ways.
- The surface of the Earth is carved by agents of gradation like running water, waves and tides, glaciers, wind, and underground water.
- Disasters like landslides, avalanches, glacial lake outflows, and sandstorms are associated with specific landforms.

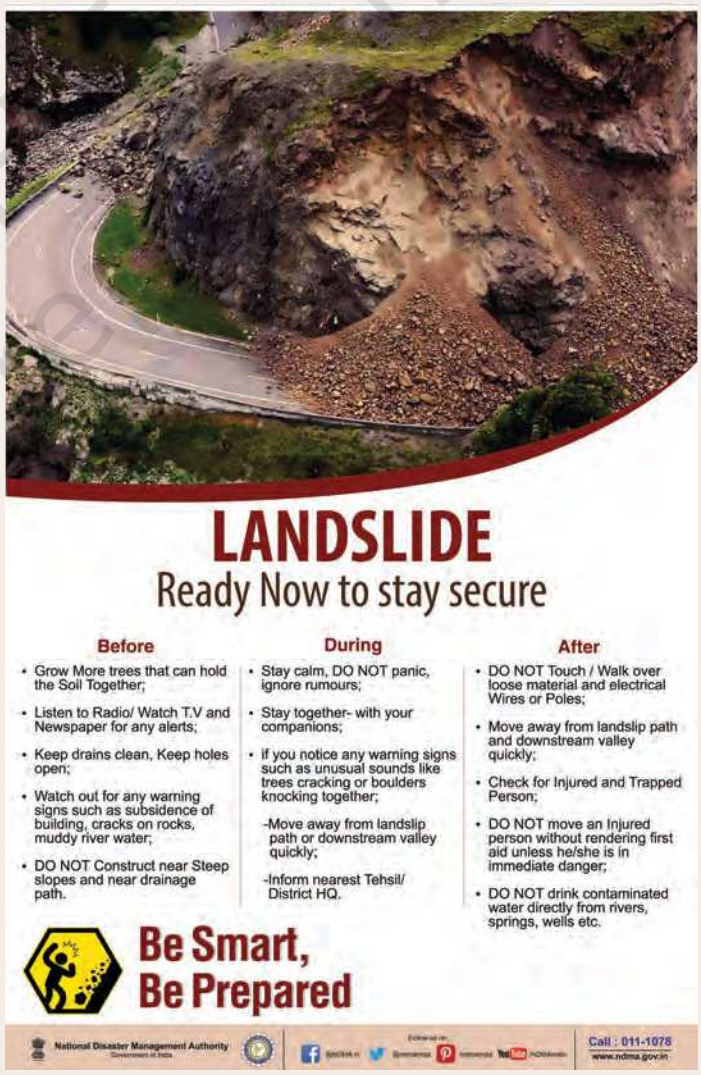


Questions and activities

1. What are the sources of energy that are required to cause movements associated with the internal forces of the Earth?
2. Relate various physiographic divisions you have studied in the earlier grades with various endogenic forces responsible for their origin.
3. Why and where do earthquakes occur frequently? Is it possible to predict earthquakes?
4. "Plate movements are responsible for the distribution of earthquakes and volcanoes." Explain.
5. Draw and label a diagram of a meander and a delta.

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6. How are deforestation and erosion associated with each other? Explain.
7. Develop a plan to protect the land in your local area from erosion.
8. Which disasters do you think you might experience in your region? Discuss a mitigation plan in your classroom.
9. Prepare a model of landforms created by underground water.
10. What precautionary measures will you take if you are staying in an earthquake-prone region?
11. Prepare a map showing landform-associated disasters that happened in the current calendar year.
12. Create a poster showing landforms that are considered to be sacred or important in your region, and add the folk stories associated with them.
13. Document a case of a disaster that hit your region in the past, highlighting its effects on various human activities.
14. Translate the given poster on landslide into your native language and display it in your home.
15. Divide the class into three groups. Each group will work on one project (water, wind, and glacier). The project should highlight the causes, impact on human life and the environment, and mitigation measures.



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