



Class 9 Social Science – Chapter 2

Notes



Shaping of the Earth's Surface



Textbook: *Understanding Society: India and Beyond – Grade 9, Part 1*



Subject: Social Science – Geography



Chapter: 2



Academic Session: 2026–27



1. Earth's Surface Is Constantly Changing

The Earth's surface is constantly changing because of powerful forces working **inside and outside the Earth**.



Internal Forces

These include:

-  Earthquakes
-  Volcanic eruptions
-  Folding
-  Faulting

These forces can create:

-  Mountains
-  Valleys
-  Ocean basins



External Forces

These include:

-  Weathering
-  Erosion
-  Deposition

These processes gradually wear down and reshape the Earth's surface.

Together, these processes create the diverse landforms found on Earth and influence **climate, resources, settlements and cultures**.

2. Interior of the Earth

The Earth has three major layers:

Crust

The outermost layer of the Earth.

Mantle

The layer beneath the crust.

Core

The innermost part of the Earth.

Processes occurring inside the Earth generate forces that affect the Earth's crust.

These internal forces are associated with:

-  Earthquakes
-  Volcanic activity
-  Folding
-  Faulting

The **interior of the Earth** is specifically included in the official Class 9 curriculum.

3. Theory of Plate Tectonics

What Is Plate Tectonics?

The **theory of plate tectonics** explains the movement of large plates that form the Earth's outer portion.

Plate tectonics plays a major role in shaping the Earth's surface.

The movement of plates can lead to the formation of:

-  Mountains
-  Valleys
-  Ocean basins
-  Volcanoes
-  Earthquakes

It also helps explain the distribution of continents and oceans.

Major Tectonic Plates

Important major plates include:

-  Pacific Plate
-  North American Plate
-  South American Plate
-  African Plate
-  Eurasian Plate
-  Indo-Australian Plate
-  Antarctic Plate

 **Remember:** Students should be able to **locate major tectonic plates on a world map.**

4. Plate Boundaries, Earthquakes and Volcanoes

Most earthquakes and volcanoes occur along **plate boundaries**.

Ring of Fire

The region around the **Pacific Ocean** has extensive earthquake and volcanic activity and is known as the **Ring of Fire**.

Plate movements help explain the distribution of earthquakes and volcanoes around the world.

5. Earthquakes

An **earthquake** is a sudden shaking or movement of the Earth's surface associated with the release of energy within the Earth.

Earthquakes are closely related to tectonic activity.

Earthquakes can cause:

-  Damage to buildings
-  Damage to roads and infrastructure
-  Loss of life
-  Environmental damage
-  Changes to the landscape

The textbook asks students to examine why earthquakes occur frequently in certain regions and whether they can be predicted.

Earthquake Risk in India

India has experienced major earthquakes in the past.

A major earthquake in a densely populated region can cause severe damage to **life and the environment**.

Therefore, identifying earthquake-prone regions and preparing for earthquakes are important parts of disaster management.

6. Volcanoes

Volcanoes are associated with **internal processes of the Earth** and are closely connected with tectonic activity.

Volcanic activity can:

-  Create new landforms

- 🌍 Change existing landscapes
- ⚠️ Cause hazards to people and settlements

Their distribution is strongly associated with tectonic plate boundaries.

7. Weathering

What Is Weathering?

Weathering is the process by which rocks are broken down at or near the Earth's surface.

Weathering gradually modifies landscapes.

📌 The curriculum expects students to explain **weathering and erosion with suitable examples**.

8. Erosion

What Is Erosion?

Erosion is the removal and movement of weathered material from one place to another.

Simple difference:

-  **Weathering** → breaks down rocks
 -  **Erosion** → removes and transports material
 -  **Deposition** → deposits transported material
-

9. Deposition

What Is Deposition?

Deposition occurs when material transported by water, wind, ice or another agent is laid down in a new location.

Remember:

 **Weathering** →  **Erosion** →  **Transportation** →  **Deposition**

These processes continuously reshape the Earth's surface.

10. Agents of Gradation

Natural agents that erode, transport and deposit materials are called **agents of gradation**.

The Class 9 curriculum specifically includes:

Running Water

Rivers and streams erode, transport and deposit sediments.

Waves and Currents

Sea waves and currents reshape coastal areas.

Wind

Wind transports and deposits loose particles, particularly in dry regions.

Glaciers

Moving ice erodes, transports and deposits rock and sediment.

Underground Water

Groundwater contributes to erosion and deposition and can form distinctive landforms.

11. Landforms Created by Running Water

Running water is an important agent of:

-  Erosion
-  Transportation
-  Deposition

It can create different landforms.

Meander

A **meander** is a bend or curve in a river channel.

▼ **Delta**

A **delta** is a depositional landform commonly formed where a river deposits sediments near its mouth.

 **Exam Tip:** The textbook specifically asks students to **draw and label a meander and a delta**.

12. Landforms Created by Waves and Currents

Sea waves and currents continuously modify coastal areas.

They can:

-  Erode coastal material
-  Transport sediments
-  Deposit sediments
-  Reshape coastlines

Different combinations of erosion and deposition create different coastal landforms.

13. Landforms Created by Wind

Wind is an important agent of gradation, especially in dry and semi-arid regions.

Wind can:

-  Remove loose particles
 -  Transport sediments
 -  Deposit sediments
 -  Modify landscapes
-



14. Landforms Created by Glaciers

A **glacier** is a large mass of ice that moves slowly over land.

Glaciers reshape the Earth's surface through:

-  Erosion
-  Transportation
-  Deposition

Glacial processes are particularly important in mountainous and cold regions.



Glaciers are also important sources of freshwater and feed many river systems.



15. Underground Water

Underground water can act as an agent of:

-  Erosion
-  Deposition

Groundwater interacts with rocks beneath the Earth's surface and can contribute to the formation of distinctive landforms.



16. Landslides

A **landslide** is the movement of rock, soil or debris down a slope.

Landslides can cause:

-  Damage to roads
-  Destruction of buildings
-  Loss of vegetation
-  Transport disruption
-  Loss of life

Landslides are included among the natural hazards in the Class 9 curriculum.

17. Avalanches

An **avalanche** is the rapid movement of snow and ice down a mountain slope.

Avalanches are especially associated with mountainous regions.

They can pose serious risks to:

-  People
 -  Roads
 -  Buildings
 -  Mountain settlements
 -  Infrastructure
-

18. Glacial Lake Outburst Floods – GLOFs

What Is a GLOF?

A **Glacial Lake Outburst Flood (GLOF)** occurs when a glacial lake suddenly releases a large amount of stored water.

Causes of GLOFs

Several factors can contribute:

- 🌡️ Rising temperatures
- 🧊 Rapid melting of glaciers
- 💧 Increase in lake size and water level
- 🌧️ Heavy rainfall
- ❄️ Intense snowfall
- 🌍 Earthquakes
- 🏔️ Avalanches
- 🏞️ Landslides

Glacial lakes may be held back by natural dams made of **ice or loose moraines**. If the natural dam weakens or collapses, water can be released suddenly.

⚠️ Effect

A GLOF can cause **destructive flooding in downstream areas**.

🌀 19. Duststorms

A **duststorm** occurs when strong winds carry large quantities of dust and loose particles.

Duststorms can affect:

- 👁️ Visibility
- 🌬️ Air quality
- 🌾 Agriculture
- 🚗 Transport
- 👥 Human health

Duststorms are included among the natural hazards in the Class 9 curriculum.

🚨 20. Natural Disasters and Mitigation

Natural processes can become disasters when they cause serious damage to:

- 👥 Human life
- 🏠 Infrastructure
- 🌾 Livelihoods
- 🌳 Environment

Chapter 2 Natural Hazards

-  Earthquakes
-  Landslides
-  Avalanches
-  GLOFs
-  Duststorms

Disaster Mitigation

Disaster mitigation means taking measures to **reduce the harmful effects of disasters**.

Important measures include:

-  Identifying hazard-prone regions
-  Monitoring vulnerable areas
-  Preparing communities
-  Building safer infrastructure
-  Using warning systems
-  Planning emergency responses

The curriculum expects students to explain the **causes of natural disasters** and **propose strategies for their mitigation**.

21. Human Life and Landforms

Landforms are closely connected with human life.

They influence:

-  Climate
-  Availability of resources
-  Agriculture
-  Settlements
-  Transport
-  Economic activities
-  Culture

Understanding how the Earth's surface changes helps people appreciate natural processes and prepare for natural hazards.

Quick Revision

 Topic	 Key Point
 Earth	Crust, mantle and core
 Internal forces	Earthquakes, volcanoes, folding and faulting
 External forces	Weathering, erosion and deposition
 Plate tectonics	Explains movement of tectonic plates
 Ring of Fire	Pacific region with extensive earthquake and volcanic activity
 Weathering	Breakdown of rocks
 Erosion	Removal and movement of material
 Deposition	Laying down of transported material
 Agents of gradation	Water, waves, wind, glaciers and underground water
 Meander	Bend in a river channel
 Delta	Depositional landform commonly formed near a river mouth
 Landslide	Movement of rock, soil or debris down a slope
 Avalanche	Rapid movement of snow and ice down a slope
 GLOF	Sudden release of water from a glacial lake
 Duststorm	Strong winds carrying large amounts of dust

Important Terms to Remember

 **Plate Tectonics**

 **Crust**

 **Mantle**

-  Core
 -  Earthquake
 -  Volcano
 -  Folding
 -  Faulting
 -  Ring of Fire
 -  Weathering
 -  Erosion
 -  Deposition
 -  Agents of Gradation
 -  Meander
 -  Delta
 -  Glacier
 -  Landslide
 -  Avalanche
 -  GLOF
 -  Duststorm
 -  Disaster Mitigation
-

Important Practice Questions

1

What are the sources of energy required for movements associated with the internal forces of the Earth?

2

How are different physiographic divisions related to the endogenic forces responsible for their origin?

3

Why and where do earthquakes occur frequently?

4

Is it possible to predict earthquakes?

5

“Plate movements are responsible for the distribution of earthquakes and volcanoes.”
Explain.

6

Draw and label diagrams of:

-  **Meander**
-  **Delta**

These questions are included in the textbook's end-of-chapter activities.

Curriculum Focus

The official 2026–27 curriculum gives **8 instructional hours** to this chapter and expects students to understand plate tectonics, locate major tectonic plates, explain weathering and erosion, identify agents of gradation, describe landforms and explain causes and mitigation of natural disasters.