


Geography Class 16

A BRIEF OVERVIEW OF THE PREVIOUS CLASS- 9:09 AM

TSUNAMI- 9:19 AM

- **Definition-** TSunami is the Japanese word for harbor waves. They are also called **seismic sea waves**.
- There are **four stages** during Tsunami -
- 1. Generation
- 2. Propagation in deep water
- 3. Propagation in shallow water
- 4. Landfall

STAGES- 9:43 AM

- **1. Generation**
- It is generated due to the vertical displacement of the water column inside the ocean.
- **Causes earthquakes** along the oceanic floor through normal or ^{reverse} ~~rivers~~ fault, volcanic eruptions along the oceanic floor, land subsidence on oceanic floors, meteoritic impact, and underwater nuclear explosions.
- **2. Propagation in deep water**
- In deep waters, the speed of the Tsunami wave will be very high and the amplitude will be very low.
- Therefore Tsunami is not visible in the open ocean and they will not cause any damage.
- **3. Propagation in shallow water -**
- As the Tsunami wave approach, the coast depth of water decreases and speed decreases, and amplitude increases.
- This sudden decrease in speed causes the **piling up** of water near the coast which is called a **shoaling effect**.

- **4. Landfall-**
- Tsunami waves break on the land causing flooding.

GEOMORPHIC PROCESS- 10:00 AM

- **Exogenetic movements-** These are the earth's movements caused due to various forces acting from above the earth's surface.
- The source of energy is Sunlight and gravity.
- The different agents of exogenetic movements are wind, water, and glaciers.
- The **exogenetic process involves-**
- **Upgradation-** it is the action of various processes that cause deposition on the surface in order to bring uniformity of grade or slope.
- **Degradation or denudation-** it involves the combined action of various processes that cause **varying away** of the earth's surface and causes a general lowering and leveling out of the earth's surface. → tearing
- It involves weathering, erosion, and mass movement.
- **Weathering-** It is the total effect of various processes that cooperate in bringing about the decayed disintegration of rocks involving no large-scale transportation.
- Weathering is **in-situ** and does not involve the transportation of degraded rock material. → at its own location
- **Factors affecting the rate of weathering-**
- **Rock type and structure-** Includes massiveness of rock, **porosity, permeability,** presence of cracks and fractures, etc. In erosion disintegration happens when body is in motion.
- Example- Sedimentary rock weather faster than igneous.
- **Slope -** Steep slope will greatly aid weathering as weathered material flows down.
- The slopes are exposed to wind, water, and sunlight and are more prone to weathering.
- example- The southern slopes of the Himalayas compared to the northern slopes.
- **Temperature-** The range of temperature subjects the surface layer to expand and contract continuously causing a physical breakdown.
- Temperature also increases the rate of chemical reactions.
- **Water-** The addition or removal of water imposes mechanical stress on the rocks
- The presence or absence of water decides the rate of a chemical reaction.
- **Biological factors-** Such as plant roots, **burrowing animals,** and microorganisms.
- Difference between chemical and physical weathering.

animals jo bil khodte h
for ex:- rats, snakes etc.

Porosity means presence of air gaps.
If that air gaps are connected to each other then it will let the gas and water to pass through it which is known as permeability.

For ex:- Black soil is poros but not permeable

when saline water from ocean or through other process enter into cracks then this water evaporates after sometime and rock left with salt.

dararen

halo means salt


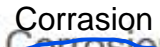

clasty means "to break"

alag kr dena

TYPES OF WEATHERING-11:08 AM

- **Physical weathering types-**
- **Frost shattering-** When water finds its way into cracks or pores it **wedges apart** rocks **fissures** and joints and breaks the rock.
- It is mainly active in desert areas.
- It is called a freeze-thaw in the glacier region.
- **Haloclasty-** The growth of salt crystals by crystallization and deposition create pressure in pore, spaces, and cracks.
- It is also called salt weathering.
- **Pressure release-** As the confining pressure from the weight of overlying rocks is removed, the lower rocks expand resulting in the development of fractures.
- **Exfoliation-** Rapid expansion and contraction of the surface rock weaken the shell, creating fissures and cracks and causing the shell to peel off.
- **Chemical weathering types-**
- **Hydrolysis-** It is the chemical union of water and mineral-producing solution.
- **Hydration-** It occurs when minerals incorporate water into their molecular structure, it causes swelling.
- **Oxidation/reduction-** the addition or removal of oxygen, results in discoloration.
- It is the first visible sign of chemical weathering.
- **Carbonation-** Rainwater observing CO₂ producing carbonic acid which can alter limestone and dolomite structures through dissolving action.
- **Biological weathering-** It involves breaking down particles by plant roots, worms, ~~borrowing~~ ^{burrowing} animals, etc.
- The decomposing organic matter releases different chemicals which may increase the rate of weathering.
- **Erosion-**
- It refers to varying away of land surface by the mechanical action of debris derived from weathering as they are transported to different locations by agents like wind, water, glacier, etc.

This can be because of wind, water etc.

- **Abrasion-** It involves varying away of a surface by mechanical processes by rubbing, scratching, etc.  Polishing
- Abrasion in water is called ~~Corrosion~~  Corrasion
- **Attrition-** it involves a reduction in the size of fragments by friction and impact during transportation.
- It breaks down the load into finer sediments.
- **Cavitation-** The collapse of bubbles of water along the river bed causing an explosion, sending shock waves that may disintegrate the rocks.
- **Corrosion-** it involves varying away of particles by solvent and chemical action of water.
- **Deflation-** The lighting and removal of dust particles by the wind is called ~~deflection~~  deflation
- **Hydraulic action-** The breaking of rocks by fast-moving water.
- **Plucking-** As the glacier moves drag the rocks and disintegrate them into smaller pieces.

The topic for the next class- Mass movement, landforms

AACCDHP



Abrasion





Frost shattering

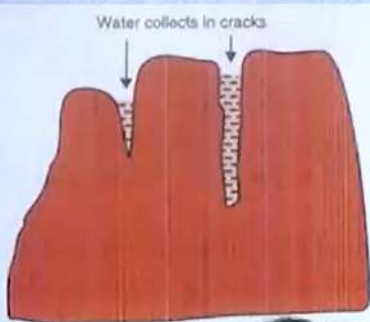
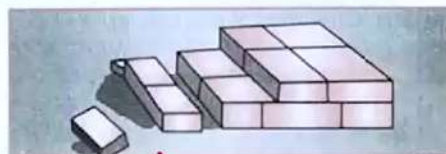
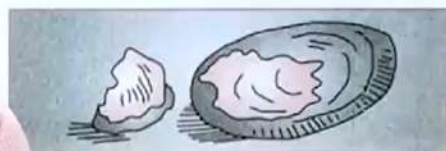


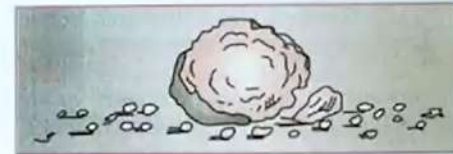
Fig.



(a) Block disintegration



(c) Exfoliation



(b) Granular disintegration



(d) Frost Action

Fig. 11.3. Types of Mechanical Weathering

Water freezes and expands in crack

Table 11.1. Difference between Mechanical and Chemical Weathering.

Mechanical (Physical) Weathering	Chemical Weathering
1. Disintegration of rocks take place without any change in <u>chemical constituents of rocks.</u>	1. Decomposition of rocks take place with changes in <u>the chemical constituents of rocks.</u>
2. Factors such as <u>temperature, moisture,</u> frost action and wind <u>cause physical break-up of rocks.</u>	2. <u>Temperature, moisture, etc.,</u> cause minerals in rocks to either dissolve in water or change their composition.
3. It is more rapid in <u>desert climates.</u>	3. It occurs in <u>moist and cold climates</u>
4. Rocks are <u>affected to great depths.</u>	4. It mostly takes place <u>near the surface of the earth.</u>
5. Its agents are temperature and moisture.	5. Its agents are water, oxygen, carbon and various organic acids.

Wikipedia
Exfoliating granite - Wikipedia

USGS.gov
Exfoliating domes of granite

Exfoliation - Conf....
Exfoliation dome

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exfoliation dome

Beckley Boutique
Exfoliation Domes: How They Form

Exfoliation domes	Exfoliation toes
1. Exfoliation domes are large smooth round domes.	1. Exfoliation toes are small to big size buttresses.
2. They are formed due to unroofing and expansion of rocks.	

Philoid
exfoliate

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