



OCEAN DEPOSITS



MARINE SEDIMENTS

Ocean Deposits

- Unconsolidated Sediments - derived from various sources.
- Deposited - Seafloor.
- Derived from
 - weathering & Erosion - continental rocks
 - volcanic eruptions.
 - Decay & decomposition - marine organism (Plants + animals)

1. Terrigenous Materials

- Fine to coarse sediments
- Disintegration & decomposition - cont. rocks.
- These sediments - continental origin.
- Brought to rivers - Surface wash. - Gullies.
/to - Rainwash. - Small rivulets.
ocean and - Rills
Seas.
- Per year : 15,000 million tones - 20,000 million tones
Terrigenous sediments - added to Oceans.
- Variation - size and shape

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- ~~Marked gradients~~

- Marked gradation:
Near Coast

↳ Coarser & larger
Sediments.

eg. Boulders,
Cobbles,

Pebbles.

Away 4m Coast

↳ Smaller & finer
Sediments.

Offshore regions

↳ very fine
sediments.

- Divided into; [on basis of size, composition & chemical characteristics]

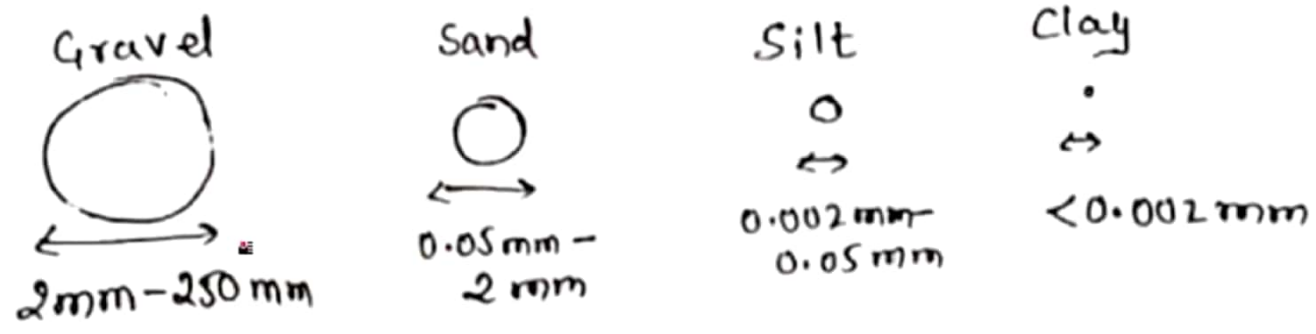
↳ Gravel.

↳ Silt.

↳ Mud.

↳ Sand.

↳ Clay.



- Gravel :- 2mm - 250mm
- Sediments - very large size.
 - Deposited near coast on continental shelves.
 - Sediments - disintegrates (further size reduced)
 - Brought by rivers.
- Boulders (250mm)
 - Pebbles (4mm)
 - Cobbles (60mm)
 - Granules (2mm)



Sand :

- 0.05 mm - 2 mm.
- Continental rock fragments - disintegration.
- Deposited by: Rivers, surface wash, winds.
- Marked Gradation:
 - Coarser sand - near coast
 - Fine sands - away 4m coast.

- very coarse sand (2mm)
- Coarse sand (0.5mm)
- Medium " (0.25mm)
- Fine " (0.125mm)
- very fine " (0.065mm)

Silt :

- 0.002 - 0.05 mm.
- B/w sand & clay.
- Found - mix with sand & clay.
 - in suspension with water.

- Clay: - < 0.002 mm
- Significant cementing material
 - Brought with rivers
 - deposited - calm sea water.
 - Generally found - 100 - 1000 fathom
(600) - (6000) feet.

- Mud: - liq / semi liquid mixture - water + diff. kind of soil
- ↳ Blue Mud - Ancient mud deposit - hardened over geological time - sedimentary rocks
eg. shale.
Mudstone.
- Rock disintegration $\xrightarrow{\text{rich}}$ Iron Sulphide.
Organic Elements.
 - Generally found - greater depth - continental shelves.
 - colour - bluish black.
 - contains - 35% Calcium Carbonate.
 - Predominantly found: Atlantic Ocean Arctic Sea
Mediterranean Sea Enclosed Seas.



- ii) Red Mud
- Rocks rich in Iron Oxide (FeO)
↳ Red colour.
 - contain - 32% Calcium Carbonate.
 - Found - Yellow Sea
Brazilian Coast
Floors - Atlantic Ocean.



- iii) Green Mud
- Blue mud $\xrightarrow[\text{Weathering}]{\text{Chemical}}$ Green Mud. [react with sea water]
 - contains: Green Silicates of Potassium.
Calcium carbonate - 56%.
 - Found: N. America - Atlantic Coast.
Pacific " "
Japan, Australia & Africa coast
 - Depth: 100 - 900 fathoms.



2. Volcanic Materials:

- Derived from 2 sources;

i. Volcanic eruption - Land

- Fine materials - collision among themselves.
- further disintegration.

- Near-coastal land - wind → Ocean.

Away - " " - overland flow
rain wash → Oceans.

ii. Volcanic eruption - Ocean

- Directly deposited.
- Resembles blue mud.
- colour - grey to Black.

3. Biotic matters / Organic materials.

- Sources - sea itself.
- include - skeletons of marine organism.
 - Plant remains.
- Grouped - 2 categories:
 - Neritic matter. - skeleton - Marine organism & Plant remain
 - Pelagic matter. - Remains of diff. kind of algae.

• Meritic matter

- Depos skeleton - marine organism & plant remains.
- Deposited mostly - continental shelves.
- Generally - covered by - terrigenous materials.
- Include: Shell of molluscs
skeletons - marine org.
Calcareous & siliceous plant remains.



• Pelagic matter

- Matter derived from algae.
- Mostly in form of liquid mud, generally known as Oozes
- consist - remains of marine plants & animals
in form of - diff. types of ooze covers.
- Cover ~ 75% of ocean areas.



- Based on ooze composition, 3 types - pelagic sediments;
 - i. Calcareous ooze.
 - ii. Siliceous ooze.
 - iii. Red clays.

i. Calcareous Ooze;

- Contains limestone in abundance.
- Seldom found at greater depth.

[high degree of solubility]

- Generally found - Sea-floor (b/w 1000 fathoms - 2000 fathoms)
(6000 ft.) (12,000 ft.)
1828 m 3657 m

Cold water dissolves CO_2 better & forms acids.

Not present in cold deep water (below 3500m)

This depth - Carbonate compensation depth

- Further divided:
 - a. Pteropod Ooze
 - b. Globigerina Ooze

a. Pteropod Ooze:

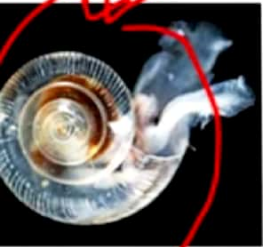
- ↳ Formed - floating pteropod molluscs
- ↳ contains - 80% calcium carbonate.
- ↳ Mostly found - Tropical Ocean & Seas.

- depth 300 - 1000 fathoms
- with ↑ depth: decrease
- Not found - below 2000 fathoms.

↳ Found mostly - Regions of Corals.

Surrounding Azores,
Canary Islands,
Antilles

Mid Mediterranean submarine Ridge



ii. Siliceous Ooze;

- Silica content dominates.
- " - derived 4m - gap. of Protozoa & benthic animals mainly sponges.
- Does not dissolve as compared to calcareous ooze [less carbonate & dominance of silica]
- Found: warm + cold waters - @ greater depths.
- Divided; (on basis of dominance of particular organism)
 - a. Radiolarian ooze
 - b. Diatom ooze





a. Radiolarian ooze

- Formed by shells of radiolaria & foraminifera.
- When dried - becomes - dirty grey powder.
- Silica predominates. (Avg. 5%)
- Calcium carbonate also present.
- Lime content - \downarrow - \uparrow depth.
 - disappears - greater depth.
- Found: upto 2000 - 5000 fathoms - Tropical oceans.
- Cover largest area - Pacific Ocean.

b. Diatom ooze

- Formed - Shells of very microscopic plants.
↳ containing silica in abundance.
- Calcium content - varies (3-30%)
- Also contain some clay.
- Colour - Near land - blue
Away 4m " - yellow or cream.
- When dried - fine white powder.
- Found - Greater depth (high latitude)
 - Zone around Antarctica.
 - N. Pacific (belt - Alaska to Japan)
- Depth: 600-2000 fathoms.

4. Abiotic matters / inorganic matters

- usually - Precipitates - which fall down from above.
- Some - transported 4m land to Oceans.
- Includes: dolomite, amorphous silica, iron manganese oxide, phosphate etc.
Feldspar, Clay minerals etc.
- Chemical process - mix. with organic materials.
 - ↳ become difficult to isolate.