



Place in News – Mud Wave

Context: A study conducted in 2025, published in *Global and Planetary Change*, revealed the existence of mud waves that are 117 million years old, buried beneath the Atlantic seabed close to Guinea-Bissau.



About Mud Waves:

- These are large, rhythmic sedimentary formations found on the ocean floor, generated by continuous bottom currents. In this instance, they were formed by dense saline flows originating from the young North Atlantic and moving into southern basins during the Cretaceous period.

Key Features:

- **Size:** Exceeding 1 km in length and reaching hundreds of meters in height.
- **Age:** Approximately 117 million years old.
- **Location:** Situated nearly 1 km beneath the Atlantic seabed to the west of Guinea-Bissau.
- **Composition:** Composed of layered sediment sequences that provide insights into historical ocean currents.
- **Associated Currents:** Influenced by deep-water density flows traversing the Equatorial Atlantic Gateway.

Formation Process:

Early Atlantic Water Spill:

- Around 117 million years ago, the North Atlantic Ocean was relatively young and partially isolated from the southern regions. Eventually, saline ocean water from the north flowed into the southern area through a newly formed passage known as the Equatorial Atlantic Gateway.

Underwater Sediment Avalanches:

- This abrupt influx of heavy, salty water collided with older, stagnant waters in the south, which were rich in mud and organic matter. The impact stirred up vast quantities of sediment, resulting in enormous underwater "mud avalanches" that surged along the seabed.

Shaping the Mud Waves:

- Over time, the strong underwater currents continued to push and accumulate these sediments into wave-like formations. These eventually evolved into massive "mud waves," which have remained in place for millions of years, now concealed beneath the ocean floor.



About the Atlantic Ocean:

- The second-largest ocean after the Pacific, it is approximately half its size. It features a distinctive 'S'-shaped outline.

Key Physical Features:

- **Continental Shelf:** The widest section is found in the Northern Atlantic (northeast America, northwest Europe).
- **Mid-Atlantic Ridge:** A 14,000 km-long and approximately 4 km high ridge that runs parallel to the shape of the ocean.
- **Seamounts and Islands:** This category encompasses the Azores, Canary Islands, Bermuda, and Cape Verde.
- **Trenches and Troughs:** While less extensive than those in the Pacific, significant examples include the Puerto Rico Trench and the Romanche Trench.
- **Marginal Seas:** This includes Hudson Bay, the Baltic Sea, and the Gulf of Mexico.