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THE CONCEPT OF SEDIMENT TRANSPORT AND HOW IT AFFECTS COASTAL AREAS.

Concept of sediment transport

Sediment transport is the movement of solid particles ([sediment](https://en.wikipedia.org/wiki/Sediment)), typically due to a combination of gravity acting on the sediment, and/or the movement of the [fluid](https://en.wikipedia.org/wiki/Fluid) in which the sediment is entrained. Sediment transport occurs in natural systems where the particles are [clastic](https://en.wikipedia.org/wiki/Clastic) rocks ([sand](https://en.wikipedia.org/wiki/Sand), [gravel](https://en.wikipedia.org/wiki/Gravel), [boulders](https://en.wikipedia.org/wiki/Boulders), etc.), [mud](https://en.wikipedia.org/wiki/Mud), or [clay](https://en.wikipedia.org/wiki/Clay); the fluid is air, water, or ice; and the force of gravity acts to move the particles along the sloping surface on which they are resting. Sediment transport due to fluid motion occurs in [rivers](https://en.wikipedia.org/wiki/River), [oceans](https://en.wikipedia.org/wiki/Ocean), [lakes](https://en.wikipedia.org/wiki/Lake), [seas](https://en.wikipedia.org/wiki/Sea), and other bodies of water due to [currents](https://en.wikipedia.org/wiki/Current_%28fluid%29) and [tides](https://en.wikipedia.org/wiki/Tide). Transport is also caused by [glaciers](https://en.wikipedia.org/wiki/Glacier) as they flow, and on terrestrial surfaces under the influence of [wind](https://en.wikipedia.org/wiki/Wind). Sediment transport due only to gravity can occur on sloping surfaces in general, including [hillslopes](https://en.wikipedia.org/wiki/Hill), [scarps](https://en.wikipedia.org/wiki/Escarpment), [cliffs](https://en.wikipedia.org/wiki/Cliff), and the [continental shelf](https://en.wikipedia.org/wiki/Continental_shelf)—continental slope boundary.

Sediment transport is important in the fields of [sedimentary geology](https://en.wikipedia.org/wiki/Sedimentary_geology), [geomorphology](https://en.wikipedia.org/wiki/Geomorphology), [civil engineering](https://en.wikipedia.org/wiki/Civil_engineering) and [environmental engineering](https://en.wikipedia.org/wiki/Environmental_engineering) (see [applications](https://en.wikipedia.org/wiki/Sediment_transport#Applications), below). Knowledge of sediment transport is most often used to determine whether [erosion](https://en.wikipedia.org/wiki/Erosion) or [deposition](https://en.wikipedia.org/wiki/Deposition_%28sediment%29) will occur, the magnitude of this erosion or deposition, and the time and distance over which it will occur.

How sediment transport affects coastal areas

1. In coastal waters, sediment transport processes are strongly affected by high-frequency waves introducing oscillatory motions acting on the particles. The high-frequency (short) waves generally act as sediment stirring agents; net sediment transport is due to the mean current.
2. It results in the formation of characteristic coastal landforms such as [beaches](https://en.wikipedia.org/wiki/Beach), [barrier islands](https://en.wikipedia.org/wiki/Barrier_islands), and capes.
3. It takes place in near-shore environments due to the motions of waves and currents.