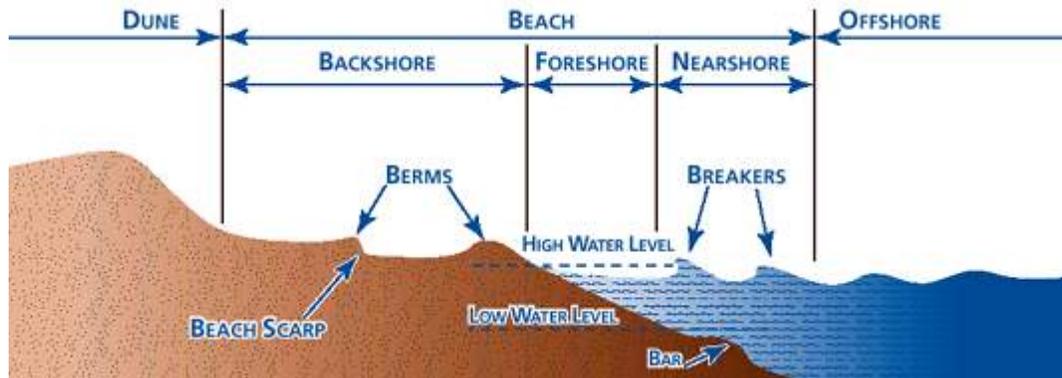


ANATOMY



BEACH TERMINOLOGY

ACCRETION Deposition of sediment, usually sand, which is evident by the seaward advance of a shoreline indicator, such as the high water line, berm crest, or vegetation line. Accretion causes the beach to become wider. Opposite of erosion.

AEOLIAN Transport and deposition of sand by wind; the principal means by which sand dunes are formed.

ALONGSHORE CURRENT See [LONGSHORE CURRENT](#).

ARMORING Placement of fixed engineering structures, typically rock, wood timbers, or concrete, on or along the shoreline to reduce coastal erosion. Armoring structures include seawalls, revetments, bulkheads, and rip rap.

BACKSHORE Generally dry portion of the beach between the berm crest and the vegetation line that is submerged only during high water levels and eroded during storm events.

BACKWASH The seaward return flow of swash on the beach face due to gravity.

BAR Submerged mound of sand that generally runs parallel to the shore and causes waves to break before reaching the beach.

BARRIER BEACH A low-lying, sandy island or spit that lies offshore and generally parallel to the mainland.

BEACH Accumulation of wave-deposited, loose sediment, usually sand, that extends from the outermost breakers to the landward limit of wave and swash action.

BEACH LOSS Volumetric loss of sand, usually measured by a loss of dry beach width.

BEACH MONITORING Periodic collection of data, such as dry beach width, to study changes over time.

BEACH NARROWING Decrease in usable (dry) beach width caused by episodic storm impact or long-term erosion.

BEACH NOURISHMENT Sand artificially placed on the beach, usually by pumping sea bottom sediments onshore, to replace that being lost alongshore or offshore. Beach nourishment projects are usually large scale, spanning many miles of shoreline to rebuild eroded beaches.

BEACH PROFILE Measurement of the elevation or height of the beach surface taken along a line that runs from the dune to the water across the beach. Profiles taken at different dates can be compared to illustrate and quantify storm, seasonal, and longer-term changes in beach width, height, volume, and shape.

BERM Feature usually located at mid-beach and characterized by a sharp break in slope, separating the flatter backshore from the seaward-sloping foreshore.

BLOWOUT Small, often circular or oval depression in sand dunes, caused by wind scouring where protective vegetation has been disturbed.

BLUFF High, steep bank or cliff along the mainland of non-coastal origin. Steepened bluffs are caused by wave undercutting of the cliff toe.

BREAKWATER Structure built parallel to the shoreline and seaward of the beach designed to protect the beach and upland areas by causing waves to break and dissipate their energy before reaching the shore.

BUILDING SETBACK State or locally required seaward limit of beachfront construction, usually for a house.

BULKHEADS Rigid structures with vertical walls built parallel to the shoreline to serve as barriers to wave attack and prevent storm surge flooding of upland areas; constructed out of treated wood, corrugated steel, PVC, or other materials.

COASTAL COMPARTMENT Stretch of shore that is connected by a common longshore sediment transport system, such as the south shore of Long Island, New York.

CUSPS Crenulated beach surface, characterized by an evenly spaced series of rounded, small headlands (projections) and bays (or embayments). The along-shore spacing of cusps ranges from a few feet to 100's of feet and their relief varies from a few inches to several feet.

DEFLATION Lowering of the beach profile.

DOWNDRIFT In the direction of net longshore sediment transport.

DUNE Mound or ridge of sand deposited by the wind, capable of movement when unvegetated. Dune building can be augmented by sand fencing or planting beach grass.

DUNE RESTORATION Technique of rebuilding an eroded or degraded dune through one or more methods (sand fill, fencing, revegetation, etc.).

DUNE WALKOVER Light construction that provides pedestrian access across a dune without trampling the vegetation.

EBB CURRENT Tidal current moving away from the coast during a falling (ebbing) tide, often with high velocity flows through tidal inlets.

EBB TIDAL DELTA Sandy shoals formed by ebbing currents found on the seaward side of tidal inlets.

EROSION Physical removal of sand from the beach which is transported offshore, alongshore, or into bays and lagoons via inlets. Erosion results in shoreline recession—landward retreat of a shoreline indicator such as the high water line, vegetation line or dune line. Opposite of accretion.

EROSION HOT SPOTS Areas where erosion is occurring at a much higher rate than adjacent beach areas, which can threaten beachfront development or infrastructure. Typically the dry beach has narrowed considerably.

EROSION WATCHSPOTS Areas where the coastal environment (natural or built) will soon be threatened if shore erosion trends continue.

EUSTATIC SEA-LEVEL RISE World-wide changes of sea level over decades to centuries caused by addition of water from the melting of glacial ice and/or thermal expansion of sea water due to global warming.

FETCH Distance of open water over which the wind blows in the development of waves. The fetch length can restrict wave development so that only relatively small waves occur in narrow bays and lagoons.

FLOOD CURRENT Tidal current moving toward the shore, through a tidal inlet, or up a tidal river, estuary, or lagoon.

FLOOD TIDAL DELTA Sandy shoals formed on a rising (flooding) tide and found on the estuarine or lagoonward side of a tidal inlet.

FORESHORE Seaward sloping portion of the beach within the normal range of tides.

GEOTEXTILE TUBES Elongated cloth bags or tubes made out of plastic material that can be stacked or arranged as a form of semi-hard coastal engineering.

GROINS Shore protection structures which extend from the beach backshore into the surf zone, perpendicular to the shoreline. A groin is intended to build up an eroded beach by trapping littoral drift or to retard the erosion of a stretch of beach. Often mis-identified as jetties.

HARDENING See [ARMORING](#) .

HARD STABILIZATION Emplacement of treated wood, rocks, concrete, PVC, and/or steel in the form of breakwaters, bulkheads, groins, jetties, seawalls, etc.

HIGH WATER LINE The line or “wetted bound” separating wet from dry sand and formed by swash uprush on the beach face.

HURRICANES Tropical cyclones with winds 75 mph or greater which spiral inward toward a core of low pressure and rotate in a counterclockwise direction in the Northern Hemisphere.

INLET See [TIDAL INLET](#).

ISOSTATIC Local or regional changes in the ground surface elevation, resulting in land subsidence or uplift.

JETTIES Shore-perpendicular structures built at the sides of an inlet to maintain navigable waterways. They stabilize an inlet by intercepting the longshore transport of sand that would otherwise fill it in or cause the channel to shift position. Jetties are often confused with groins, but are much longer and more substantial structures, usually built in pairs.

LITTORAL BUDGET Sediment budget of the beach consisting of sources and sinks.

LITTORAL DRIFT Sand and coarser material moved in the breaker and swash zones by waves and longshore currents along the shoreline.

LITTORAL SYSTEM Area from the landward edge of the coastal upland (usually the dune) to the seaward edge of the nearshore zone.

LONGSHORE CURRENT Current moving along (parallel to) the shore, generated by waves breaking at an angle to the shoreline.

LONGSHORE SEDIMENT TRANSPORT

Sediment transport along the beach (parallel to the shoreline) caused by longshore currents and/or waves approaching obliquely to the shoreline. See [LITTORAL DRIFT](#).

MEAN SEA LEVEL The average elevation of the sea surface determined from tide gauges.

NEAP TIDE Small tide range, occurring at the first and third quarters of the moon, when the gravitational pull of the sun opposes that of the moon.

NEARSHORE Underwater area close to the beach, often characterized by sand bars, where sediment is actively being moved by waves and currents. This zone typically extends to a depth of 25 to 30 feet along the Atlantic coast.

NODAL POINT Location of longshore sediment transport divergence, where the littoral drift moves away in opposite directions along the coast. Normally areas of higher erosion rates.

NOR'EASTERS Extratropical storms with winds that commonly blow from the northeast, occur during the winter, and can generate large waves and elevated tides, resulting in considerable beach and dune erosion.

OBLIQUE WAVE APPROACH Waves that approach the beach at an angle (e.g., not straight-on) and generate longshore currents.

OFFSHORE Area seaward of the nearshore zone where sediment transport is only initiated by large swell waves or coastal storms.

OVERWASH Wave uprush overtopping the beach and dunes during storms; water and entrained sand that are moved landward of the dune. Also called an overwash surge during major events. See [WASHOVER](#).

PEAT Dark-brown to black, fibrous material produced by plants which grow in marshes or bogs. When exposed on the beach face, it indicates long-term erosion and landward barrier migration.

PERIGEAN Period of time (twice a year) when the moon is at its closest approach to the Earth, and the tidal range is larger than normal.

PERIGEAN SPRING TIDES Coincidence of perigean and spring tidal conditions resulting in the highest high and the lowest low tides, Nor'easters, such as Ash Wednesday Storm of 1962, become even more damaging when they occur during perigean spring high tides.

PERIOD See [WAVE PERIOD](#).

RECESSION Landward movement of the shoreline due to the loss of beach material and/or direct inundation of the land.

REFRACTION The bending of waves by bars and shoals that can cause the concentration of wave energy on a portion of the shoreline, resulting in accelerated beach erosion.

RELATIVE SEA LEVEL RISE The gradual rise in the water level relative to the land surface due to worldwide changes in the volume of seawater and/or local vertical movement of the land.

REVTMENT Facing of stone, concrete or rubble built to protect an embankment or upland against erosion by wave action or currents.

RIDGE A longshore feature that may become exposed at low tide; often formed by a bar moving onshore as a form of post-storm beach recovery.

RIP CURRENTS Strong, localized current flowing seaward from the shore; visible as an agitated band of water, which is the return movement of water piled up on the shore by incoming waves. Rip currents are by far the biggest killers of ocean swimmers.

RIPRAP Layer, facing or protective mound of stones randomly placed to prevent erosion of upland areas. Also the name of the stone so used.

RUNUP Part of the swash action caused by breaking waves.

SAND BAGS Sand-filled cloth or geo-textile bags that can be stacked to provide semi-hard coastal protection and are designed to retain sand while allowing water to flow through.

SAND WAVES Much larger features than cusps that may migrate along the shoreline. Sand waves can locally cause accelerated erosion known as erosion "hot spots." Also called shoreline meanders, sand humps, or giant beach cusps.

SCARP Vertical drop-off of the dry beach caused by oblique wave attack during stormy conditions; beach scarps can be several inches to over six feet high and disappear by the return of sand onshore during berm accretion. Dunes can also be scarped, forming vertical, wave-cut faces.

SCOUR Removal of beach material by waves and currents such as at the base of a dune or toe of a shore structure.

SCARPING Erosion of a dune or berm, usually by oblique wave attack during a storm.

SEA Short period, steep waves generated during a storm that cause beach erosion.

SEAWALLS Vertical or near vertical shore-parallel structures designed to prevent upland erosion and storm surge flooding. Seawalls are generally massive concrete structures emplaced along a considerable stretch of shoreline at urban beaches.

SHADOW EFFECT Stretch of sand-starved, eroded beach that is downdrift of a structure such as a jetty or groin and hence in the littoral drift "shadow" of that structure.

SHOAL A large deposit of sand, generally created by currents near inlets, that can be an obstruction to boats and can cause wave refraction.

SHORELINE Boundary between the land and the sea, which is often defined as the mean high water line for mapping purposes.

SOFT STABILIZATION Artificial emplacement of sand via beach nourishment or through building and enhancement of sand dunes with sand fencing or vegetative plantings. Sand scraping of the beach to build up sand dunes is another means of "soft stabilization".

SORT Separation of particles into various size categories by moving water or wind.

SPOIL Dredged sediment, usually from inlets or lagoons, that can be clean or polluted.

SPRING TIDE Larger than average tidal range that occurs twice monthly during new and full moon times.

STORM SURGE Sudden, temporary rise of sea level primarily due to winds but also caused by atmospheric pressure reduction, resulting in piled-up water against the coast, which is the primary cause of coastal flooding during a storm.

SWASH Sheet of water that flows up and down the beach foreshore caused by waves breaking and gravity, respectively. See [UPRUSH](#) and [BACKWASH](#) .

SWELL Long period waves that tend to widen the dry beach, usually in summer months or during fairweather.

TIDAL INLET Channel through a barrier beach, which is characterized by swift currents that interrupt the littoral drift of sand.

TIDAL PRISM Amount of water that flows in and out of a semi-enclosed bay or estuary between high and low tide.

TIDAL RANGE Difference in height between high and low tide.

UNDERTOW General layman's term used to describe coastal currents which may "suck" swimmers underwater. A more accurate description is backwash from large breaking waves or seaward-flowing rip currents.

SEMI-HARD STABILIZATION Use of sand bags and/or geotextile tubes that can be stacked or arranged to provide protection to beachfront properties.

UPDRIFT Direction opposite that of the predominant movement of the littoral drift. Opposite of downdrift.

UPLAND Mainland or land behind the dunes; high ground that is above normal tidal flooding.

UPRUSH The movement of water (swash) up the beach face when a wave breaks on the foreshore.

WASHOVER OR **WASHOVER FAN** Sand deposited during storms landward of the dune line, sometimes extending to the marshes or into the bay waters.

WAVE HEIGHT Vertical difference between a wave's crest and trough; higher waves are more energetic and can cause rapid beach changes.

WAVELENGTH Distance between successive wave crests.

WAVE PERIOD Time in seconds between successive wave crests. Swell are long period, while sea are short period waves.

WAVE REFRACTION See [REFRACTION](#) .