Coastal processes and sand dunes

Term	Definition
Abrasion	the process of scraping or wearing something away.
Accretion	accumulation of sand or sediment due to waves, tides, and winds.
Adaptation	the process of change by which an organism or species becomes better suited to its environment.
Biodiversity hotspot	a biologically rich yet threatened area.
Breaching	the carving of an opening in a dune ridge by strong currents. Breaches can vary in width. Smaller breaches often fill with sand in the months following a storm. Larger breaches may become permanent entry points for water, allowing the areas behind the dune ridge to flood.
Climax community	an ecological community in which populations of plants or animals remain stable and exist in balance with each other and their environment. A climax community is the final stage of succession, remaining relatively unchanged until destroyed by an event such as fire or human interference.
Climax vegetation	the vegetation found in the final stage of biotic succession in an area under particular environmental conditions, typically in the UK tall scrub and even woodland will establish as the climax vegetation.
Deflation	a process that occurs when areas of loose sand become exposed due to lack of vegetation binding the surface together.
Deposition	is the laying down of sediment carried by wind, water, or ice.
Dune wash through	can occur during storm conditions when raised storm tides and high waves erode beaches and dunes. The sand and water carried by waves may break through the dunes and spill out onto the inland side of the barrier dune.
Erosion	the geological process in which earth materials are worn away and transported by natural forces such as wind or water.
Freeze/thaw cycle	is a process of erosion that happens in cold areas where ice forms. A crack in a rock can fill with water which then freezes as the temperature drops. As the ice expands, it pushes the crack apart, making it larger. When the temperature rises again, the ice melts, and the water fills the newer parts of the crack. The water freezes again as the temperature falls, and the expansion of the ice causes further expansion to the crack. This process continues until the rock breaks.
Halophyte	a plant that grows in waters of high salinity, coming into contact with saline water through its roots or by salt spray.
Longshore drift	the process of material relocation along the shore through the action of waves, tides, and the wind. Waves approach the shore obliquely (at an angle), carrying beach sediment with them, but on their return to the sea, wave movement is always perpendicular to (away from) the shore. This leads to a gradual movement of sediment onto and along the shore.
Overtopping	the passage of water over the crest level of a shoreline structure, natural feature, or building.

Glossary

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Perched water table	occur when there are lenses of impermeable material in a rock that is otherwise permeable. These allow small, localised water tables to develop over the lenses, which can overlay a regional water table in the surrounding rock mass.
Pioneer plants	these are the first species that grow in an area and are the first stage of succession. They are usually a hardy plant species that can withstand a hostile environment.
Prevailing wind	winds that blow consistently in a given direction over a particular region on Earth.
Primary succession	the process of ecological succession that takes place in areas where there is an absence of soil and living organisms – pioneer species are the plants which establish.
Psammosere	is a seral community, an ecological succession that began life on newly exposed coastal sand. Most common psammoseres are sand dune systems.
Saltation	when the wind hits the ground it causes turbulence, disturbing sand particles. If the wind has enough velocity it will cause the particles to move. As the sand moves it hits other grains which cause them to bounce up in the air. The wind then picks up these airborne particles and carries them. The force of gravity will cause them to fall back down. If the sand lands on a hard surface (e.g. rock), the sand particle will bounce off again and be carried further. If the particle lands on a sandy surface it will cause other particles to be disturbed, bounce up and they too will be carried, causing a chain reaction. This is the most common way that sand is moved by the wind.
Sand dune cliffs	sheer cliffs of sand. With tonnes of sand having been sheared off, dune cliffs are unstable and can collapse. Over time, dune cliffs will eventually erode to become gentler slopes.
Solution	minerals are dissolved in the water and carried along in solution. This typically occurs in areas where the underlying bedrock is limestone.
Standard of protection	provides an indicative level of risk to a specific area from flooding from the sea or a river.
Strandline	a mark left by a high tide indicating the maximum rise of water. It is usually easy to recognise as seaweed and other debris are deposited in a line along the beach.
Surface creep	larger sand particles are too heavy to be picked up and carried by the wind so instead they move along the ground, colliding with other grains. Once sand begins to move through this process it picks up momentum and won't stop until it collides with an object. Through this process, not only are sand particles moved but by moving against other particles, they erode into smaller particles which can be picked up by the process of saltation or suspension. Winds of adequate velocity will move smaller particles of sand from the beach and transport them inland. Medium sized sand particles will be deposited at the top of the beach, larger particles remain in position on the foreshore.

Glossary

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Suspension	this process moves fine sand particles by the wind, high in the air. They are not affected by the forces of gravity and can consequently travel hundreds of miles before they land on earth again. When they land, it is often because they have combined with raindrops and fallen within rain.
Traction	where pebbles and larger material is rolled along the seabed.
Transportation	the movement of sediment by: solution suspension saltation traction
Water table	the level below the surface of the ground where water can be found.
Weathering processes	the breaking down or dissolving of rocks and minerals on the surface of the Earth. Water, ice, acids, salts, plants, animals, and changes in temperature are all agents of weathering.

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