

Sand is broken down bits of rock (and sometimes shell). To look at different types of sand visit: <http://www.sandatlas.org/rocks-pictures/>

Beaches work as buffers to waves and help prevent coastal erosion. Beaches are constantly changing. In general, the bigger and wider the beach, the older it is.

Most of the loose particles make their way to a beach from eroded cliffs, longshore drift, constructive waves or transported by rivers.

Beach Profile

Beaches: form along the coasts of seas and oceans, or the edges of lakes and larger rivers. They usually consist of loose particles such as sand, gravel, shingle, cobblestones, pebbles or shells.

We all know that the deeper under water we go, the greater we feel the pressure of the water on our heads. This pressure is caused by density.

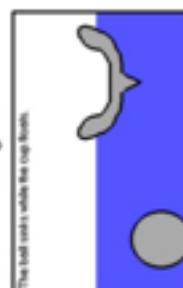
Density is:

In a body of water, the weight of the water on the top, pushes down on the water below. This means all the water molecules at the bottom have to snuggle up together. When they are snuggled up, there is not much room for anything to get in-between them. As a result only those things with greater density will be able to push their way in-between the water molecules.

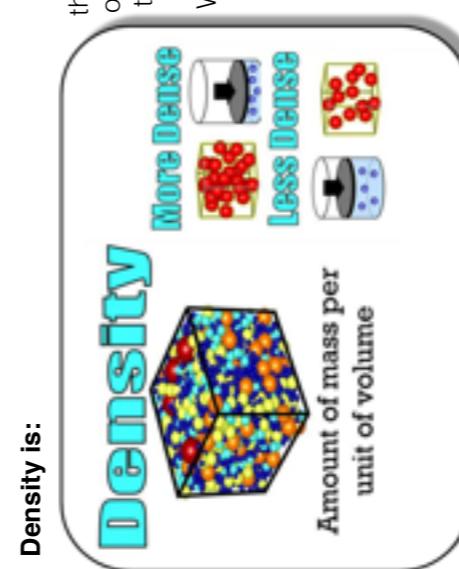
This is why a brick will sink (high density) and a feather will float (low density)

How do boats/ships float?

Obviously the density of a metal rowboat or a "concrete canoe" is **greater** than the density of water, but they float because they contain a large amount of empty space. Because of their **shape**, they displace enough water to balance their own weight.

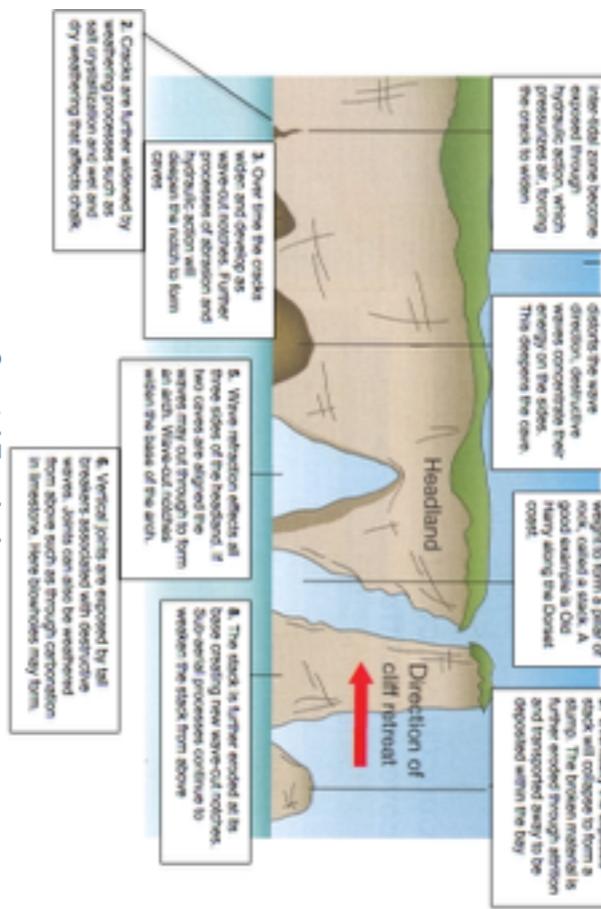


You might do this by letting some of the vessel fill up with water, so it will sink, and then pushing the water out to go back up again.



Sand, Seas and Other Stuff

Coastal Erosion: Cave, Arch, Stack, Stump Formation



Backshore: Bit of beach that is normally dry, except during extreme storms etc. when the waves come much further up the beach.

Backwash: Where the sea water is pulled away from the land and back towards sea.

Berm: Where material has been pushed up the beach by waves, creating a small(ish) ridge.

Constructive waves: Waves that build up a coast line as the swash is stronger than the backwash, meaning material carried in/by the water is deposited but not pulled back out to sea again.

Destructive waves: Waves that erode a coast line. The backwash is stronger than the swash, transporting material away from the coast.

Foreshore: Part of the beach nearest the sea. All is exposed when tide is out, up to the zone that can be covered by 'normal' wave wash.

Longshore drift: Constructive waves hits the coast at an angle of less than 180 degrees to the coast, but the backwash goes out at 180 degrees to the sea that's near land, up to low water line.

Nearshore (or inshore): Sea that's near land, up to low water line.

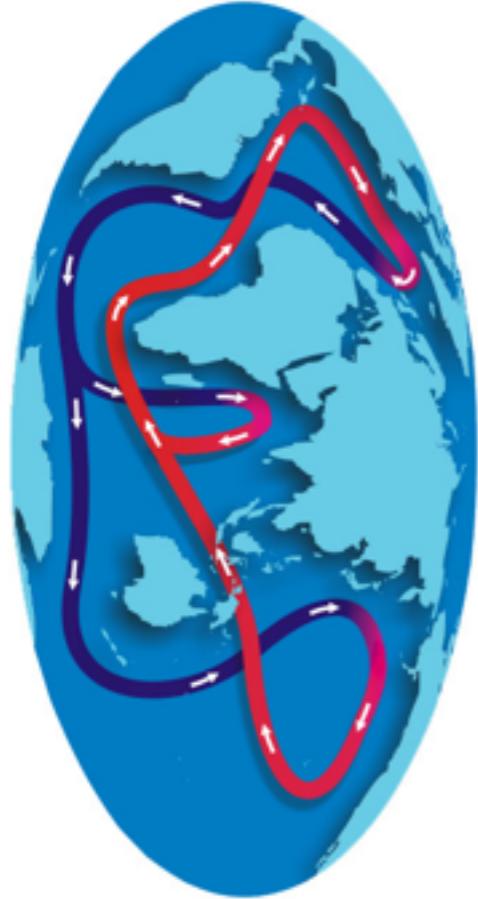
Offshore: Definitions vary. Generally, out at sea and away from land.

Swash: Waves running up the beach.

Swash zone: Covered and then exposed by wave run-up. Moves up and down the beach as the tide moves in and out.

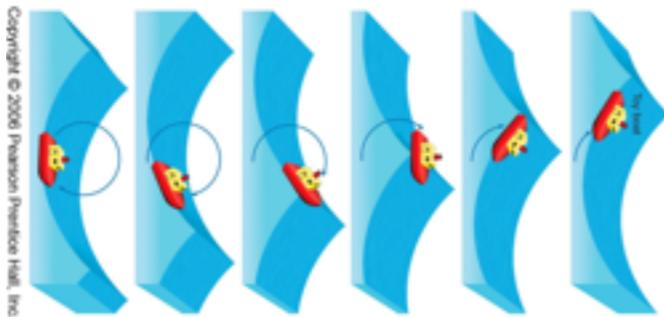
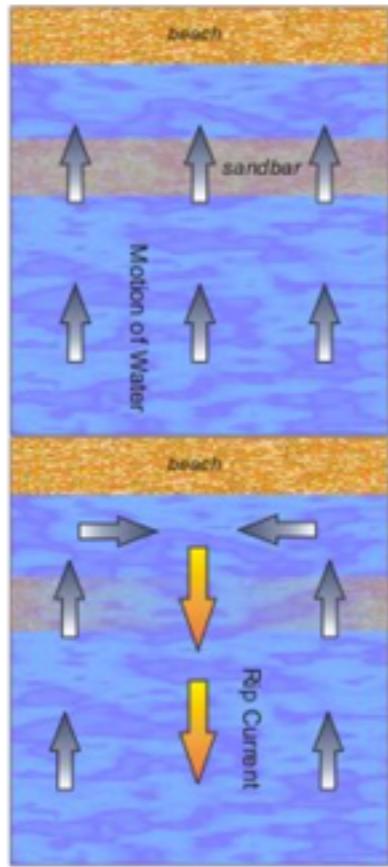
Wrack line: The highest point where the waves have deposited debris, both organic and inorganic.

Further definitions: http://www.coastalwiki.org/wiki/definitions_of_coastal_terms



The Great Conveyor Belt, aka, the Thermohaline Circulation, is the way deep water currents move around the ocean

Rip currents, are sometimes known as riptides, but they are not tides at all. Incoming waves deposit material, creating a sandbar. Backwash wants to get back with as little resistance as possible, so at the weakest point in the sandbar, the backwash breaks through, creating a gap. All backwash in that area then wants to come through the gap. This creates a current of water that pulls everything with it back out to sea.

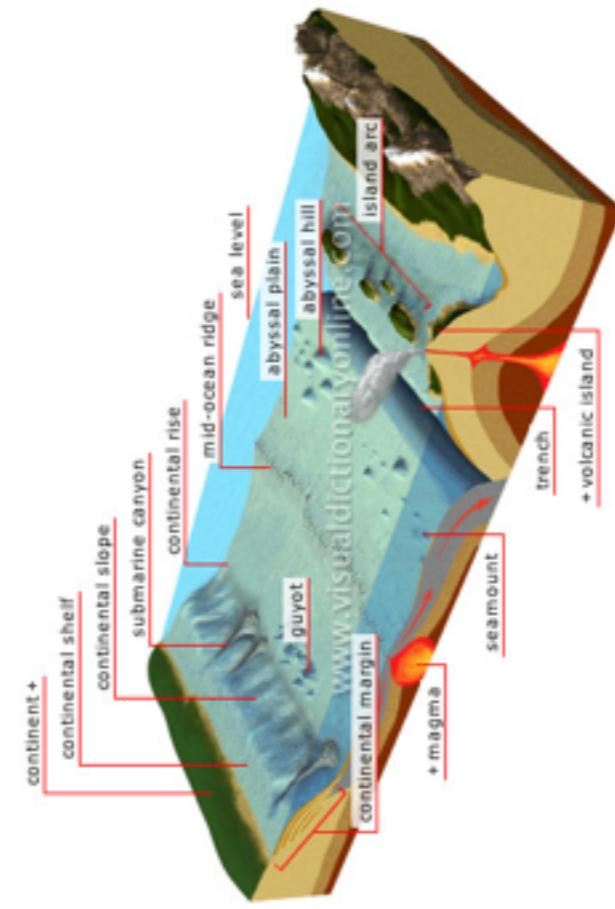


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as waves, while the water particles essentially stay in the same place. It is only when the waves start to break that the water particles on the top move position. The water particles hitting the land slow down due to the resistance from the ground, so instead of moving in a circular motion, they begin to move in an elliptical [oval] motion. These bottom particles in turn slow down the particles above them, but not enough to keep all the particles moving at the same speed and the column upright. The higher particles, although slowed down, are still moving faster than the lower particles, so the higher particles start to fall over the top of the lower particles creating *surf*. They finally hit the land as *swash*.

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Features of the ocean floor



Ocean: Gk. It is generally defined as a saline [salty] body of water that composes much of the world's hydrosphere [total mass of water on the planet].

A sea: Again, generally defined as a large body of salt water surrounded in part, or wholly, by land.

The sea: Part of the global saltwater system that is the ocean (or oceans).

Undoubtedly those definitions have done little to help you, as even those in the know have difficulty in deciding upon set definitions. There is even dispute about how many oceans we actually have! [There are arguments for 1,3, or 5.

<https://en.wikipedia.org/w/index.php?title=Oceans&oldid=933011353>

While the Sea of Galilee may technically be a lake, other things that aren't called in short, a sea is smaller than an ocean and the sea can be used to mean part of the ocean. Seas are bigger than lakes (but not always), and seas are salty - but some things that are called seas, for example the Sea of Galilee, are freshwater... but is that really a lake?!

moon formed by a volcanic eruption.

Now that we have that straight...

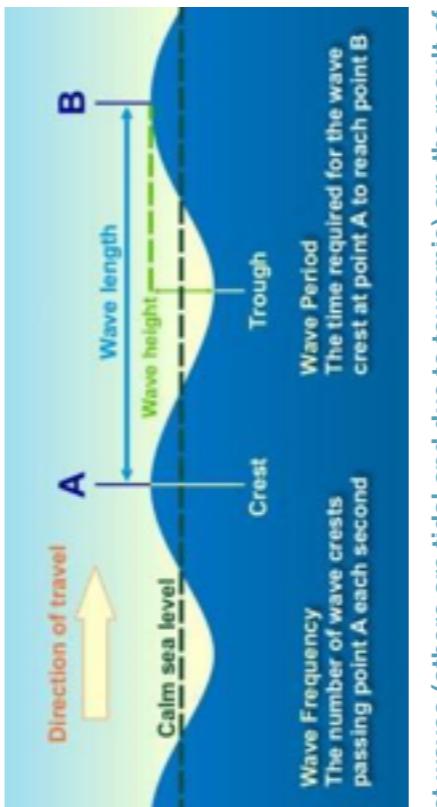
- A mediterranean sea:** is mostly an enclosed sea where there is limited exchange of water with outer oceans and circulation is dominated by salinity and temperature, rather than wind. Examples include: The Mediterranean, The American Mediterranean, the Baltic sea and Baffin Bay
- A concentration basin:** where the water is saltier than the outer ocean, e.g. the Med.
- A dilution basin:** where the water is fresher than the outer ocean, e.g. Baffin Bay.



The biggest problem with this offshore rubbish dump is the impact it is having on wildlife.



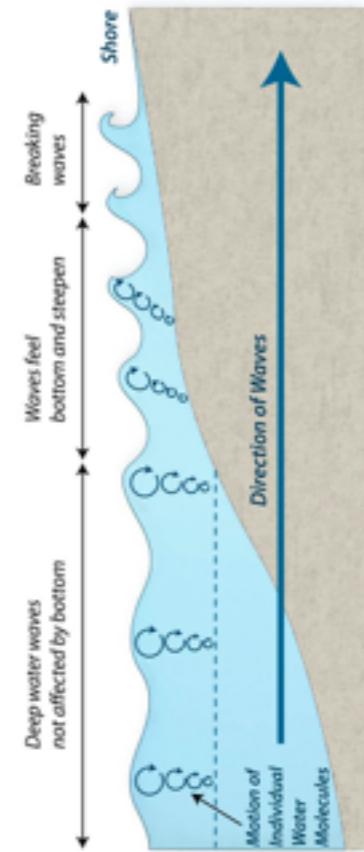
Characteristics of a Wave



Most waves (others are tidal and due to tsunamis) are the result of wind. The size of the waves depends on the strength of the wind, how long the wind blows for and the distance (fetch) over which the wind blows in a straight line across the ocean.

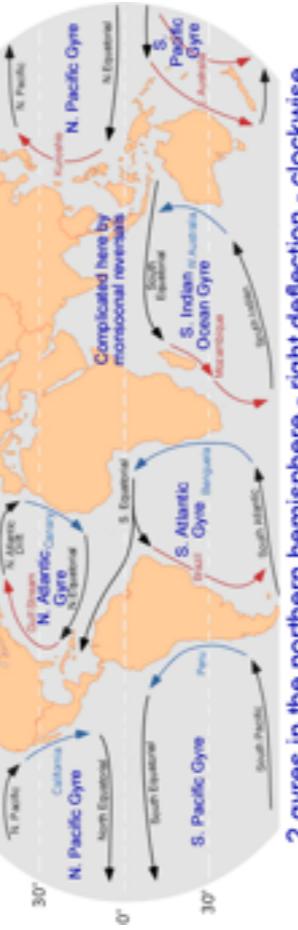
The stronger the wind and the longer it blows across the fetch, the larger the wave will become.

Breaking Waves



Ocean gyres are large systems of rotating ocean currents. There are 5 major gyres in the world: North and South Pacific, North and South Atlantic and one in the Indian ocean.

They are created, partly by wind currents and partly by the rotation of the earth [the Coriolis Effect]. At the centre of these gyres the water is pretty still.



2 gyres in the northern hemisphere - right deflection - clockwise

3 gyres in the southern hemisphere - left deflection - counterclockwise

Once an item floats into the gyre, there is no current to let it drift out again. As a result, loads and loads of rubbish has collected at the centre of each of these gyres.

Great Pacific Garbage Patch.

There is still lots of be learnt about it, and no one has fully determined the size, but it may be twice as large as the American state of Texas.

Far and away the biggest is the Great Pacific Garbage Patch. The biggest problem with this offshore rubbish dump is the impact it is having on wildlife.

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wiki for everything.