

Longshore drift

Revision points:

- Longshore drift is the method by which sediment is transported along a coastline
- When waves approach the coastline at an angle the sediment will be carried up the beach (swash) at the same angle; it then moves back down (backwash) at right angles.
- The result is a zig zag motion along the beach which moves sediment along a coastline.

Two students discuss field work.

Student 1: Thanks for doing this field work with me, I really don't have a clue about what I'm doing. I went to pieces when I found out we had to plan our own projects and collect our own data over the summer. I don't really understand all this coasts stuff. Thanks for helping me.

Student 2: No worries. It needs at least two of us to collect this data anyway, just to handle the equipment, and to carry it down here to Eastbourne on the train!

Student 1: I was wondering why we've come all this way. Why Eastbourne?

Student 2: Well, we need to measure the direction of longshore drift and Eastbourne is a good place to see which way it's going because of the groynes on the beach.

Student 1: What are groynes?

Student 2: Groynes are those wooden structures you can see on the beach, at right angles to the coastline. They trap the pebbles as they move along the coast, and because the pebbles usually move in the same direction, they pile up on one side of each groyne. What we call the updrift side. That means if you look at one individual groyne, the height of the beach on one side is considerably different to the other. The other side is called the downdrift side.

Student 1: Oh I see, but what do you mean by the pebbles "usually" move in the same direction?

Student 2: Well, longshore drift is dependent on the prevailing wind; the direction from which the wind usually blows, which in this case is from the south west. The wind direction determines the wave direction.

Student 1: I get it now. So if the wind is usually from the south west, then so are the waves.

Student 2: That's right, and if the waves move up the beach from south west to north east, then so does the sediment or the pebbles in this case. It's called the swash.

Student 1: So what about when the waves move back down the beach, what happens then?

Student 2: That's the backwash. The waves or backwash move down the beach at right angles or 90 degrees to the coastline, so the result is a zigzag motion. The sediment can't move too far here though because the groynes are trapping it in small sections all the way along this stretch of coastline.

Student 1: They look a bit ugly these groynes, why would you want to build them and stop longshore drift anyway?

Student 2: If there was no beach here then the land behind would be eroded really quickly, and it's quite valuable. All of those buildings up there facing the sea are hotels. The owners wouldn't be too happy if they fell into the sea, and just think what would happen to the tourist industry and the local economy, it would collapse! When there's a prevailing wind causing longshore drift that erodes the coastline, it's in the council's best interest to invest in coastal management.

Student 1: So what would happen to the pebbles if there weren't any groynes here?

Student 2: Well, the groynes are trapping them so they can't keep moving. If they weren't here the longshore drift would keep the pebbles moving until the coast changed direction. Then they would be carried out to sea and be deposited to form a spit.

Student 1: Ah that makes sense now, thanks. So what do we need to do now? Record some data for the fieldwork write up?

Student 2: Yeah, but let's take some photos first and then I'll run through what we have to do to collect this data.