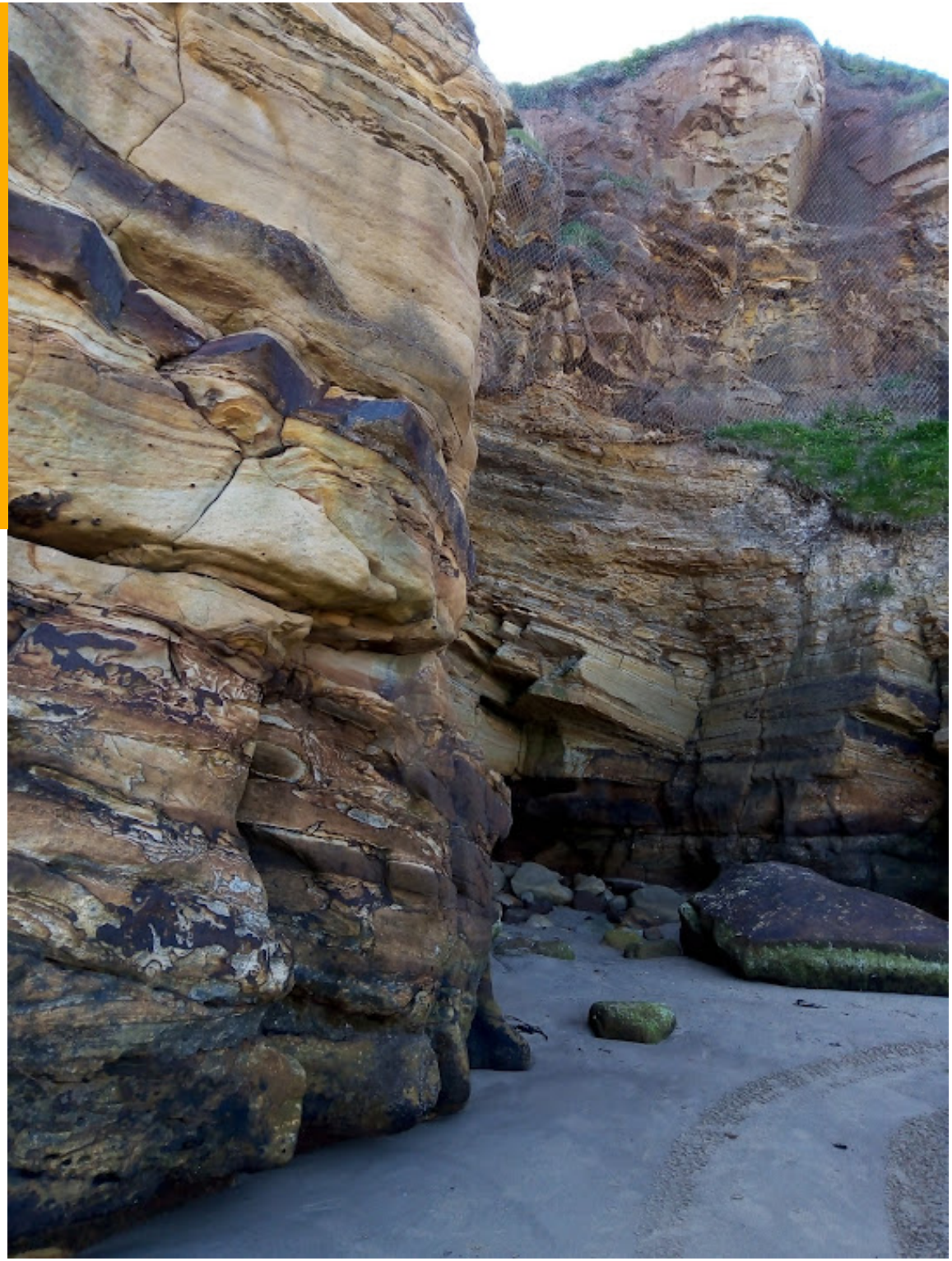
**Profile of the cliffs to the west of Whitby.**
**The lower cliffs consist of sandstones which are generally resistant to erosion and sub-aerial processes.**
**The upper cliff is made of softer mudstones and clays that weather to a gentler angle producing a bevelled cliff profile.**
**There are many differing beds within the sandstones each of varying resistance to erosion that produces the irregular cliff profile.**

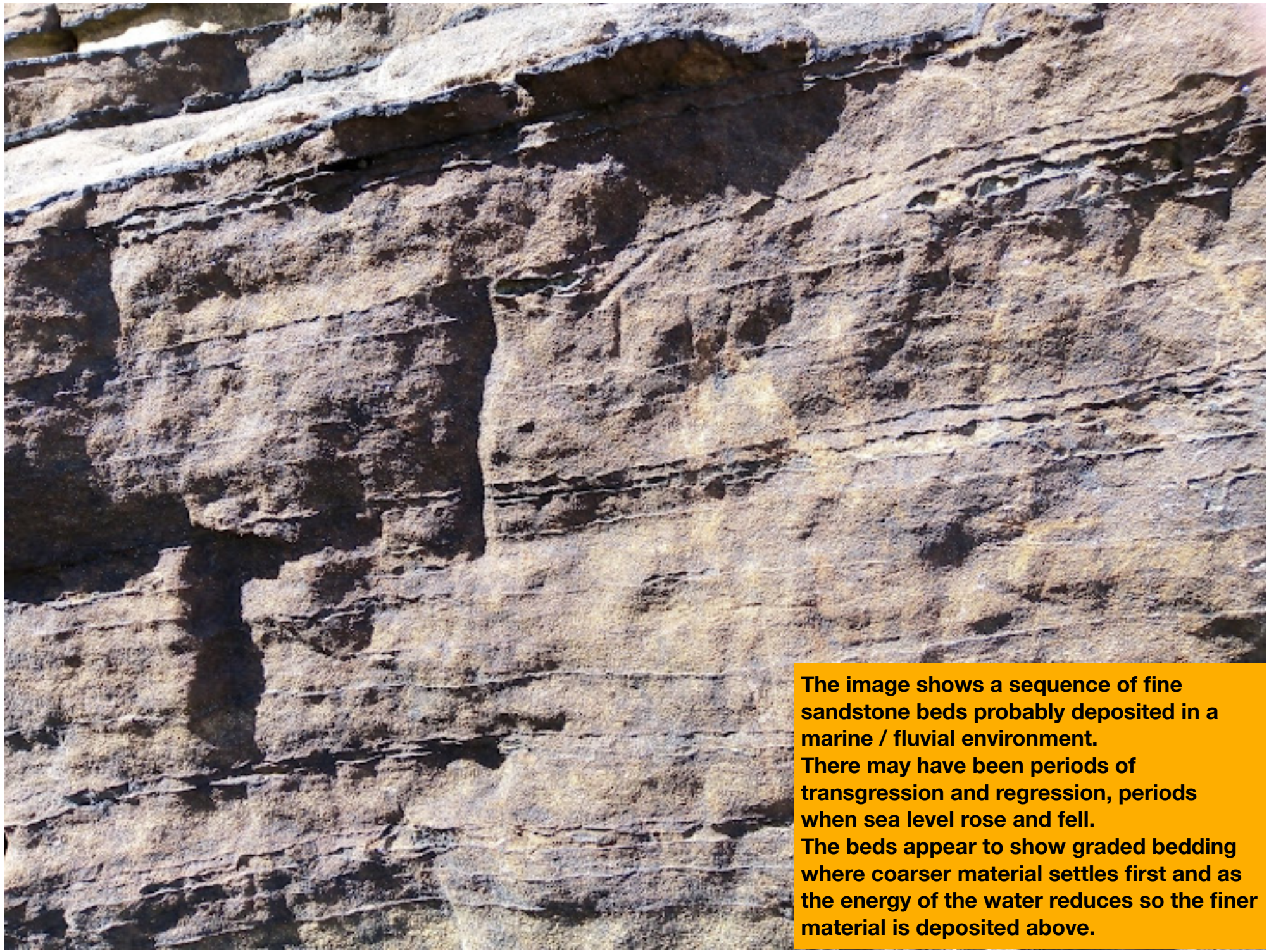
**A variety of rocks all of fluvial / marine origin. Mudstones, siltstones, fine and coarse sandstones.**
**Some well stratified, some laminated, with bedding planes in different directions and angles indicating delta foreset beds, meandering channels and mudflats.**

Jurassic rocks make up the west cliffs at Whitby. They are generally resistant to erosion and to the effects of sub-aerial process and form vertical cliffs with the occasional overhang.
In places where there are major joints or faults weaknesses form that are exploited by wave erosion to form small caves. The sandstone rocks produce a sandy beach at the foot of the cliffs. Both of these features are seen at the bottom of this image.

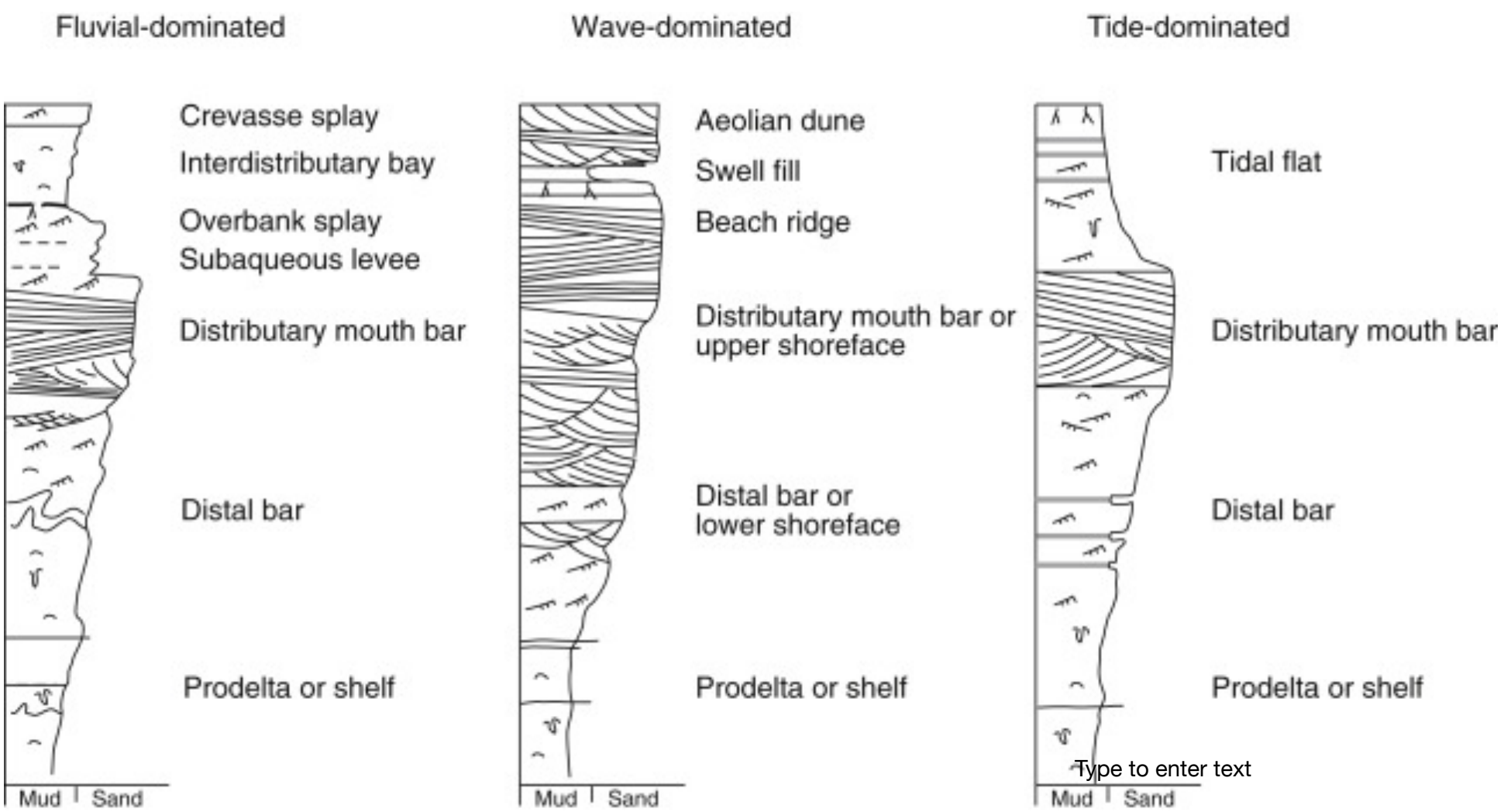


**The bedding planes of the rock strata can be clearly seen here.**
**Rocks of differing strengths erode at different speeds to give this complex cliff structure.**
**The base of the bedding planes show clear ripple marks and flow structures which indicates that the beds were deposited in running water.**
**Note: the marks are the impression of the ripples on the top of the previous bed.**

**A variety of bedding patterns seen on this image of the west cliffs.**
**Lenticular beds form in lower energy intertidal environments when, at calm periods, mud is deposited around lens shaped patches of sand. Typical of zones where tides flow in and out.**
**Flaser beds form in a higher energy fluvial environment  when ripples in the surface of sand deposited by water flowing in one direction are infilled by mud during quieter periods.**



The image shows a sequence of fine sandstone beds probably deposited in a marine / fluvial environment.
There may have been periods of transgression and regression, periods when sea level rose and fell.
The beds appear to show graded bedding where coarser material settles first and as the energy of the water reduces so the finer material is deposited above.

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**Graphic logs of estuarine / deltaic depositional environments showing the wide variety of sediments deposited there and subsequent rocks formed.**
**Mudstones in the deeper calmer water environments, then siltstones and sandstones in the shallower more energetic fluvial environments.**
**Notice also the wide variety of depositional structures, graded bedding, cross bedding etc.**