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Short Communication

Beach Plains: Development, Adaptation, and Environmental Importance

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DESCRIPTION

Beach plains are coastal accumulations that can be flat or ridged and have crests that are typically a few meters above sea level. They are typically made of sand but can also contain gravel. Wherever inherited environmental conditions have allowed the shoreward buildup of wave-worked sediments, they can be found in all kinds of wave, tidal, and climate settings.

Major beach plains typically develop when sediment availability is high and the shoreline is prograding, or moving out to sea. The morphology and depositional history of these deposits may be used to track changes in the variables affecting the processes, patterns, and rates of progradation of beach plains [1].

Deposits from beach-plain areas may therefore be useful tools for identifying historical environmental changes when carefully analyzed. This is particularly true of plains made up of beach ridges, which have been widely used as proxies to highlight changes in a variety of environmental conditions, including sea level, climate, sediment supply, and wave energy and direction. These plains also serve as natural indicators of past shoreline positions [2].

Beach-plain soils are typically of low quality because the parent sediments, which are mostly formed of quartz sand or gravel produced from different rock types, are not susceptible to much weathering. Due to the wonderful life-supporting aquifers that these sands frequently form, coastal plains serve as biotopes for a variety of plant and animal species [3].

Beach plains' flat terrain has drawn people to move there, and in many places it has encouraged commercial and subsistence agriculture as well as industrial growth. Beach plains provide higher-lying land for habitation in wetland environments since lagoons and marshes are frequently connected with them. Beach plains are appropriate topography for the construction of routes in coastal wetland areas since they can also include linear beach ridges that extend over great distances.

When there is a plentiful supply of sediment, beach ridges typically indicate progradation, or advancement, of the coast. While beach plains are typically Holocene to modern in age, Pleistocene beach plain specimens may coexist alongside Holocene plains on some beaches, such as those in southeast Alabama and northwest Florida in the United States, Brazil, and south-eastern Australia. Compared to sandy plains, gravel beach plains are less frequent, but they can accumulate significantly over mid- to high-latitude coasts [4].

They form in areas with an abundance of loose heterogeneous sediments, particularly glacial material, that are sourced from rivers with steep catchments and are rich in gravel, cobbles, or boulders. In these beach plains, the gravel is often frequently referred to as "shingle."

Waves cause the deposition of sediments in the beach plain. This means that beach plains can be found on wave-dominated shores in all tidal range situations, from low to high. The environmental changes that could result in differences in the sediment supply are also a concern for these plains. Variations in the morphology, internal structures, and depositional history of these forms can be used to track changes in the factors controlling the processes, patterns, and rates of beach plains' progradation. These variables include wave energy, wave direction, wave height, sea level, and sediment availability. Beach-plain morphological variations may be useful markers of historical environmental changes, but they must be carefully examined to prevent misinterpretations of such changes [5].

CONCLUSION

Each couplet in the ridge-and-swale pattern reflects a previous beach and the area immediately adjacent to it that has been left behind by coastal erosion. The beach-plain morphology that is the most prevalent and frequently characterized consists of beach ridges. In humid environments, rill wash and rain processes may gradually erase the ridge-and-swale architecture. Beach plains may be subject to reworking and recycling of their material into estuaries, lagoons, and rivers by linked drainage networks and channel meandering. In beach plains, ridge-and-swale morphology, as well as morphological variations, is significant for the development of soil and heterogeneity. These variations

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may be linked to formational differences in height and beach-ridge sets, or they may be caused by post-formational erosion and dissection by channels or runoff drains.

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