

## **Sedimentological and geomorphological study of Vravra Beach, East Attica.**

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This study focuses on the sedimentological and morphological features of Vravra Beach, East Attica, in order to determine the seasonal changes in the textural group classification of the coastal sediments, as well as, changes in coastline position (Fig. 1). Additionally, Vravra Beach has been chosen for the assessment of a potential coastal erosion, using the Coastal Vulnerability Index (CVI) through GIS technology, since several incidents of erosion have been identified during the past decades in the broader area of East Attica (Dimou et al., 2010).

For the composition of the beach profile in seasonal scale, cross sections were conducted along the beach from landward to seaward until approximately 10 m from the coastline. Beach width as well as the current coastline position for each season were measured with a differential GPS (DGPS). The land use at the landward upper limits of the study area were also measured. Along selected cross sections, sediment sampling was also conducted during January 2018 for the composition of the winter profile of the study area and during September 2018 for the composition of the summer profile of the study area.

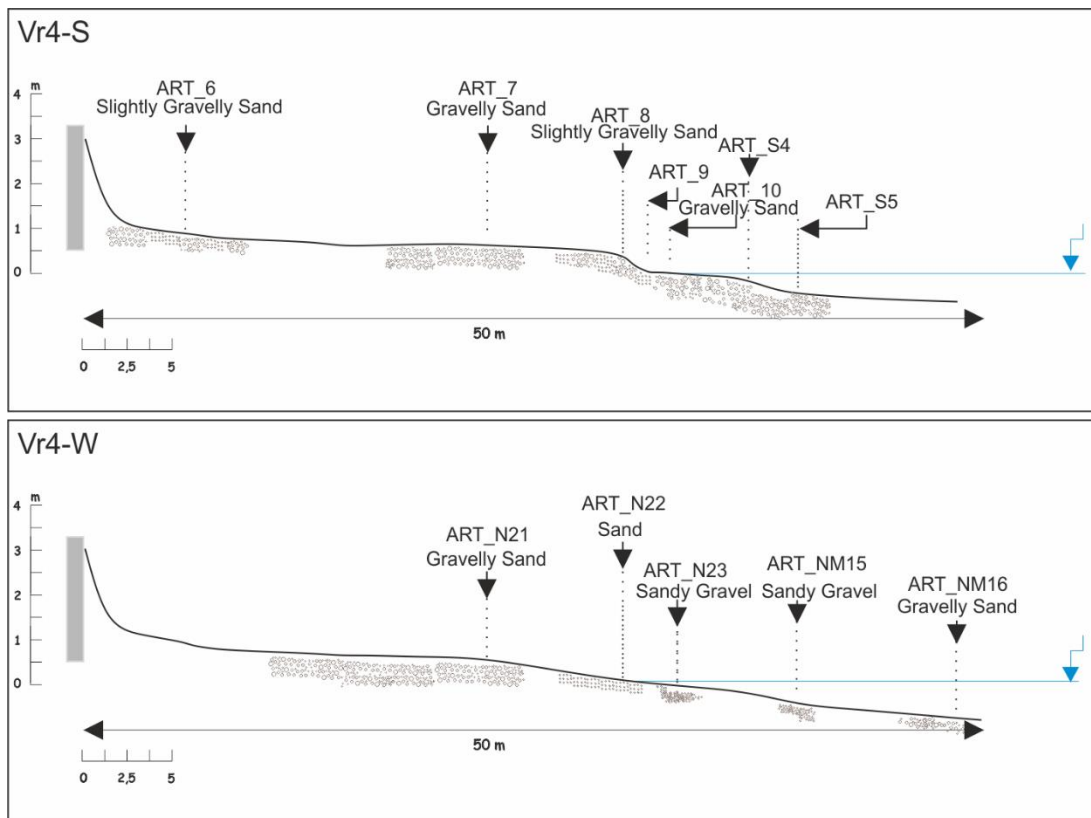
Sedimentological analyses were based on grain size distribution for the analysis of unconsolidated sediments by sieving and statistical parameters such as sorting, skewness, mean and kurtosis were calculating using GRADISTAT v. 0.4 software in order to determine the sedimentological features of the study area and the transport mechanism at the time of deposition. The textural group of the samples was also determined by Folk and Ward (1957) classification.

The grain size analysis of the samples, collected between the upper limit of the beach and the coastline during summer period, show that the majority of grains is described as slightly gravelly sand and gravelly sand, but during the winter period the grains are between gravelly sand and sand. The samples collected from the coastline until approximately 10 m seaward are mainly described as slightly gravelly sand and sandy gravel for both sampling seasons (Fig. 2).

DGPS measurements of coastline position indicate changes that varies between 4.38 m to 7.41 m with a maximum value at 8.27 m. In agreement to field observations, DGPS measurements indicate an accumulation of sediments at the northern part of the beach during the winter period, while during summer period there is an accumulation of sediments at the southern part of the beach.



**Figure 1. Vravra Beach, East Attica.**



**Figure 2.** The above figure corresponds to the summer (top) and winter (bottom) profile of the cross section Vr4-S which is located at the southern part of the beach. The figure indicates the topography of the beach and the arrows point the collected sediments samples.

## References

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