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Seasonal variations of morphological and sedimentological characteristics of some beaches in the northern Latium coastal area (Italy).

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The coast is the “hinge” between two environments: the continental shelf and the emerged lands. The coastal environment is strongly dynamic, as a result of the differential action of the marine weather forcings on the geomorphological structures. It has a fundamental ecological and biological role but at the same time, it is home to many industrial activities. The spatial overlap of very different and sometimes incompatible coastal uses often causes damage to habitats and ecological communities.

In this work, the morphological and sedimentological characteristics of some beaches included in the Physiographic Unit Capo Linaro - Capo Anzio (Latium, Italy) were investigated. The physical characteristics of the beaches and the changes in the morphological structure, from the dune to the shoreline, between winter and summer were examined, to acquire useful data for the analysis of the sedimentary balance and the seasonal evolution of the shoreline. Four beach areas, between Marina di Cerveteri in the north and Castel Porziano in the south, which present a morphology relatively undisturbed by human action, were investigated.

The sedimentological characteristics were examined by analyzing sediment samples, while volumetric variation between the winter and summer seasons were obtained using two distinct methods: a graphical reconstruction of the trend of the beach profile and a mathematical-analytical methodology. During summer, the morphological profiles showed a less articulated structure than in the winter, with an elongation of the beach profile. Textural variations were observed between the summer and winter periods, but these variations are not isolated in single slope breaks and occur along with the entire morphological profile. Finally, the analytical method for the volumetric calculation is reliable especially in poorly articulated topographical situations (discrepancies with the graphical method of less than 2%).

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