



GEOMORPHOLOGICAL AND ENVIRONMENTAL CHANGES ON SEVERAL BEACHES IN THE SINIS PENINSULA (SARDINIA, ITALY): AN EXPEDITIOUS METHOD FOR QUALITATIVE ANALYSIS.

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The coast of Sinis Peninsula (central-western Sardinia, Italy) includes a large number of beaches that alternate with uninterrupted geomorphological and sedimentary continuity. Short-medium term environmental and geomorphological evolution has been tested on some of these settings with an expeditious, reproducible and low cost method. The method required the identification of one or more around fixed shooting point for each study area, where several photos have been acquired with a digital camera supported by a tripod. The images, for at least one series at season, were then processed to make them comparable. Further processing of the corrected images made it possible to highlight the evolution of the main geomorphological forms of the beach, as well as the tracking of the coastal lines and the qualitative evaluation of the surface of surfaced sediments. Free software on Linux OS were used for both the first correction part, carried out through Gwenview and Gimp, both for the second part, developed through Qgis. First results established that the method is not equally applicable in all the beaches: it is particularly difficult to assess very wide physiographic areas when natural outposts that allow good points of view are lacking. Good results have been obtained at San Giovanni di Sinis, in the extreme south of the peninsula, where the height of the observation point (about 20 meters), allowed a periodic assessment of geomorphological variations and shoreline displacements, although observations of the furthest ends of the beach were still difficult. At San Giovanni, during the period of observation, sediment movements in the north-south and south-north directions have been evidenced along the coast, in good agreement with the prevailing winds. Good results have also been achieved in S'Archeddu 'e Sa Canna beach, in the northern part of Sinis Peninsula, where the method allowed to follow the progressive development and displacement of main geomorphological forms (e.g. berms), to evidence remarkable progradation and/or retraction of the shoreline, and to recognise the presence of the *Posidonia oceanica* banquette. Low cost, reproducibility, lack of environmental impacts and good qualitative results in the beaches where it is applicable, are certainly the strengths of the method. The use of the method with a more quantitative approach would be certainly difficult, but it could also give good results if combined with complementary methods of investigation.

