



## **Use of sedimentology, geomorphology and hydrodynamics in heavy mineral exploration in beach sediments along the Samandağ coasts (Hatay, Turkey, E-Mediterranean).**

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The main purpose of this study is to investigate sedimentological, geomorphological and hydrodynamical conditions of the modern marine beaches of the Samandağ/Hatay coasts (SE-Turkey, eastern Mediterranean) in a such tectonically active region which seem to favour formation of heavy mineral placers of chromite and magnetite of economic importance. With the financial support of the Scientific and Technological Research Council of Turkey-TÜBİTAK (Project 112Y146 ÇAYDAG), during the years 2012 and 2013 more than 160 surficial sediment samples were collected from foreshore, backshore and dune subenvironments along the Samandağ beaches and morphodynamics field observations were carried out. Grain size analysis was made by applying standard sedimentary petrographic techniques with sieves (incl. evaluation of statistical parameters). Bromoform was used to separate heavy minerals whereby magnetic heavy minerals were separated with hand-held and laboratory-type magnets. Grain size was dominated by poorly-to moderately sorted fine-to medium sand and coarser-grained sediments are found in narrow beaches flanked by mountains and in areas close to river mouths. Based on grain size distribution the study area can be divided at least by 7 local sections and each of them displayed the effects of proximity to source, different fluvial discharge regime and varying morphology of beach profile. The total heavy mineral concentrations (mostly black sand) in bulk sediments contained usually around 20% (dry weight) but values up to 90% and down to 10% were also determined with a tendency to decrease from the NE to SW. Fluvial input of the longer and southerly major Asi River ("Orantes River") and its tributaries supply lesser heavy minerals compared to the shorter and northerly rocky coasts. Magnetite made up generally less than 10% of the bulk sediment. There exist no important relationship between grain size parameters and total heavy mineral concentration but backshore areas with beach ridges showed higher values. Occurrences of ophiolitic provenance rocks on the coast and hinterland ("Hatay or Kızıldağ Ophiolite") are major suppliers of heavy mineral, chromite placers in the study area and their exploration and exploitation require new strategies of advanced technology (incl. geophysics, mineralogy and geochemistry) and environmental and ecological aspects in future.