

SIZE, SORTING, MINERALOGY, AND CHEMICAL COMPOSITION OF THE RECENT SANDS OF THE NORTHERN GULF COAST

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ABSTRACT

An investigation was completed to determine the origin and the major transportation paths for the Recent beach sands of the northern Gulf Coast and to relate the texture and mineralogy of the Recent sands to their depositional environments. About 200 Recent sand samples were collected from the rivers and beaches of the Gulf Coast states. Mechanical analyses were made to determine the grain size and sorting. Spectrochemical methods were used to determine chemical composition, and thin-section Rosiwal analyses for mineralogical composition.

The major conclusions of this investigation are:

(1) The Recent beach sands east of the Mississippi River Delta are mature quartz sands, which contain practically no feldspar and which contain a mature heavy-mineral suite rich in staurolite and kyanite. The Recent beach sands west of the Mississippi River are feldspathic. The feldspar abundance of these sands decreases from about 20 percent in the Mississippi Delta area to less than 10 percent on the Texas coast. The westward decrease of the feldspar abundance in the direction of prevailing longshore current can be attributed mainly to dilution. The heavy-mineral suite of the Recent beach sands from Louisiana and east Texas contains abundant unstable minerals; among the resistant heavy minerals garnet predominates over staurolite and kyanite.

(2) The relative abundance of unstable heavy mineral which can be easily decomposed during weathering or by post-depositional changes is not a reliable criterion for paleogeographic interpretations. Feldspar abundance and ratio of garnet to staurolite plus kyanite, on the other hand, may be used to recognize ancient petrologic provinces.

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