

Heavy mineral chemistry in different source rocks and coastal sediments of SW coast of India: understanding the provenance and processes in Placer deposit formation

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The distribution of heavy mineral beach placers of the Kerala coast was investigated by many workers and vaguely delineated the crystalline rocks of the Western Ghats as provenance. However, varying opinions exist on the relative contribution of heavy minerals from different source rocks of the highlands. Recent petrological and geochemical studies of the lower crustal granulites from southern India reported pronounced variation in mineral compositions and prompted for a thorough investigation in the light of recent understanding of mineral chemical variation with respect to protolith compositions. This mooted the idea of a comprehensive study of mineral chemistry of beach placers in relation to petrogenesis of probable host rocks in the hinterlands. This research program is therefore aimed at evaluating the chemical composition of heavy minerals in placer deposits of Kerala coast with respect to the probable sources in the hinterlands. The project therefore is also aimed at obtaining a detailed chemical composition of heavy minerals from both source rocks in the Western Ghats and coastal sediment to provide greater confidence in identification and precision to the information on the relative contributions of potential source lithologies. Provenance analysis has the advantage of providing information to reconstruct and interpret the history of sediments from the initial erosion of parent rocks to the final burial of their detritus. This study therefore has potential to provide wide information on the geologic, physiographic and climatic aspect of the source area.