TEXTURAL AND HEAVY MINERAL CHANGES IN FLUVIAL SEDIMENTS IN THE KELANI RIVER DRAINAGE BASIN – SRI LANKA

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The Kelani River is a major river draining into the western coast of Sri Lanka and it carries a large load of ferruginous sediments annually to the western continental shelf. In this paper an attempt is made to describe the textural and heavy mineral changes in fluvial sediments in the 606 km^2 Kelani River drainage basin which consists of different fluvial environments and rock types.

The sediments of Kelani River were collected at 500 m intervals to a distance of 25 km upstream. Stream sediments were collected covering the lower and upper drainage basin. A total of 41 river sediments and 45 stream sediment samples were analysed for granulometric parameters and mineralogical composition.

The texture of the Kelani river sediments is directly related to the gradient of the river profile. Sediments from the lower segment are poorly to moderately well sorted and positively skewed. The mean grain diameter of these sediments falls within the sand range. The upper reaches of the drainage basin consists of very coarse to coarse sand with poorly sorted and well skewed sediments.

The quantity of heavy minerals varies from 1.6 to 30.4% in the major river while in stream sediments it varies from 0.6 to 36.2%. The sediments comprise ilmenite, magnetite, garnet and monazite. Zircon, rutile, hornblende, hydrated iron oxides and spinel are the other common minerals found in the sediments. Sillimanite, corundum and tourmaline are found in the upstream sediments.

The percentages of ilmenite, garnet and magnetite in major river sediments range between 66.7% to 18.8%, 62.5% to 7.1% and 37.7% to 2.9% respectively. In the stream sediments it is 59.5% to 15.0%, 54.4% to 8.6%, 36.7% to 8.6% respectively. Relatively high concentrations of monazite and spinel are found in the upper reaches of the drainage basin. The mineral assemblages of the fluvial sediment are determined by the type of rocks underlying the drainage basin.