Application of clay minerals as an indicator for soil erosion: An example from Lateshur watershed, southeast of Tehran

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Abstract: It is very important to identify the source of sediment yield in a drainage basin for any practical soil conservation program. Clay minerals in lithological units, can be used as an indicator for prediction of soil erosion. Marl and marly-limestone of Neogen red beds, Hezardarreh Formation and Quaternery alluvium, are exposed in the Lateshure watershed. 21 samples from surface soils of different lithologic units and alluvium sediments were collected. These samples were analysed by XRD for identification of different types of clay minerals (montmorillonite, chlorite, illite and kaolinite) as well as their amounts were semi-quantitatively determined. Cluster analysis showed that the clay minerals can differentiate surface soils from Neogen red beds and alluvium sediments. Based on F test in this study, montmorillonite and illite can be used as an indicator for prediction of the source of soil.

Keywords: clay minerals, source indicator, cluster analysis, F test