

The Impact of Urbanisation on Sediment Concentration of Ginzo River in Katsina City, Katsina State, Nigeria

Authors : Ahmed A. Lugard, Mohammed A. Aliyu

Abstract : This paper studied the influence of urban development and its accompanied land surface transformation on sediment concentration of a natural flowing Ginzo river across the city of Katsina. An opposite twin river known as Tille river, which is less urbanized, was used to compare the result of the sediment concentration of the Ginzo River in order to ascertain the consequences of the urban area on impacting the sediment concentration. An instrument called USP 61 point integrating cable way sampler described by Gregory and Walling (1973), was used to collect the suspended sediment samples in the wet season months of June, July, August and September. The result obtained in the study shows that only the sample collected at the peripheral site of the city, which is mostly farmland areas resembles the results in the four sites of Tille river, which is the reference stream in the study. It was found to be only + 10% different from one another, while at the other three sites of the Ginzo which are highly urbanized the disparity ranges from 35-45% less than what are obtained at the four sites of Tille River. In the generalized assessment, the t-distribution result applied to the two set of data shows that there is a significant difference between the sediment concentration of urbanized River Ginzo and that of less urbanized River Tille. The study further discovered that the less sediment concentration found in urbanized River Ginzo is attributed to concretization of surfaced, tarred roads, concretized channeling of segments of the river including the river bed and reserved open grassland areas, all within the catchments. The study therefore concludes that urbanization affect not only the hydrology of an urbanized river basin, but also the sediment concentration which is a significant aspect of its geomorphology. This world certainly affects the flood plain of the basin at a certain point which might be a suitable land for cultivation. It is recommended here that further studies on the impact of urbanization on River Basins should focus on all elements of geomorphology as it has been on hydrology. This would make the work rather complete as the two disciplines are inseparable from each other. The authorities concern should also trigger a more proper environmental and land use management policies to arrest the menace of land degradation and related episodic events.

Keywords : environment, infiltration, river, urbanization

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