

Study on spatial and temporal characteristics of fine sediments in urban stream

-with Yanjae stream

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Fine stream sediments can act as a source or a sink for hazardous materials in aqueous environments. Especially sediments in urban stream could have various materials from anthropogenic sources like input of road dust or discharge from waste-water treatment facilities. This study is purposed to investigate the spatio-temporal changes in particle size distribution, metal concentrations and total organic matter content of fine sediments in the Yangjae stream, running through the Seoul metropolitan to delineate the effect of human activities on fine sediment. The middle part of the stream is the boundary of the city with the floricultural area to the south and the residential area to the north. Therefore, it is expected that the influence of human activities such as a car wash, a gas station and some boulevards would be large in heavy rainfall periods.

Along the stream, sediment samples were collected in three campaigns for a year. Thereafter, analyzed were particle size distribution and chemical composition of fine sediments, major components and metals. The contamination degree was analyzed by Enrichment Factor and Geoaccumulation index, and compared with various sediment quality guidelines.

The results show that Yangjae stream is affected by various external factors such as a car wash, precipitation and constructions. And attention is required to contaminated road dust and flooding sediments. Although the contamination degree of the mainstream is not high, heavy metals are not decomposed in nature, and they could move easily with fine sediments. Therefore, it shows the necessity of management and monitoring of urban stream such as Yangjae stream. In addition, this study can be used as a basic data for understanding the pollutant routes of Yangjae stream and prevent the inlet of pollutants.