Environmental Engineering and Management Journal

November 2017, Vol.16, No. 11, 2599-2604
http://omicron.ch.tuiasi.ro/EEMJ/

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STUDY ON SEDIMENT EVOLUTION OF THE LOWER YELLOW RIVER BASED ON WAVELET ANALYSIS

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Abstract

Studying on evolution law of sediment concentration in the lower Yellow River, revealing the evolution cycle and the relationship with the grain size of sediment have an important guiding significance for the governance of sediment in the Lower Yellow River. Based on the sediment data concentration of four important hydrological stations, Huayuankou, Gaocun, Aishan and Lijin, in the lower Yellow River. The evolution of the sediment sequence cycle were studied using Morlet wavelet analysis the complexity of the multi time structure of sediment transport in the Yellow River are revealed. The results show that sediment concentration have periods of 55 years, 26-34 years, 17-18 years and 6-11 in the lower Yellow River. Period of 55 years is global, not affected by human activities and a finer sand cycle in the Yellow River. Now it is in less time. Period of 26-34 years is global, small affected by human activities and a fine sand cycle in the Yellow River. Now it is in more time. Period of 17-18 years is along path property, affected by human activities and riverbed. It's a medium sand cycle in the Yellow River. Period of 6-11 years is locality, much affected by human activities, is a coarse sand cycle. The mutation appeared in 1950-1960, 1985-1986 and 2000.Sediment control should be based on different of particle sizes, so source area of coarse sand is governed combine its cycle.

Keywords: multiple time scales, sediment concentration, wavelet analysis, Yellow River

Received: May, 2017; Revised final: October, 2017; Accepted: November, 2017

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