Field Observation on Seed Arrival into Surface Layers of Sand Bars after Several Floods in Kinugawa River

Hitoshi Miyamoto (1), Tetsuya Oishi (2), Kazuaki Ohtsuki (2), Sohei Ohmura (1), and Hayata Iimura (1)

(1) Shibaura Institute of Technology, Civil Engineering, Tokyo, Japan (miyamo@shibaura-it.ac.jp), (2) Aqua Restoration Research Center, Public Works Research Institute, Japan (ooishi@pwri.go.jp)

This presentation gives the results of field observation on seed arrival into surface layers of sand bars after several floods during 2016 in Kinugawa River, Japan. The seed arrival could be an onset of secondary succession on sand bars, leading to their well-vegetated states after several decades that cause river management issues both on flood disaster prevention and riverine ecosystem alteration. Kinugawa River had the largest record flood in September 9-10, 2015. It resulted in the levee failure and the corresponding flood disaster in Joso City located in the downstream part of Kinugawa River. It also had the large impact on the riverine vegetation environment, resulting in making many sand bars and gravel beds be bare surface states. In order to investigate the very initial state of the seed arrival into the created bare surfaces by small to medium flood events, 3 channel sections with 6 observation points in total were chosen and observed during the rainy season in 2016. A steel ling with a pile was used for measuring the depth of active surface layers on the sand bars during the flood events. The sediments in the active surface layers were sampled for making the grain size accumulation curve as well as for counting the number of seeds within the sample sediments. The results showed that the sample sediments with the smaller mean diameters, ranging around 0.1 - 6.4 mm, kept much more seeds than those with the larger mean diameters over 12 mm. The number of seeds decreases with the small percentile (around 10-20th) in particle diameter rather than the mean diameter. Furthermore, relationships were discussed in detail between the number of seeds, the depth of the active layers, and bed shear stresses calculated by a numerical simulation model.