

## Characteristics of Grain Size Distribution in Groin Fields and Their Environmental Implications

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### 1. Introduction

Groins alter the flow structure, channel morphology as well as bed materials composition, generally exerting significant impacts on natural river systems. In this study, the characteristics of the grain size distribution in groin fields are investigated, which are important for the assessment of habitat quality but have received less attention up to date.

### 2. Methodology

Field surveys on the grain size distribution in groin fields are conducted along two rivers: the Minjiang River near Chengdu City (China) and the Kizu River near Kyoto City (Japan). In the site along the Minjiang River, the selected groin field consists of two impermeable groins (Fig.1). And in the site along the Kizu River, the selected groin field consists of a permeable groin and an impermeable one (Fig.2). Sediment samples at representative points of the two sites are taken from the surface of the riverbeds during the dry season of year 2010 and are analyzed in Sichuan University (China) and Kyoto University (Japan).

### 3. Conclusions

It is found that groin structures significantly promote sediment sorting in their neighborhood, in particular along the transverse cross-section of a river. Grain size is generally much finer in the groin field compared with that in the main channel area. The relatively closed area in-between two consecutive groins are capable of trapping the finest materials such as clay. Moreover, the area behind the permeable groin is more diverse in terms of grain sizes compared with

that behind the impermeable one. Alternate distribution of coarse and fine sediment, termed as sand ribbons, is observed downstream of the groin field. The environmental implications of the grain size distribution are also discussed. Finally, based on the findings in this research, suggestions are made for the maintenance and management of the two groin sites.

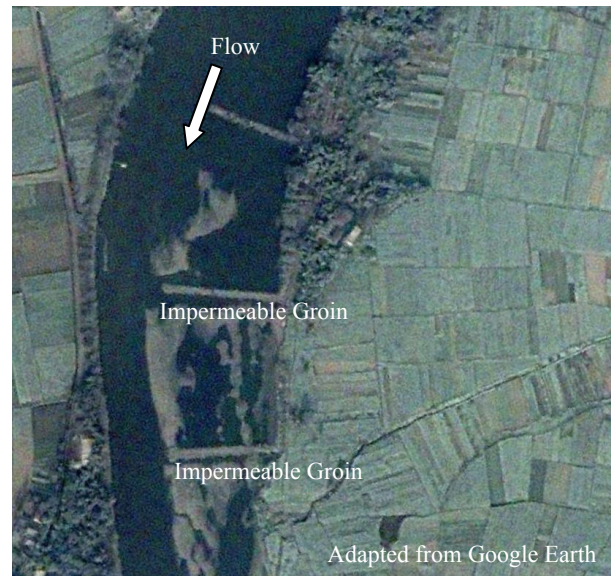


Fig.1 Minjiang River near Chengdu City, China



Fig.2 Kizu River near Kyoto City, Japan