

Recent Evolution Trend and Mechanism of Hechangzhou Braided Channel in Zhenyang Reach of Yangtze River

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ABSTRACT

The Hechangzhou Braided Channel in Zhenyang (Zhenjiang-Yangzhou) Reach is one of the severely changing sections in the lower reaches of Yangtze River. To effectively forecast the evolution trend of this reach and prevent disaster, this paper is mainly based on the concepts and methods of GIS. Using the noted geographic information software MapInfo 9.5 and Surfer 8.0, we digitized the scanned river survey maps (1:10000) of Hechangzhou in 1974, 1978, 1997, respectively, and established the Digital Elevation Model (DEM) for this river section. Then the recent plane deformation, water depth variation and scour-and-fill feature of Hechangzhou Braided Channel were analyzed. The evolution mechanism was also concerned through the points of incoming water & sediment conditions and geologic-geomorphic feature of Hechangzhou Channel. Finally, some suggestions were provided for the third phase project in Zhenyang Reach and following regulations.

KEY WORDS: Zhenyang Reach; Hechangzhou Braided Channel; Evolution analysis; GIS

INTRODUCTION

Located in the middle of Jiangsu Province, the Zhenyang Reach of Yangtze River starts from Siyuan Channel and ends at Wufeng Mountain, with a length of 56km. It includes five major segments: Yizheng Channel, Shiyezhou Braided Channel, Liuwei Channel, Hechangzhou Braided Channel and Dagang Channel (Figure 1). Because of the combined action of geologic structures, riverbed landforms, incoming water & sediment conditions and other factors, the Zhenyang Reach has severe evolution all the time, and it is considered as one of the 14 reaches which are most difficult to be regulated in the lower reaches of Yangtze River (Lv et al., 2009). Especially for Hechangzhou Braided Channel since the 70s' of last century, the north branch grows rapidly after the curve cut-off, and the durative bank erosion greatly threatens the safety of land protection and flood control. Meanwhile, the south branch which was former main channel experiences a progressive decline. It seriously influences the functions of constructions along the river such as ports, factories and intakes. Therefore, doing a deep analysis on evolution process and mechanism of Hechangzhou Braided Channel is significative to forecast the evolution trend of this reach, reduce disasters and direct regulation measures.

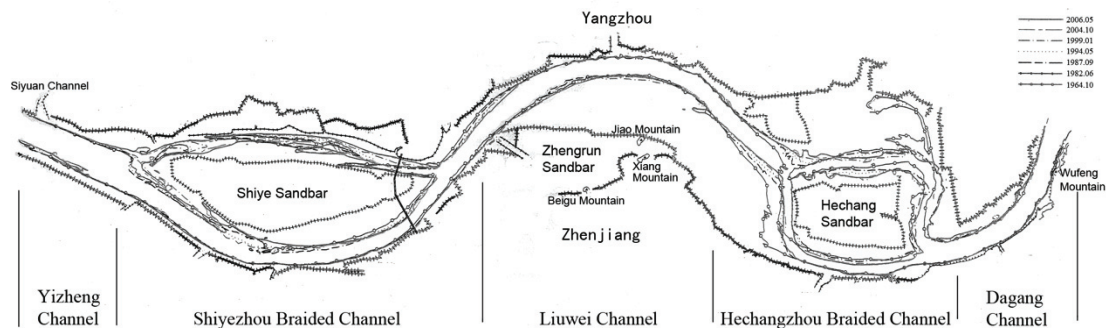


Figure 1. River regime of Zhenyang Reach of Yangtze River