Response Relation between Sediment Particle-size Distribution and Hydrodynamic Characteristics in Offshore Area of Jiangsu Province

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ABSTRACT

The whole coastline of Jiangsu province is 954km. It starts north from Xiuizhen estuary, which is the junction of Jiangsu and Shandong province, and south to the north bank of the Yangtze River estuary. According to composition, it can be divided into three categories, including sandy coast, rocky coast and muddy coast. Due to differences of hydrodynamic characteristics, the coast of Jiangsu is separated into four regions. There laid 24 typical spots in Jiangsu offshore investigation and assessment (JS908), to collect bed load particle size, suspended sediment particle size, suspended sediment concentration, flow rate, water temperature, salinity and others. Based on particle-size analysis of a number of sediment samples, combing sediment source, tidal wave, tidal current, storm current and etc, the relationship is concluded between particle-size distribution and hydrodynamic characteristics.

KEY WORDS: Jiangsu offshore area; particle-size distribution; hydrodynamic characteristics; radial sand ridge.

INTRODUCTION

Jiangsu Province locates in lower reaches of the Yangtze River and Huai River, and beside the Yellow Sea. The coastal zone is in the middle part of circumlittoral areas in China. It starts north from Xiuizhen estuary, and south to the north bank of the Yangtze River estuary. The whole terrestrial coastline of Jiangsu province is 954km. Among them, the main type is muddy coast, and it is about 884km’s long. It exceeds more than 90% as in a whole.

There are abundant natural resources and large potential for development. Meanwhile, more complicated natural conditions there. For instance, typical muddy tidal flats, special tidal wave system, tidal current characteristics, and remarkable radial sand ridges, etc. As usual, most of all developed cities and countries separated in the estuaries and coastal areas. It is the same in China. But contrast to other developed areas, including the Yangtze River Delta, the Pearl River Delta, here along the Yellow Sea in Jiangsu Province, it shows some obvious disadvantages. Because of large quantity of muddy coasts, sea-routes, aquacultures, harbors can’t exert their adequate affections. With the authorization of “Development programming in Jiangsu coastal areas (2009-2020)” in June 10 2009, the development in Jiangsu terrestrial areas is becoming a national tragedy. Consequently, it will be much better. In order to make full use of this region, we should know the depositional and erosional rates, also it is important to give the relation between sediment particle-size and hydrodynamic characteristics.