A Study for the Generation Mechanism of the Rip Current at the Enclosed Beach by the Groin

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ABSTRACT

This study tried to comprehend the generation mechanism of the rip current at the enclosed beach by the groins. Firstly, this study did field survey and comprehended the large scale and velocity of the rip current. In this method, the rip current was pigmented by the sea water colorant, and the pigmented current was recorded as the aerial photography by the multi-copter. Secondly, this study simulated the rip current in accordance with the results of field survey, and the results of simulation and filed survey were compared.

KEY WORDS: Rip current; cusp topography; enclosed by groins; aerial photography; numerical simulation; Niigata Prefecture, Japan Sea.

INTRODUCTION

The rip current occurs at the wave breaking area near the beach, and the accident that is related to the rip current occurs every year in the world. Some generation mechanisms of the rip Current are known. For example, the rip current occurs at the sand beach that has the cusp topography, or the rip current occurs near structures such as groins.

The beach in Niigata Prefecture, faces the Japan Sea, has not many large sand beach, furthermore many beaches are enclosed the groins those were built due to protect from the coastal erosions. In this area, some beach has the cusp topography and the beach is enclosed by the groins. In this case, the current sometimes make the complicated current due to under the influence of the cusp topography and the groins.

This study tried to comprehend the generation mechanism of rip current at the enclosed beach by the groins. Firstly, this study did field survey and comprehended the scale and the velocity of rip current. In this method, the rip current was pigmented by the sea water colorant, and the pigmented current was recorded as the aerial photography by the multi-copter. As the result, the study confirmed the strong rip current that was developed near the cusp top, furthermore decreased and meandered near the head of breakwater area. Secondly, this study simulated the rip current in accordance with the