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Characteristics of wave runup observed over breakwater in field

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Abstract

Typically, physical quantities of breakwater runup vary depending on not only properties of incident waves (i.e. wave height, wave period, wave direction) but also characteristics of coastal geometry such as breakwater porosity, breakwater slope, breakwater roughness, etc. In earlier studies, investigations of the runup quantities with relation to wave properties and geometric characteristics were mostly limited to laboratory-scaled experiments. However, field-based studies on the breakwater runup characteristics were rarely found. In order to verify the lab-based empirical formulas, herein, the laboratory-scaled results are compared to the properties of wave runup obtained through field observations in various water wave conditions. In this study, wave runup on the breakwater slope seaward in field is measured by means of an optical video imaging method, at three different locations in the East coast of Korea. The measured breakwater runup is characterized in association with incident waves and breakwater geometries. Then, the characteristics of the breakwater runup quantified in field are investigated by comparing with generalized empirical formulas, which were derived from laboratory experiments.