

EXPERIMENTAL DETERMINATION OF THE FRICTION COEFFICIENT FOR ESTIMATING SEA STORM INDUCED MEGABOULDERS MOVEMENTS

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ABSTRACT: The presence of numerous boulders on rocky coast is linked to phenomena of detachment and deposit due to the occurrence of sea storms. Currently, several hydrodynamic equations are known in the bibliography to estimate the wave height able to displace them, applying geometric parameters and hydrodynamic coefficients. A new methodological approach intends to consider the minimum energy required for the linear movement of a boulder along a weakly sloping rocky surface as a function of the friction coefficient.

KEYWORDS: Boulders, waves, friction coefficient

1. INTRODUCTION

Along the rocky coast of the Puglia region it's evident the presence of geomorphological evidences represented by boulders deposits of various size whose origin has been connected to the occurrence of exceptional waves impact, due to *tsunami* and/or sea storms (cf. Mastronuzzi and Pignatelli 2012; Pignatelli et al., 2009) (Fig. 1). A new study has been carried out on the position and movement of these boulders using a new methodological approach, which consider the displacement of boulders by "many waves" impacting on rocky coast. This new approach requires the knowledge of the dynamic parameters of the rocky surface on which the detachment and displacement process occurs. This

study, with respect to the equations known in the bibliography, focuses the attention on the energetic aspects of the storm rather than on the geometric parameter of a single wave.

2. MATERIAL AND METHODS

The preliminary part of a more geographically extended study, has been conducted along a stretch of gently sloping rocky coast in San Giovanni of Polignano a Mare, about 30 km SE of the city of Bari. In this location there are deposits of calcarenite blocks, from about 1 to 2,5 m³ in size and 2 to 6 ton in weight, and located at different distances from the coast line, whose genesis has already been linked to the occurrence of exceptional



Fig. 1 - Boulders deposits in the studied area.