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From boulder characteristics to wave parameters: Interpreting boulder deposits related with extreme marine inundations

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eChanges – cE3c

Boulder deposits resulting from extreme marine inundation have been studied worldwide using different complementary approaches. The main goal has been to establish the wave type responsible for boulder detachment, transport, and deposition further inland and/or upwards. Are these deposits generated by tsunamis, storms, or both? The establishment of the driving mechanism is highly relevant for coastal hazards and risk assessment, due to the large contrast in return periods characterizing both types of inundations. However, differentiation between storm- and tsunami- coastal deposits is not an easy task in rocky coastal contexts. This differentiation can be inferred by applying well-established methods used in paleocurrent reconstructions and simplified energy-balance equations based on boulder size and direction of imbrication. Another relevant approach is the intersection between age estimation of boulder placement in coastal deposits with historical and instrumental records of extreme marine events. Finally, the study of present-day deposits related to both types of events can provide additional insights regarding the position and morphological characteristics of coastal boulder accumulations. In this talk, these approaches will be briefly addressed, together with an example of application to a boulder deposit in the west coast of Portugal.

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