Preface

The most extended geomorphological feature on Earth is the coastline, being more than one Mio km long in total. They all are very young in geological timescales and started their evolution about 6000–7000 years ago, when sea-level again reached modern values after the −120 m low-stand of the last ice age. Coastal forms and sediments normally are comparably easy to detect because of their open exposure and only limited thickness, and the methods to analyse the deposits are well developed. Nevertheless, some important questions on coastal evolution are rather embryonic in the geosciences, such as research on the importance of extreme events (for landforms and sediments) like tropical and extra-tropical storms (*paleotempestology*), or *paleo-tsunami research*. Until today, for most coastlines, it is unknown whether the continuous forming under "normal" conditions of wave and tide impacts, or extraordinarily strong but rare events contribute more to coastal evolution, but during the past two decades significant advances have been made.

It is surprising that a rather simple problem also remains unsolved, which is the process and energy required to move large fragments from sea to land, or, in other words, which forces have deposited large boulders onshore: storm waves or tsunami flow? Identifying transport modes of tsunami flow is difficult because of the rareness of the processes involved, but storm wave modes certainly have been observed and even registered, numerically measured, and modelled many thousand times. However, if a publication on coastal boulder deposits by storm waves is presented, critics might favour of a tsunamigenic transport, and vice versa.

As the central west coast of Ireland is not only strongly exposed to winter storm waves but also exhibits one of the most spectacular coastal boulder deposits of the World regarding size of clasts, position inland and above sea-level, the documentation of the wide spectrum of natural features from this region may help to develop the general discussion on coastal boulder transport processes. We present material which has been gained from the Galway Bay and Aran Island area through our own fieldwork since the year 2006 (as well as from other coastal regions of the world under extreme conditions by own research and from the literature) in an extensive documentation with the main emphasis on quantitative field data, based also on recent investigations on the result of six extraordinary winter storms of the season

2013/2014 in the NE Atlantic Ocean. In comparison to observations from other coastal sections of the World under extreme forming processes we will conclude on the main processes involved and, therefore, to promote the knowledge of coastal evolution under strong geomorphological and sedimentological impacts.

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