Geohazard in Rocky Coastal Areas

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It is recommended that reference to all or part of this book should be made in one of the following ways:

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BRANDOLINI, P., FACCINI, F., ROBBIANO, A. & TERRANOVA, R. 2009. Slope instability on rocky coast: a case study of Le Grazie landslides (eastern Liguria, northern Italy). *In*: VIOLANTE, C. (ed.) *Geohazard in Rocky Coastal Areas.* Geological Society, London, Special Publications, **322**, 143–154.

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EDITED BY

C. VIOLANTE
IAMC–CNR, Italy

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Preface

This book brings together contributions dealing with different aspects of hazard-related geological processes that naturally drive coastal slope evolution and deeply influence the human use of coastal resources. The editorial plan was conceived with the aim to frame the study of coastal geohazard phenomena in a context based on sea–land correlations that include marine geophysical surveys and direct field investigations. Special attention was paid to the study of documentary sources, an important source of data in the reconstruction of event chronology on a human time scale.

The collected papers focus on Italian case histories, mostly related to the Neapolitan coastal area, and cover different geological settings and morphologies which are dependent on rock type and tectonics. Contributions from key-areas concern both volcanic and non-volcanic coastal ranges and provide a significant source of information for researchers working in similar coastal environments. Particular attention received the Sorrento Peninsula, a tectonically uplifted coastal area typically exposed to stream floods, with most of the human activities located on unstable alluvial fan-deltas or along the path of floodwaters.

The introductory paper by **Violante** provides definitions and constraints for geological hazard assessment in rocky coastal areas. Processes of rapid sediment transfer by catastrophic stream-flow, sea-cliff retreat and flank collapse of volcanic and rocky slopes are described with examples based on both marine and terrestrial geological data. The introduction is followed by a set of papers dealing with the volcanic influence on coastal sedimentary system of the Naples and Salerno districts (Southern Italy). The paper by **Sacchi *et al.*** and the work by **Cinque & Robustelli**, concern the far ranging catastrophic reaction of steep coastal watersheds of the Sorrento peninsula following large explosive eruptions, noting the role of unstable pyroclastic fall-out deposits in volcanic hazard assessment. This issue was identified by the paper on historical reconstructions of stream-flow events by **Porfido *et al.***, who give a detailed flood chronology, based on the study of numerous and varied documentary sources. A further mechanism for volcaniclastic sediment delivery into the Neapolitan coastal system is provided by **de Alteriis & Violante** and **Milia *et al.***, who document catastrophic collapses of volcanic flank on Ischia island and Somma-Vesuvius respectively. The reported coastal landslides involve large volumes ($>1\ km^3$) of volcanic debris and blocks being rapidly transferred from the coast to the sea, with a significant tsunamigenic potential.

The wide occurrence and variety of sea-cliffs and rocky slopes along Italy's coasts is reported by **Iadanza *et al.*** who illustrate the types and distribution of Italian coastal landslides based on information derived from the IFFI archive (Italian Landslide Inventory; http://www.sinanet.apat.it/progettoiffi) with examples from various coastal settings. A case history on coastal slope retreat in the Ligura district (Northern Italy) is presented by **Brandolini *et al.***, who point out the influence of both natural and anthropogenic factors on slope instability. Finally, **De Pippo *et al.*** propose a method to assess coastal hazard based on an interaction matrix.

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CRESCENZO VIOLANTE
Institute for Coastal Marine Environment – IAMC
National Research Council – CNR
Napoli – Italy