

Foreword

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1 Presentation of the Meeting *Natura e Geodinamica della Litosfera nell'alto Adriatico* (Venice, November 5–6, 2009)

The long-term evolution of residual tidal lagoon forms, the nature of the equilibria created by interactions between hydrodynamics, morphodynamics and ecology, and the relevant themes for safeguarding Venice all depend crucially on the speed with which transgressions and/or regressions of relative sea level take place. “Relative sea level” is the combined effect of subsidence and eustasy, the latter being subject to uncertain predictions and heated discussions. The first factor, subsidence rates, is the result of geological processes together with anthropogenic effects, which are local and of debated extent.

This Meeting was devoted to studying the nature, structure and dynamics of the Po Plain-Adriatic lithosphere, essential for proper understanding of the phenomena, which control the subsidence of Venice and of all the Adriatic coastal areas. Analysis of the historical and instrumental seismicity of north-eastern Italy involves both the construction of a structural model and the identification of the impending seismic risk. One example is the problem caused by the earthquake of 1117 A.D., the probable epicentre of which was near Verona: it caused severe damage over a large part of the Paduan-Venetian plain, as also shown by historical data on the damage suffered by the city of Venice and by all the areas surrounding Verona. Now more than ever before, it is of paramount importance to define better the seismic hazard of the region, including aspects associated with tsunamis, by means of probabilistic and the latest deterministic methods. New seismic reflection exploration allows us to analyse deep crustal structures and refine the constraints imposed by regional tectonics and geodynamics, contributing to an interdisciplinary approach,

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which is now indispensable for proper choice of immediate and long-term strategies aimed at protecting the city of Venice and north-eastern Italy in general.

The Organising Committee

G.V. Dal Piaz (coordinator), C. Doglioni, A. Mottana, G. Panza, A. Rinaldo, and F. Sassi

2 Presentation of the volume

On November 5–6, 2009, the Meeting “*Natura e geodinamica della litosfera nell’alto Adriatico*” (Nature and geodynamics of the northern Adriatic lithosphere) was held in the magnificent halls of Palazzo Loredan, the seat of the Istituto Veneto di Scienze, Lettere ed Arti. The Abstracts volume was published in the online “*Rendiconti*” of the Società Geologica Italiana (vol. 9, 2009).

Invited lectures are collected in this Supplement to the “*Rendiconti Lincei*”. This is the first Supplement since the renewed journal was launched by the Accademia Nazionale dei Lincei and is published by Springer. It will hopefully constitute an example for future similar publishing initiatives.

This volume contains 15 original articles, examined by at least two reviewers, one Associate Editor and the Section Editor.

The first two papers present a tectonic and geophysical framework of the northern sector of the Adriatic plate, both on the mainland and offshore, firmly clasped within three counterposed orogenic chains: the Alps to the north, the Apennines to the west, and the Dinarides to the east. These papers are followed by four more, describing the complex palaeo-geographic evolution of the northern margin of the Adriatic plate from the early Palaeozoic to the Mesozoic, magmatic events, metamorphic processes, and the characteristics of the sedimentary successions. They are followed by papers dealing with the geological and structural study of seismogenetic faults and their simulation in the laboratory, the features and recent evolution of the western Po Plain, the coastline, and Venice, with particular regard to the problem of subsidence. The volume closes with a brief paper devoted to the geodynamic evolution of the region.

The editors would like to express their sincere thanks to the three outstanding cultural institutions (Accademia Nazionale dei Lincei, Accademia Nazionale delle Scienze detta dei XL, Istituto Veneto di Scienze, Lettere ed Arti), which provided financial support to the Meeting and to this volume. Without their substantial support, this clear-cut focus on the nature and dynamics of the northern part of the Adriatic Plate, as an intimate relationship between deep Earth and shallow processes which threaten the stability of Venice, would have been impossible. Thanks are also due to the Società Geologica Italiana, Società Italiana di Mineralogia e Petrologia, and the International Year of Planet Earth, which kindly sponsored the Meeting. Lastly, special thanks are due to the whole staff of the Istituto Veneto di Scienze, Lettere ed Arti, and particularly to Dr. Franchini and Dr. Metrangolo: their organising ability and generous attitude were the mainstay for the perfect course of the meeting.

The editors are greatly indebted to the 30 reviewers who anonymously participated in the careful peer review of these papers. The time and care they devoted significantly improved the contents of the present volume.

The Editors

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