

PREFACE

This volume contains the majority of papers presented in the 11th International FIG Symposium on Deformation Measurements which was hosted by the Geodesy and Geodetic Applications Lab. of the Department of Civil Engineering, Patras University, Greece, in a spectacular venue, the Nomicos Conference Centre at the rims of the Santorini (Thera) Island (Greece) volcano caldera, between 25-28 May 2003, and which was attended by more than 120 scientists, professionals and students from 29 countries.

This Symposium reflects a tradition of more than 30 years of multi-disciplinary systematic research and international cooperation in the framework of WG 6.1 “Deformation Measurements” of the FIG Commission 6-“Engineering Surveys”, inspired and coordinated by Prof. Adam Chrzanowski of the University of New Brunswick, Canada, as is analyzed in the introductory paper in this volume.

FIG Deformation Measurements Symposia also reflect a tremendous, global scale increase in the need for monitoring/measurement, analysis and prediction of permanent or transient deformation (oscillations etc.), *first*, of the earth surface as a result of various natural and man-related processes (earthquakes, volcanic effects, landslides, surface deformations due to mining and underground excavations, etc.) and *second* of main engineering structures (dams, bridges, historical structures, etc.) in order to avoid costly and occasionally high death-toll failures.

An important outcome of this series of Symposia is that in the last thirty years the methods and instruments for deformation measurement studies are gradually changing; for instance with the introduction of GPS, INSAR, scanners and fiber-optical sensors, as well as of robotic and real-time techniques. The fields of application of Deformation Measurements techniques are also expanding: in this last Symposium, ground deformations during tunneling, ground deformations in volcanic areas and deformation of ancient and historical buildings represent rather new thematic units. The field trip following the Conference was devoted, indeed, to the surveillance of the Santorini volcano.

Papers in this Proceedings Volume are divided in 9 thematic units and cover a wide range of topics in earth sciences and engineering, as well as in applied mathematical theory.

In order to obtain maximum publicity, this volume will be posted in the FIG website (www.fig.net), while printed copies of these Proceedings will be deposited in various libraries worldwide. The publication of the papers presented in the 11th FIG Deformation Symposium will be complemented by the publication of selected articles of specific thematic units in Special Volumes of *Engineering Geology*, and hopefully of another peer-reviewed journal.

The organization of the Symposium and the publication of this Proceedings Volume became possible thanks to the support of ERGOSE SA, the Company responsible for the modernization of the railroad network in Greece and of the Hellenic Ministry of the Aegean, as well as of the Silver and Barite Ores Mining Co SA, of the Hellenic Ministry of Culture, of the Athens Metro SA, of the Canadian Centre for Geodetic Engineering of the University of New Brunswick and of the Patras University.

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