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Continental Scientific Drilling

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(Editors)

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**A Decade of Progress,
and Challenges for the Future**

With 94 Figures

 Springer

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Foreword

Scientific drilling is an indispensable tool of modern Earth science research, as it provides the only means of obtaining direct information on processes operating at depth. Drilling allows for the determination of in-situ properties of solid materials and fluids and permits testing of hypotheses and models derived from surface observations. In addition, drill holes may be used as a natural laboratory for experiments and as observatories for long-term monitoring of on-going active processes. Earth drilling, therefore, plays a critical role in scientific research directed towards improved understanding of the workings of our planet and has a key role in solving urgent socio-economic problems.

As a rule, drilling projects are an integral component of major geoscientific research programs, comprising comprehensive pre-site investigations, accompanying laboratory studies, the drilling phase itself, and consecutive measurements and tests in the drill hole. Such drilling programs are costly and thus only realizable to a limited extent. International cost sharing, the optimal utilization of all available resources, the incorporation of international leading experts, and the application of the existing know-how, as well as the selection of an optimal drilling location ("World Geological Site"), are thus essential elements of an international scientific drilling program.

The International Continental Scientific Drilling Program, ICDP, founded in the year 1996, has amply demonstrated that these principal goals can be achieved. This volume summarizes the progress in scientific drilling on land during the past years and the plans of the science community to address challenging geoscientific problems by drilling in the forthcoming years.

More than 210 participants from 24 countries, representing a large variety of disciplines, attended the 2nd International Conference on Continental Drilling at the GeoForschungsZentrum Potsdam, Germany, under the title "Continental Scientific Drilling 2005 – A Decade of Progress and Challenges for the Future" from March 30 to April 1, 2005. The first day of the meeting served to provide an overview and review the past 10 years of research conducted within the framework of the ICDP. The second day of the meeting was used to develop visions for the future, to prioritize scientific questions and potential key locations. For this purpose, the conference split up into the eight breakout groups (Climate Change and Global Environment, Impact Structures, Geobiosphere and Early Life, Volcanic Systems and Thermal Regimes, Mantle Plumes and Rifting, Active Faulting,

Collision Zones and Convergent Margins, Natural Resources). Results of the thematic working groups were presented during the third day in a plenary discussion aimed at defining the overarching goals and developing synergies.

The quintessence of the deliberations during the “Potsdam Conference” is presented in this book and will serve as a science plan for future internationally-coordinated and conducted scientific drilling projects on land.

Rolf Emmermann

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Telegrafenberg, 14473 Potsdam, Germany

Table of Contents

History and Status of the International Continental Scientific Drilling Program

Ulrich Harms and Rolf Emmermann1

Climate Dynamics and Global Environments: A Community Vision for the Next Decade in ICDP

Julie Brigham-Grette, Gerald H. Haug, and the Climate Group53

Continental Drilling and the Study of Impact Craters and Processes – an ICDP Perspective

Christian Koeberl and Bernd Milkereit95

The GeoBiosphere

Brian Horsfield, Thomas L. Kieft, and the GeoBiosphere Group163

Active Volcanic Systems

John C. Eichelberger and Kozo Uto213

Scientific Drilling of Active Faults: Past and Future

Ze'ev Reches and Hisao Ito235

Hotspot Volcanoes and Large Igneous Provinces

Donald J. DePaolo and Dominique Weis259

Convergent Plate Boundaries and Collision Zones

Jan H. Behrmann, Jingsui Yang, and the CoZone Working Group289

Natural Resources

Wilfred A. Elders and Scott R. Dallimore337

Author Index

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