DYNAMICS OF PLATE TECTONICS AND MANTLE CONVECTION

Edited by
João C. Duarte

Dynamics of Plate Tectonics and Mantle Convection, written by specialists in the field, gathers state-of-the-art perspectives on the dynamics of plate tectonics and mantle convection. Plate tectonics is a unifying theory of solid Earth sciences. In its initial form, it was a kinematic theory that described how the planet's surface is fragmented into several rigid lithospheric plates that move in relation to each other over the less viscous asthenosphere. Plate tectonics soon evolved to describe the forces that drive and resist plate movements. The Earth sciences community is now developing a new perspective that looks at plate tectonics and mantle convection as part of a single system. Why does our planet have plate tectonics, and how does it work? How does mantle convection drive the supercontinent cycle? How have tectono-convective modes evolved over the Earth's history? How did they shape the planet and impact life? Do other planets have mantle convection and tectonics? These are some of the fascinating questions explored in this book.

This book started with a challenge from the editor to the authors to provide perspectives from their vantage point and open the curtain to the endeavors and stories behind the science.

Key Features

- Provides diverse perspectives from different experts in tectonics and geodynamics
- Includes the most up-to-date knowledge on plate tectonics and mantle convection
- Sets the scene for future developments and challenges

About the Editor

João C. Duarte works in tectonics, geodynamics, and marine geology. He is an auxiliar professor at the Faculty of Sciences of the University of Lisbon and a researcher at IDL, where he coordinates the research group on Continental Margins and the Deep Ocean Frontier. João has published more than 40 papers and has several edited works, including two Elsevier books entitled *Transform Plate Boundaries and Fracture Zones* and *A Journey Through Tides*, an Elsevier special volume in the *Journal of Geodynamics* on the "200 years of geodynamic modelling", and an AGU monograph entitled *Plate Boundaries and Natural Hazards*. He was awarded the Discovery Early Career Researcher Award from the Australian Research Council in 2015. In 2017, he was awarded the Arne Richter Award for Outstanding Early Career Scientists of the European Geosciences Union. He is a member of the editorial board of *Communications Earth & Environment* and a Fellow of the Lisbon Academy of Sciences. João is passionate about science communication, and he regularly collaborates with science magazines and the media.

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