

Our planet faces many challenges. In 2013, an international partnership of more than 140 scientific societies, research institutes, and organizations focused its attention on these challenges. This project was called *Mathematics of Planet Earth* and featured English- and French-language blogs, accessible to nonmathematicians, as part of its outreach activities. This book is based on more than 100 of the 270 English-language blog posts and focuses on four major themes:

- A Planet to Discover
- A Planet Supporting Life
- A Planet Organized by Humans
- A Planet at Risk

Readers will learn about the challenges that confront the Earth today, and how mathematics and mathematicians contribute to a better understanding of some of these challenges.

This book is accessible to a general audience with a basic scientific background. Mathematicians will learn about some planetary challenges, which provide mathematical and/or interdisciplinary research problems.

Hans Kaper is an applied mathematician interested in the mathematics of physical systems. Dr. Kaper spent most of his professional career at Argonne National Laboratory and is currently affiliated with Georgetown University. He is Co-Director of the Mathematics and Climate Research Network (www.mathclimate.org), an NSF-funded virtual organization developing the mathematics needed to better understand the Earth's climate system. He is a Corresponding Member of the Royal Netherlands Academy of Sciences and a Fellow of the Society for Industrial and Applied Mathematics (SIAM). He is the (co-)author of five books and more than 100 articles in refereed journals. His latest book, *Mathematics & Climate* (co-authored with Hans Engler, SIAM), received the 2013 Choice Award from the Atmospheric Science Librarians International.

Christiane Rousseau, a specialist in dynamical systems, is Professor at the University of Montréal. Throughout her career, she has combined an active research program with numerous outreach activities, giving lectures at schools, organizing mathematics camps for students, and contributing articles to mathematical magazines. She was President of the Canadian Mathematical Society (2002–2004) and Vice President of the International Mathematical Union (2011–2014). During her term as Director of the Centre de recherches mathématiques (CRM) she conceived the idea of *Mathematics of Planet Earth* 2013 (MPE2013). The initiative then grew to the size of an international year under the patronage of UNESCO.

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